



## 2007 ANNUAL REPORT

**Jim Benney, CAE**  
**NFRC Executive Director**

### *“Celebrating Our Success”*

The National Fenestration Rating Council had a number of reasons to celebrate in 2007. An overview of activities included:

- A successful move to a new headquarters in Greenbelt, MD
- International recognition of NFRC through the Asian Pacific Partnership and activities; resulting in two new international members (licensees) – Australia and South Africa
- New regular members; we now have 238 members
- Successful Board of Directors elections.
- Approved guidelines for IGU certification within the NFRC Product Certification Program
- Completed a program for rating applied film.
- Successfully addressed new product ratings
- Completed and rolled out new NFRC Certified Products Directory and interactive database (CPD 2.0)
- Improved relations with DOE; including increased revenue in FY2006 and meeting with Assistant Secretary Karsner.
- Multiple meetings with numerous legislative staff have improved the recognition of NFRC “on the hill.”
- Increased recognition of NFRC programs at Southern California Edison and Pacific Gas and Electric
- NFRC staff continues to implement good accounting practices; tracking all revenues and direct expenses by program, including:
  - PCP
  - LAP
  - CAP
  - Membership Program
  - RTP-Research and Technology Program
  - Compliance Program
  - Marketing and Education Program
  - Component Modeling Approach Program



- Continually working on improving the NFRC balloting process; providing summary sheets as well as attempting to get TG to work on the returned ballots to streamline the discussion at the meetings
- Improving on working in a “Green” environment when dealing with workshops

## **NFRC INTERNATIONAL ACTIVITY**

### **Strategic Goal - Maintain a long-term global focus**

#### **Internal Business**

- 1) Remain engaged with international standard setting organizations.
- 2) Be on the cutting edge of fenestration thermal performance calculations and modeling so that world experts accept NFRC rating methods.

#### **Learning and Growth**

- 3) Monitor and assess international activity for fenestration energy standardization activities.

### Executive Summary

In 2007, NFRC has been diligently following its goal in international operations. Programs with which NFRC are engaged include:

- 1) International Licensees  
NFRC currently has two countries with which it has signed license agreements for the assisting in the development of window rating and labeling programs; specifically, Australia and South Africa. It is hoped that all APP countries will become NFRC licensees (see below) – especially South Korea and India. In addition, we have had discussions with Kuwait and the United Arab Emirates (Dubai).
- 2) Asian Pacific Partnership (APP)  
The Asia-Pacific Partnership on Clean Development (APP) was launched in 2005 as a joint effort by the US, Australia, China, India, Japan, and South Korea to accelerate clean development through the accelerated introduction and use of clean energy resources and energy efficiency. The emphasis is on practical, voluntary measures, public-private partnerships, and capacity building that can stimulate private sector investment and innovation, especially for energy efficiency and clean/renewable energy in China and India to help stem their rapid growth in greenhouse gas emissions. One specific program related to NFRC is



entitled – “Asia Pacific Partnership Building Codes: Window Rating and Labeling” and is supported by the Department of Energy.

- 3) International Organization for Standardization (ISO)  
NFRC supports activity within ISO; specifically in the following committees:
  - ISO TC 163 (energy performance of glass TG)
  - ISO TC 160 (insulating glass TG)
- 4) Energy Conservation and Commercialization (ECO) Project (USAID/India)  
– Development of building energy codes, window ratings; and an Energy Center.
- 5) Conferences
  - a. Glass Performance Days (Finland, June 2007) – NFRC chaired the session on Energy Performance in Buildings and gave a presentation on the Component Modeling Approach.
  - b. Chinese Buildings Program – including presentations at Glass processing Days – China (May 2007); and presentations and sponsorship at China Fenestration Days (Nov. 2007).

#### Future activities

- 1) The U.S Department of Energy is extremely interested in NFRC providing international leadership on standardization of insulating glass durability performance. This is a natural fit for NFRC; as we have developed national guidelines for Insulating Glass Performance and Certification.
- 2) Continuing window ratings-related projects will be submitted to APP for funding.

#### Funding

NFRC activities in international work are supported by DOE funding (including our future work on harmonizing IGU requirements). The majority of NFRC’s work is carried out by our international coordinator, Bipin Shah; with assistance from NFRC’s Manager of Technical Services, Ray McGowan; and NFRC Executive Director, Jim Benney.

**See following Program Manager Reports for more details on all of our 2007 accomplishments.**



## **2007 OPERATIONS REPORT**

### **Deb Callahan, NFRC Deputy Executive Director**

2007 has been a year filled with challenge and change for NFRC staff. Most notable was the physical relocation of NFRC offices from Silver Spring to Greenbelt MD. This was a considerable effort that resulted in increased space and cost savings. On the personnel front we experienced several staff departures and additions. Staff changes afforded us the opportunity to redefine certain roles, furthered the interdependence of the programs and operations sides of our staff structure, and produce a solid body of work. Throughout these activities NFRC has maintained an emphasis on collaboration, cohesion and progress. We've tried to strike a balance between autonomy and collaboration, team work and personal accountability. From an operations perspective our 2007 focus was on stability, economy, and efficiency. We've put mechanisms in place that ensure that NFRC operates using the best practices in non-profit management. Overall, we've worked hard to create a positive working environment for staff. The following highlights our 2007 efforts and accomplishments:

#### **1. Human Resources**

- All staff participated in continuing education and professional development sessions this past year. Courses included time management, effective communication, advanced Excel, Access, programming, finance, non-profit law, personnel management, project planning, enhanced support services, and strategic planning.
- As a group, NFRC staff participated in a 2 day program on communication and conflict resolution. We also held a one day staff retreat in which we focused on team work, communication, risk taking, and personal challenges.
- Updated the *Benefits and Compensation Study* that was initially completed in 2005, which included comparisons to an aggregate of ~600 similarly structured non-profit organizations in both regional and nation markets. This process continues to be integral to our ensuring internal equity and external competitiveness.
- Researched and selected a new health insurance plan (to be implemented in 2008) that provides employees with A+ insurance



while reducing both the employee and NFRC's portion of premium costs.

- Researched and selected a new retirement plan and advisor (to be implemented in 2008). The benefits of this change include reduced annual fees, improved administrative functioning of the program, personalized financial planning services, and broader selection of high performance funds.
- Revised the annual employee evaluation process to include metrics for performance in the core areas of work quality and quantity, communication, and team work (to be implemented in Dec 2007).
- Revised the NFRC staffing structure to account for employee growth and progress recognition. Developed a well defined set of attributes, characteristics, and performance expectations for all staff levels (to be implemented in Dec 2007).
- Hired 2 new staff in 2007 – Anita Bowling (Certification Programs Coordinator) and Tom Herron (Communications and Marketing Manager). Promoted 2 staff - Jacque McCracken (Certification Program Manager) and Jessica Ferris (CMA Program Manager). Two staff departed in 2007 – Zina Bulbuc (Director of Education) and Hardik Jani (Data Analyst). Identified additional technical staffing needs. Recruitment is underway for a Junior Engineer to assist LAP, Codes, Compliance and Research.

## 2. Accounting

- Developed and implemented mechanisms to provide monthly reports to executive and program staff enabling more timely tracking and course adjusting.
- Developed and implemented new budget process. Facilitated the transfer of program budget development from executive staff to program managers.
- Completed the FY2006 audit 2 months ahead of schedule. Auditors found minimal material concerns, and reported that NFRC practices are aligned with generally acceptable accounting principles.



### 3. Internal Operations

- Upgraded NFRC communications system. Highlights include remote management, enhanced conferencing, customer and user friendliness, more efficient and less costly ongoing management. Initial outlay of system expense (22k) will be recouped within 1 year as its conference abilities will allow internal management of conferencing rather than contracting with external vendor.
- Updated NFRC IT security and disaster recovery plans applicable to our entire enterprise.
- Upgraded NFRC server capacity and configuration to better comply with the technical requirements of the NFRC.
- Relocated NFRC head quarters to Greenbelt MD in July 2007. The need for additional space coupled with rent increase was primary motivation for the move. The new location provides NFRC an additional 450 sq. ft. of office space as well as 300 sq ft of storage. The reduced cost per sq. ft. will total a \$6500 annual savings for NFRC.



## **Certified Products Directory – 2007 Achievements**

Staff and Cornerstone Professional Group (CPG) worked consistently throughout 2007 to finalize CPD 2.0. Detailed below you will find grouped listings of key activities for the major project areas of this effort. Currently CPD 2.0 is undergoing final testing with a deployment date of 12/21/07 planned.

<b>CPD</b>	<ul style="list-style-type: none"> <li>• Continued efforts to maintain operational efficiency/stability of the system             <ol style="list-style-type: none"> <li>1. Streamlined stored procedures and web pages</li> <li>2. Developed updated indexes</li> <li>3. Tuned the database</li> </ol> </li> <li>• Developed and implemented Schedule V and VI private labeler capability</li> </ul>
<b>CPD 2.0</b>	<ul style="list-style-type: none"> <li>• Analyzed project requirements (Business Rules, Input/Output analysis, Simulation Upload mechanism, Error Checking, Data Migration Strategy and Approach, Business Object Definition, Storage and Archiving)</li> <li>• Developed detailed project plan/schedule</li> <li>• Designed and developed data model and database schema</li> <li>• Designed proof-of-concept application in an effort to research ways to speed up the uploading of simulation reports.</li> <li>• Completed hardware and software analysis.</li> <li>• Developed project documentation (Vision and Scope, Database Schema, System Architecture, Web Security, Error Checking)</li> <li>• Designed and developed updated integrated Manufacturer, Inspection Agency, Test Validate, Simulator, Reporting, and Administrator modules</li> <li>• Designed and developed updated history-tracking for Manufacturers, IAs and Labs.</li> <li>• Designed and developed integration strategy for Film Attachments and CPD.</li> <li>• Designed and developed efficient/streamlined search mechanism for finding manufacturer data.</li> <li>• Designed and developed centralized data-access module.</li> <li>• Designed and developed account-management and security module.</li> <li>• Designed and developed role-management and membership module.</li> <li>• Tuned spreadsheet validation.</li> <li>• Developed upload spreadsheet which contained color-coded error indicators.</li> </ul>



	<ul style="list-style-type: none"> <li>• Designed and developed management components for Labs, Plants and IAs.</li> <li>• Designed and developed integrated search module (window, door, skylight, film).</li> <li>• Designed and developed data migration strategy and scripts to transfer live data from 1.0 to 2.0</li> <li>• Solution is targeted to be deployed to production on 12-21-07.</li> </ul>
<p><b>APD – Attachment Products</b></p>	<ul style="list-style-type: none"> <li>• Integrated the Film solution into the new 2.0 framework             <ol style="list-style-type: none"> <li>1. Manufacturer, Inspection Agency, Simulator, Administrator and Search Modules</li> <li>2. User interface</li> <li>3. Security mechanism</li> </ol> </li> <li>• Redeployed the updated application to production (11/07)</li> </ul>
<p><b>Archiving</b></p>	<ul style="list-style-type: none"> <li>• Performed additional archiving analysis and updated the scripts to allow for more streamlined archiving routines</li> <li>• Enhanced/updated archiving mechanism/scripts to remove data from and store expired data from the CPD system</li> <li>• The enhanced scripts yielded a 32% reduction in the size of the production database.             <ol style="list-style-type: none"> <li>1. 24% - reclaimed HD space</li> <li>2. 8% - the percentage of space occupied by the archive database</li> </ol> </li> <li>• Developed un-archive scripts to facilitate ability to retrieve archived data</li> </ul>



## **Meetings and Membership Report – 2007 Achievements**

### **Cheryl Gendron, Manager, Meetings and Membership**

- NFRC currently has 238 Voting members with twenty-six new companies joining in 2007
  - ADCO Products, Inc.
  - Advanced Glazings Limited
  - Associated Materials, Inc.
  - Australian Fenestration Rating Council (AFRC)
  - C.R. Windows Inc.
  - CANADA WINDOWS & DOORS
  - Dayside Industries Ltd
  - EPAL N.A., LLC
  - Euro Tech Window Industries
  - EuroWind LLC
  - Fenetherm
  - George W. Trapp Company
  - Hunter Douglas, Inc.
  - Monda Window & Door Corp.
  - Power Windows & Siding
  - Precision Entry
  - Quiet Solution LLC/QuietHome Windows
  - Seal Craft Corporation
  - Southern California Edison
  - Suburban Building Products
  - The Gary Law Group
  - Torrance Aluminum
  - Vinyl-Pro, Inc.
  - Viwinco, Inc.
  - VTech Industries
  - Wayne Dalton Corporation
  
- New membership categories created to meet the need of our growing organization:
  - International Country Franchise Member
  - New category for manufacturing companies joining NFRC to work on researching/creating ratings for products never before rated by NFRC.
  
- The NFRC Insider!



- A new email newsletter directed specifically for the NFRC membership kicked off in early 2007 after the Spring membership meeting in Austin, Texas. Four issues have been distributed full of detailed meeting breakdowns, member interviews and industry news.
- A Step in the GREEN direction
  - NFRC meetings have taken a step in the green direction with the integration of select efforts to improve the overall impact of our gatherings.
  - Recycling paper and aluminum at meeting sites; removal of bottled water – switch to refillable cups; lowering the organizations carbon foot print by planning for meetings in more centralized locations for 2008 as well as partnering with a carbon off-set organization for meetings through 2007 (and beyond) – to create carbon neutral meetings and travel for our organization and attendees.
- Improved Program Materials for pre and at meeting understanding and preparation
  - A terminology glossary, sample motion forms, staff directory, among other items added to the continually improving meeting materials available to our attendees.



## Research and Technology Programs – 2007 Achievements

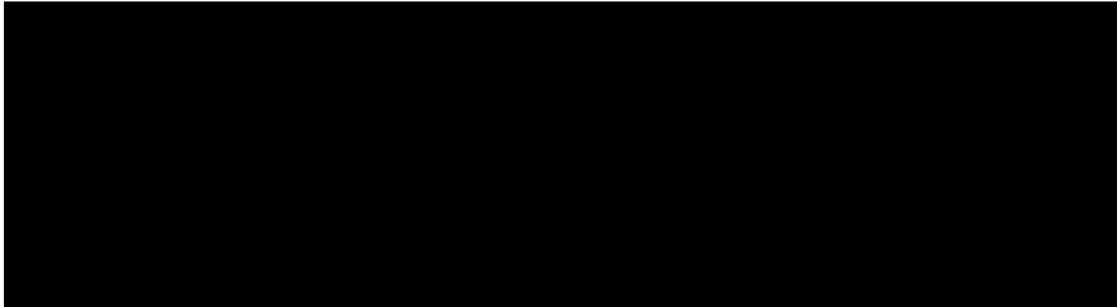
**Ray McGowan, Manager, Technical Program**

### **Research Projects**

<b>Fenestration Research Status</b>	
<b>Project</b>	<b>Status</b>
Development of a Procedure and a Model for U-Factor Rating of Domed Skylights	Carli has nearly completed this project reporting that a final report will be made in FY08.
Tubular Daylighting Device U-Factor Rating	ATI finished primary work and completed the testing procedure. FY08 completion likely and DOE reimbursement will be sought.
Component Modeling Approach-Frame Group Research	Carli reported that this project is now complete and a final presentation to membership was given in November. Final payment will be requested and DOE reimbursement will be sought in FY07, pending TG approval.
Component Modeling Approach-Condensation Resistance Research	Carli reported the project is progressing well and a brief report was made at the November 2007 membership meeting.
Component Modeling Approach-non standard product methodology Research	This bid was awarded to Carli, Inc. at the July meeting and the initial advance payment was made. DOE reimbursement will be sought in FY08.
Spectral Weighting Modification Function Research	Solar Consulting Services made a progress report at the November membership meeting and expects to finish prior to the March 08 membership meeting. DOE reimbursement will be sought.
Complex Product VT Rating Research	ATI, Inc. will begin work pending the appointment of an optical expert for the project. DOE reimbursement will be sought in FY08.
WINDOW 6/THERM 6 validation research project	RFP approved at the Fall 2007 Membership meeting. Bids being accepted until December 19, 2007. Award will be made prior to Spring 2008 membership meeting by having the BRTG submit bidder recommendation directly to RSC-RTC-Board.



## Research Project Financial Status



### **US Department of Energy Cooperative Agreement**

NFRC was reimbursed for fenestration research, software development, and international harmonization efforts for \$261,000. In August, the US DOE modified the NFRC cooperative agreement adding \$100,000 to enable NFRC staff and two contractors (WinBuild and Lingnell Services) to pursue insulating glass international harmonization efforts.

### **Contractor Activity**

NFRC employs five contractors to assist on its Research and Technology efforts. Brief summaries below indicate their 2007 activity.

#### ***LBNL***

Maintained the IGDB adding and deleting numerous glazing participants including new film participants. LBNL also reported at the summer 2007 membership meeting on the 2006 Glazing Properties Interlaboratory Comparison (ILC). This was NFRC's first optical property ILC and the results were good.

#### ***Carli/University of Massachusetts (UM)***

Carli attended two International Standards Organization meetings for NFRC regarding thermophysical properties and window testing methods. UM operated the thermophysical properties peer review for all eight materials reviewed in 2007.

#### ***WinBuild***

This contractor traveled to China, Australia, South Korea, Switzerland, and India coordinating several international harmonization efforts and attended pertinent International Standards Organization (ISO) meetings.



### ***Lingnell Services***

Lingnell Services traveled to China in November to begin Insulating Glass Harmonization efforts as part of the added task to the DOE-NFRC cooperative agreement.

### ***Ross McCluney***

This contractor developed an article for ASTM (**Windows and Daylighting – ASTM Illuminates the Scene**) and attended the Illuminating Engineers Society of North America-Daylighting committee meeting for NFRC. Ross also participated on the Complex VT Rating RFP/project and other optical property matters.

### **Staff Activity**

- Attended ASTM, IECC, ASHRAE (90.1, 90.2, ENV SC) meetings
- Updated glazing participants measurement and account information
- Conducted numerous PMTG, BRTG, and RTC conference calls
- Maintained OPSC, TPSC, RSC, RTC, all related TG web pages
- Maintained Research financial status
- Administered all research project RFPs, bid awards, payments
- Developed ballots for RFPs and modified NFRC research documents (NFRC 600, Research Program Manual)
- Reviewing Junior Engineer resumes for staff addition

### **Documents**

- NFRC 101-2006 was modified four times adding eight new, peer reviewed materials
- The Optical Properties subcommittee set up task groups to modify NFRC 101, 103, 300, 301, 302, 303, and 304 for the 2009 documents cycle
- ASTM 903 (referenced by NFRC 300) has been discussed on two conference calls. Efforts to modify this document will be coordinated with NFRC 300 for the 2009 NFRC document cycle.



## **Compliance Report – 2007 Achievements**

### **Ray McGowan, Manager, Technical Programs**

#### **Fines**

- Two participants fined for mislabeling
- One Inspection Agency fined, but successfully appealed to executive committee

#### **Inspections**

- Inspected a fined participant in March
- Inspected a fined participant in June
- Inspected a fined participant in July

#### **Investigations**

- Twenty participant incidents investigated
  - Eight resolved, twelve outstanding
- Two non participant incidents occurred
  - One resolved, one outstanding

#### **Meetings**

- Met with USGBC to discuss their commercial building LEED compliance activities related to NFRC certified values
  - Advised USGBC that commercial glazing requires NFRC certification in most states
  - USGBC stated they would try to confirm if NFRC certificates were submitted on LEED applications



## Certification Program – 2007 Achievements

### **Jacque McCracken, Certification Program Manager**

The following are the highlights for the 2007 Certification Program:

- Certification Program now has the following as of November 2007
  1. 565 Participating Manufacturers
  2. 5,855 Product Lines
  3. 2,350,883 Products
  4. Three of four new Participants into the program were from Canada during 2007
  5. Small Business Mfrs continue to struggle during 2007
  
- Site Built Numbers through the **3<sup>rd</sup> Quarter 2007\***
  1. Label Certificates Issued
  2. 1,588,689 Square Ft total
  3. 3<sup>rd</sup> quarter totals are already near or exceeding 2006 totals.
  
- Win-Door 2007, Toronto – the show was an opportunity to bring more Canadian manufacturers into the Certification Program; we were also able to speak with a two more Lineal Suppliers, which brings the possibility of more Fabricators into the program. The Certification Program looks forward to many more Fabricators joining the Certification Program in 2008.
  
- IG Certification Proposal was accepted by the BOD and the PCP Review TG is ready to begin work on providing language for the PCP as further direction becomes available from the BOD.
  
- Staff liaison will also continue working BOD IG TG for CAP language regarding IG Certification Agencies as further direction becomes available from the BOD.
  
- PCP Ballot related changes:
  - Manufacturer/Responsible Party language change to Licensee throughout the PCP
  - Glossary removed from the PCP to NFRC 600 Glossary and Terminology
  - Label changes for Dynamic Glazings and clarification as to where (facility) the temporary label should be applied.



- Six Month Extension process for Inspection Agencies changed
- Recertification Timelines provided for manufacturers
  
- CAP related changes:
  - IA is responsible maintaining all licensing requirements in the CAP
  - Each IA shall maintain a Quality Control Program in a stand alone manual
  - Change in IA Workshop attendance requirements for IIRC's
  
- 2007 IA Inspections are on schedule
  
- 2006 Inter Agency Comparison was evaluated in October 2007
  
- IA Workshop in Chicago (September, 2007)
  - The Inspection Agencies were all represented and generated beneficial conversations regarding door issues: labs use different calculations; files used by labs are difficult to determine; labs do not use a common spreadsheet; NFRC 100 is not clear on door simulations; door language is vague in all NFRC documents.
  
  - IA's provided insightful information regarding validation tolerances as well as the common errors they encounter at the joint workshop meeting with labs in an effort to provide better communication tools in a joint effort to get certifications through in an efficient manner. All validation tolerances provided by the IA's are in keeping with procedures specified by in NFRC Documents or in manufacturer specifications, as in pane thickness.
  
  - The APD and CPD 2.0 were reviewed with comments taken. The IA's had also been given a test period to review CPD 2.0 prior to the IA Workshop.

The CPD 2.0, IA Operations Database and APD Manuals are underway!  
First Film Certification has finally happened – CP Films



## **CMA Program and Software Project – 2007 Achievements**

**Jessica Ferris, CMA Program Manager**

### **I. CMA Program – Status:**

#### **A. Documents currently under development:**

1. CMA PCP – 90% Complete (See enclosed – The sections incorporated in this current draft are the sections that have been approved by membership, to date, and will not need to be re-balloted). The remaining sections that still require balloting and approval are Sections 2.3 and 3.2, and Appendix C-NFRC Label Certificate.
2. CMA Label Certificate – To be re-balloted in March 2008 with CMA-PCP Appendix language
3. CMA LAP – Rough draft completed; pending APC review, revision, and board approval.

#### **B. Documents approved:**

1. NFRC 100 (Section 5.6)
2. NFRC 200 (Section 5.6)

#### **C. Issues to be addressed and pending integration into program and rating documents:**

1. **Spacer Approval Paths** – The CMA Spacer Task Group met by conference call on October 1, 2007. The task group reviewed the current CMA technical language in the NFRC 100, Section 5.6.4.2 and reviewed the proposed CMA tool functionalities for each spacer approval path. The following action items were taken:
  - a. It was agreed that the spacer assembly should be referred to in all NFRC documentation as “Spacer System” assembly.
  - b. Proposed revisions to the NFRC 100, Section 5.6.4.2 have been provided by staff to the task group for review and comment based on discussions during the task group call. Specifically, Path III language was revised and language was added to clarify that only one path may be selected by a spacer manufacturer at any given time. The task group is to provide comments by email by October 26, 2008.
  - c. It is anticipated that spacer language revisions will be balloted in March 2008.
2. **Frame Grouping Research** – Completed; proposed revisions to NFRC 100 and 200 have been balloted based on the research findings.



3. **Validation Requirements for Frame Components** – With the research project completed, the task group can convene over the next few months and ballot language for the technical documents that addresses these requirements.

## **II. CMA Software Project - Background:**

In March 2007, a project outline/timeline for the CMA software project was developed and the project website was created. A project governance structure was developed, and the project contract and statement of work was finalized and approved by the Board in May.

The official start date for the CMA software project was May 21, 2007.

The first task, the Specification, was developed over several months and completed in September. It was recently approved by the Steering Committee on October 18, 2007.

### **A. Overview of Specification:**

#### **Task 1 – SPECIFICATION**

##### **Subtasks:**

1. Outline
2. Project Web Site & Issue Tracker
3. Use Cases
4. Screen Sketches First Pass
5. First Review Screen Sketches
6. Functional Requirements
7. Review Functional Requirements
8. System Requirements
9. Review System Requirements
10. Screen Sketches Second Pass
11. Second Review Screen Sketches
12. Screen Sketches Third Pass
13. Review Screen Sketches
14. Signoff on Specification - NFRC Acceptance

### **B. Description of Work Completed for Specification:**

#### **Use Cases and Scenarios**

The first step toward developing the Specification was to document the planned flow of work for the different users of the system. In the first week of the project we identified user roles and responsibilities. These are summarized in the use case diagrams which are located on the project site. The basis for this was the current draft of the CMA-PCP document and approved technical procedures in Section 5.6 of the NFRC 100 and 200.



The next three weeks were spent writing specific scenarios or workflows to identify the steps taken in completing the primary tasks for each user role or function. These have been satisfactorily completed.

### **Screen Sketches/Prototype**

After the workflows were complete, the project team started work on a sample set of screens, reports, and emails. The team invited Subject Matter Experts to walk through the screens to ensure they do simplify the tasks, are easy to use, and provide the needed functionality. We have completed three rounds of meetings to ensure we have time to review screens several times.

The functionality is divided into a simple, easy-to-use Web application meant for casual users and a more flexible Windows application meant for advanced users. The team has completed a Web and Windows client prototype.

### **Functional and System Specifications**

Using the RFP and workflows developed, the next step was to write the functional specification that documents the capabilities of the system and the system requirements that define the security, performance, scalability, and other system-wide requirements. Final drafts of these specifications have been completed and are nearing final review scheduled to conclude September 19, 2007.

The system specification defines the system-wide requirements for the CMA Software Tool. This system specification captures the requirements common to all functions and all screens. It includes architecture, infrastructure, performance, scalability, security, and validation requirements.

The combination of the screen sketches, functional requirements, and system specification define the entire software system precisely and concisely, and make up the Specification.

### **Graphic Design**

- The project team began work on the graphic design for the web and client applications of CMAST in late September.
- Sample layouts of the web application were provided by Cornerstone and reviewed by the project team. The team conducted three rounds of revisions before finalizing the web application graphics.



- Sample layouts of the client application were provided by Charlie Curcija with Cornerstone and Potomac Communications assisting in developing a Splash screen for this application. The project team conducted approximately three rounds of revisions and has finalized the graphics for this client application.
- Sign-off for the graphics took place October 26, 2007.

### **System Design**

- The system design work also began in late September.
- Carli, Inc. and Architier provided a draft system design document for NFRC's review the later part of October. Cornerstone reviewed the document and provided feedback to NFRC staff in early November.
- Sign-off for the System Design was to take place the early part of November after the Membership meeting in Tempe, Arizona; however, the project has been suspended pending further Board deliberation on the direction of the CMA program.

### **Server Database Design**

- The server database design work began the end of October and according to Carli, Inc., is approximately 90% completed.

### **Client Framework**

- According to Carli, Inc., this task is approximately 40% completed.

### **Product Configurator**

- According to Carli, Inc., this task is approximately 20% completed.

### **SPACER & Interface**

- According to Carli, Inc., this task is approximately 30% completed.



**III. Outstanding Issues:**

**A. Cost to NFRC for program implementation.**

**B. Lack of Industry Support – Due to lack of NFRC response to the following issues, per AAMA, AEC, GANA, and IGMA letter of October 9<sup>th</sup>:**

- 1. funding options and opportunities to reduce costs**
- 2. supplemental funding from outside government or utility sources;**
- 3. possible joint standard development;**
- 4. developing a rating system rather than a certification program;**
- 5. focusing on the storefront to low-rise market rather than the curtain wall market;**
- 6. changing procedures for spacer component approval;**
- 7. redundancy between CMA and IGDB;**
- 8. frame grouping rules not complete prior to release of prototype CMA software;**
- 9. additional of gas and materials library;**
- 10. development and visibility of sub-assemblies; and**
- 11. Manufacturer Approved Calculation Entity.**
- 12. complexity and cost of the program for participants**
- 13. financial viability of NFRC and residential program**

**C. Program documents are not yet complete**

**IV. Staff Recommendations:**

**A. Cost of program implementation –** It is anticipated that at least half of the CMA software project development costs will be covered by grant funds; i.e., DOE and Utilities. There is support from government and utilities for this program. At the November 8, 2007 NFRC Board Meeting's Open Forum, Rich Carney from DOE indicated the Board and those Members present that DOE would be granting \$300,000.00 for CMA at this time.

**B. Lack of Industry Support -** The issues raised by AAMA, AEC, IGMA, and GANA have been addressed by NFRC and have either been resolved or are currently in the process of resolution through the NFRC consensus process.

A key issue that appears to still remain for the commercial industry, at this point, is NFRC's intention to develop a certification program



for commercial fenestration. The industry appears to be united in its declaration that certification is not necessary and should not be required.

CMA will offer a certification as well as rating program to the commercial industry who may very well find itself in need on a regular basis of providing proof of code compliance (NFRC label certificate), obtaining fenestration performance data for bidding or building analysis purposes, and/or designing buildings that meet code requirements. Requiring certification will be code driven and not required by NFRC.

**C. Program documents have yet to be completed** – CMA’s “current format” is under development, and outstanding issues are being brought to the attention of membership during this development process and are being resolved through membership consensus.

- A CMA technical standard has been established and approved.
- A CMA certification procedure has been established and is 90% complete.
- The Laboratory Accreditation Program (LAP) document is currently being revised to address the role of the ACE and Labs in CMA.
- The Certification Agency Program (CAP) document has yet to be revised to incorporate IA requirements in CMA.
- And a software tool is being developed in relation to the program’s current development with the goal of simplicity, friendly usability, accuracy and efficiency in mind, which it is anticipated will inevitably lead to a cost-effective program.
  - Issues relating to program and technical requirements identified during the software development process have been brought to the respective task groups to address and resolve.
  - Not all issues can possibly be resolved before the software project begins or is completed.
  - Therefore, program and software development will invariably go hand in hand.



## **NFRC Laboratory Accreditation Program – 2007 Achievements**

### **Scott Hanlon, LAP Manager**

One word describes the 2007 activities of the NFRC Staff and Laboratory Accreditation Program – **Synergy**. The NFRC LAP could have not worked on any of the following activities or had any accomplishments without the support of NFRC Staff, volunteers from the NFRC Membership, and NFRC Contractors. The following list of activities and accomplishments are a result of the hard work from those listed above:

#### **Attachment Products Directory (APD):**

- LAP Staff worked with NFRC CAP Staff, NFRC Database Analyst, and NFRC contractors to implement APD Attachment Products Directory in the Fall of 2007. The LAP tasks included the following: organizing and monitoring beta testing, the writing of users' manuals, the continual review of the development of the APD prior to implementation, and managing the training of NFRC Simulators and IAs.

#### **Certified Products Directory 2.0 (CPD 2.0):**

- LAP Staff worked with NFRC CAP Staff, the NFRC Board's Database Committee, and contractors to implement Certified Products Directory 2.0 in the Fall of 2007. The LAP tasks included the following: modify and develop spreadsheets for uploading data to the CPD, develop laboratory procedures in regards to the validation process, the writing of users' manuals, and the continual review of the development of the CPD 2.0 prior to implementation.
- NFRC Staff will be constantly monitoring the CPD 2.0 and intends to have a detail plan to update and improve the CPD 2.0 based on the results of the users' feedback by the end of the first quarter of 2008.

#### **Lab Accreditation and Inspection Tasks:**

- Supported the TDD TG which successfully balloted changes to have TDD as a test only product type. NFRC Staff is working with a Test Lab for accreditation to test TDD and is expected to complete this task within the first quarter of 2008.
- NFRC Staff generated and worked with the Test Lab TG, which is chaired by M. Thoman, on completing an NFRC calculation spreadsheet for all physical test procedures. The TG intends to complete this task during 2008.



- NFRC Staff generated and worked with the Test Lab TG on completing Inspection Checklists in order to streamline inspections. This checklist will be continually updated upon the implementation of revised test methods.
- Modified Simulation Training Workshop materials to efficiently train new simulators in 3 days. NFRC Staff held a training session in May, which has resulted in 5 new certified simulators. This training was held in-house with specific requirements which resulted in a savings of approximately \$10,000 in NFRC cost.
- This year two exams were submitted to all NFRC Certified Simulators, 31 in total, to model laminates and film attachments in accordance with NFRC 303 and NFRC 304. NFRC Staff forwarded the exams, reviewed the results, and informed the APC of the results.
- NFRC Staff reviewed the results of the 2006 ILC and submitted the 2007 ILC to all participating labs and simulators.
- NFRC Staff inspected the remaining laboratories to complete the 2 year cycle. (6 simulation / 3 test)
- NFRC Staff conducted the LAP Workshop for all testing and simulation labs.

#### **NFRC Documents:**

- NFRC Staff has participated in the ASTM meetings for E06 and C16 and balloted on ASTM documents referenced by the NFRC.
- NFRC Staff and the Test Lab TG have been working on the implementation of the revised ASTM documents for the NFRC 2009 cycle.
- With the support of a work group, chaired by D. Andersen from the Test Lab TG, completed the task of revising NFRC 100 language with the intent of clarifying grouping issues which was improved at the July meeting.
- Currently working with the Accreditation Policy Committee (APC) chaired by C. Mathis with rewriting the LAP. The APC will forward 2 versions of the LAP, one with and one without language for the CMA program. The APC has received approval to implement a numbering system for NFRC program documents and the associated forms.
- Technical Interpretations and Simulation Manual: approved 4 technical Interpretations as well as introduced a new section in the Simulation Manual to model "blinds" between the glass in the opened position.

#### **NFRC Committee, SC, TG and Partner Country:**

- Under Technical Committee, the Thermal Comfort TG was elevated to a subcommittee, which is chaired by J. Larsen. NFRC Staff only need has been to support this SC during NFRC Membership Meetings.
- Window 6 / Therm 6 TG, which is chaired by J. Hayden, has submitted an RFP for approval at the Fall meeting and anticipates sending the software



- program for approval by the fall meeting in 2008. The TG intends to have training in 2008 for all currently certified simulators. NFRC Staff meets with this TG on a monthly basis continually monitoring all tasks relative to the NFRC Software Approval Guidelines.
- The Technical Interpretation Policy Committee (TIPC) introduced T. Culp as the new chair this year as well as a new member, J. Jonely. NFRC Staff meets with TIPC on a monthly basis.
  - NFRC Staff supported Storm Window and Door TG, which is chaired by T. Zaremba with meetings and ballots. NFRC Staff meets with this TG as needed and during the NFRC Membership meetings.
  - NFRC Staff has worked with a multitude of companies requesting ratings for attachment products. These requests have resulted in the Board's approval for an Attachment SC that will govern 3 new task groups: Internal Coverings, External Coverings, and Storm Door / Storm Panel.
  - NFRC Staff has worked with the members of the Australian Fenestration Rating Council (AFRC) in regards to harmonizing their position within the NFRC community. Provided LAP Workshop as an online workshop, as well as, assisting the AFRC with technical issues and supporting their efforts to improve their program.
  - NFRC Staff has supported the Condensation Resistance SC with finalizing the Condensation Resistance pamphlet, which hopefully will be going to a final ballot at the Spring 2008 meeting.

#### **NFRC Staff Activities for 2007:**

- NFRC Staff understands the importance of performing at a high level of professionalism when dealing with the membership during the NFRC Membership Meetings. To meet the NFRC Staff's expectations the following is currently being worked on or has been completed: improving the NFRC balloting process; utilize summary sheets when reviewing the ballots during the meeting as well as having the TG work on the returned ballots to streamline the discussion at the meetings; and utilize equipment to provide a more professional "looking" meeting.
- NFRC Staff is improving on working in a "Green" environment when dealing with workshops and meetings.
- Staff has attended training seminars for team building tools. These exercises have enabled Staff to see the NFRC as a whole picture and taught us how one can affect the whole group. The training has also helped staff to recognize the need and implement communication tools to better service the internal workings. This is particularly useful for the Staff members that are telecommuters.
- NFRC Program Managers have been meeting on a monthly basis to help the programs to harmonize their efforts to support the needs of the NFRC community.