



National Fenestration Rating Council

Update

SPRING/SUMMER 2008

CHAIR'S MESSAGE



JIM BENNEY
NFRC Executive Director

Energy and the Environment Legislative Activity

As predicted, energy prices are soaring. Transportation fuels are getting the most traction, with gas exceeding \$4/gallon, but increased fuels prices also affect heating and cooling of buildings. It's a little known fact that buildings account for 40% of all

the energy used in the United States, as well as 40% of all carbon emissions.

So what is happening in Congress to affect change? There has been some activity this year that could make a difference.

The Senate debated a bill that includes:

- Carbon emissions caps
- Cap-and-trade programs
- Financial incentives for advanced technologies

In the House, while no comprehensive legislation is to be considered this year, a number of position papers have been released on climate change. However, Edward Markey (D-MA), who chairs the Select Committee on Energy Independence and Global Warming, has announced his own proposal on climate change that includes carbon emission cap-auction-and-trade programs.

More importantly though are the activities that will eventually come out of the "Energy Independence and Security Act of 2007." Some of the issues affecting NFRC that we should see shortly include:

- **Increased energy efficiency requirements for federal buildings**
- **An increase in energy code requirements for manufactured housing**, including meeting the most recent version of the International Energy Conservation Code.
- **A "Zero Net Energy Commercial Building Initiative."** These buildings are defined as a high-

performance commercial building that are designed, constructed, and operated to require a greatly reduced quantity of energy; meet the balance of energy needs from sources of energy that do not produce greenhouse gases; and are economically viable.

- **The promotion of "High-Performance Green Buildings," including the formation and funding of a high-performance green building partnership consortium.** These buildings are so defined that during their life-cycle they:
 - reduce energy, water, and material resource use;
 - improve indoor environmental quality, including reducing indoor pollution, improving thermal comfort, and improving lighting and acoustic environments that affect occupant health and productivity;
 - reduce negative impacts on the environment throughout the lifecycle of the building, including air and water pollution and waste generation;
 - increase the use of environmentally preferable products, including bio-based, recycled content, and non-toxic products with lower life-cycle impacts;
 - increase reuse and recycling opportunities;
 - integrate systems in the building;
 - reduce the environmental and energy impacts of transportation through building location and site design that support a full range of transportation choices for users of the building; and
 - consider indoor and outdoor effects of the building on human health and the environment, including improvements in worker productivity and the life cycle impacts of building materials and operations.

You can trust that NFRC will keep our stakeholders concerns at the forefront. If you have any questions please feel free to contact us at info@nfr.org.

Manufacturers Continue to Improve Energy Performance of Fenestration Products

Energy lost through windows accounts for 15 percent of the energy consumed by the nation's residential and commercial buildings, according to the U.S. Department of Energy's (DOE) Building Technology Program. As a result, energy efficient fenestration products – doors, windows, skylights, and curtain walls – are a top priority for the public and private sectors.

“Using high performance fenestration in new construction or renovated buildings can help homeowners, businesses, and others save money on utility bills and reduce greenhouse gas emissions,” says NFRC Executive Director Jim Benney.

Many technologies used today have been around for years, but they are continually being refined and today's high performance residential windows offer better energy savings than products from a decade ago. Window companies want to achieve the highest performance they can because it gives them a competitive advantage, explains Mike Mooney, director of residential glass programs for Guardian Industries Corp.

“We've been able to lower the solar heat gain numbers significantly and improve the U-values,” Mooney says. U-value, or U-Factor, is a measure of heat loss through a product. For colder climates, windows with low U-values minimize the heat that escapes through windows in the heating season.

Low-e Coatings

A low-emissivity (low-e) coating – an incredibly thin layer of metal applied to a pane of glass – is an important component of today's high performance windows because it reduces the heat transfer through the glass. The percentage of low-e windows on the market is still growing, says Mooney. Consumers would be surprised at the number of different low-e windows available, he explains, and may not realize that different low-e windows can be installed on different sides of a house to maximize energy savings throughout the year.

And, those residential products for the home don't necessarily look like the tinted glass commonly found on large office buildings. Manufacturers are striving to make products as clear as possible, using spectrally selective low-e coatings.

Jim Larsen, director of technology marketing with Cardinal Glass Industries, points to the flexibility of sputtered silver coatings as an example. Larsen explains that his company offers several products using this technology, which provide the insulating value of a quad pane unit with the appearance of clear glass.

This month, Guardian Industries introduced a product with high visual transmittance optimized for homes in northern climates to take advantage of passive solar heat gain in the winter. This could help homeowners reduce their heating bills.

Efficient Technologies Spur Other Features

As low-e coating technology becomes more common, it has provided an opportunity for manufacturers to add new features to glass. For example, Cardinal Glass Industries can apply a low-

e coating to one side of a pane of glass – to save energy – and a photo-catalytic coating to the other side, so that water sheets off and dries quickly without spotting. The low-e process enables the other feature to be cost-effectively added to the product thanks to production efficiency.

There are also many different types of frames on the market, offering a range of energy performance. DOE's Office of Energy Efficiency and Renewable Energy provides consumers with information online about the benefits and disadvantages of different framing materials. Larsen observes that many manufacturers are shifting to more efficient framing materials in an effort to maximize window performance while keeping pace with the advances in glass technology.

Today's energy efficient windows often feature two or three panes of glass to save energy as well. These products may be called insulated, double-glazed or triple-glazed windows. Sometimes inert gases are sealed in the spaces between those panes to minimize the energy transferred through the window. While these types of windows are a dramatic improvement over old, single-pane glass, there is still room for improvement.

Fenestration's Future

Some researchers are studying windows that have had air entirely removed from the spaces between the panes of glass. The vacuum created in the space would greatly reduce the transfer of energy.

When it comes to advancing low-e coating, “we're going to see more and more low-e designed for specific climates,” says Mooney. “As technology to lay down sputtered film has improved, you can make low-e do more.”

In the near future, the ENERGY STAR® windows program may play an important role in high performance fenestration products. Mooney thinks that proposed revisions to ENERGY STAR criteria could spur significant changes in the marketplace. On the residential side, Mooney says that the industry is “very focused on how we reach those levels of performance.” Manufacturers may need to use different low-e products for different climates, he explains.

As a share of the marketplace, “we're continuing to see energy efficient windows grow,” says Mooney.

“Many states reference NFRC's rating and labeling procedures in their energy codes,” says Benney. “We are proud to have programs that help consumers and builders select the right high performance products for their needs,” he adds.

Larsen thinks that improving energy efficiency codes and/or adopting them where they don't exist would do more to increase window efficiency than ENERGY STAR. “Real world market transformation with long-term energy benefits happen when code minimums are rigorously enforced for both new construction and replacement,” he says. ■

Utilities' Incentive Programs Help Customers Save on Efficient Windows

Energy efficient windows provide many benefits to consumers and businesses, such as increased comfort and lower utility bills. One obstacle to achieving those benefits can be the cost of installing high performance fenestration products in a new or existing building. But, special programs offered by utility companies can make the purchase more affordable.

Steve Rosenstock, P.E., NFRC board member and manager of energy solutions with the Edison Electric Institute (EEI), explains that there has been a renewed interest in efficiency programs in the past few years as energy prices have increased. In terms of utilities, there has been an increase in the number and dollar amount of incentives offered in most cases, he explains.

In the past, customers tended to prefer equipment incentives, because usually it did not involve purchasing energy simulation software and they likely were doing one equipment project at a time, says Rosenstock. The most popular programs he's seen involve equipment incentives, but energy efficiency incentives can take various forms. "Some of the utilities take a whole building approach," he explains.

Some utilities offer incentives for energy efficient fenestration products, either for new construction or retrofits, depending on the aggressiveness of each program, says Rosenstock.

This spring, EEI updated its list of member and non-

member incentive programs. The publication, which is a representative sample of incentive programs offered by investor-owned utilities, is called "Highlights of EEI Member and Non-Member Residential/Commercial/Industrial Efficiency and Demand Response Programs for 2008." It is available online at no charge.



Rosenstock also recommends visiting the Database for State Incentives for Renewables and Efficiency at www.dsireUSA.org. The Web site – administered by the North Carolina Solar Center and the Interstate Renewable Energy Council and funded by the U.S. Department of Energy – allows users to search for government and utility incentive programs at no cost.

The Efficient Windows Collaborative also maintains a list of utilities and states that offer residential and commercial incentive programs for efficient

windows. To access the list, click [here](#). These programs can take many forms. For example, some programs offer rebates on ENERGY STAR®-rated windows, or window films and treatments (e.g., sunscreens), while others offer free energy audits, weatherization assistance, or no-interest loans for qualified windows.

According to Rosenstock, budget constraints can limit the funds available for incentive programs in some states. "The earlier that people apply, the better," he says. He also suggests searching for programs offered by local governments. ■

Industry Trade Publication Launches Green Web Site



Door and Window Manufacturer magazine recently announced the launch of a new section on its Web site, "e-green," devoted specifically to energy and environmental information targeting the window and door industry.

Viewers can find a variety of information here, including:

- updates on the U.S. Department of Energy's ENERGY STAR® program;

- profiles of door and window manufacturers who have made environmental issues a priority in their plants;
- information on products that have an environmental slant; and
- energy-related videos and links.

To submit information for possible inclusion on the site, e-mail ttaffera@glass.com. ■

CMA Software to be Unveiled at NFRC Summer Meeting

NFRC will demonstrate the prototype software for the Component Modeling Approach (CMA) certification and rating procedure at its upcoming Summer Membership Meeting in July.

CMA provides a whole product performance rating by combining the separate ratings for glazing, framing, and spacer components. It is designed to be simple, fair, credible, and cost-effective. The program will help manufacturers demonstrate to architects and specifiers that their fenestration products meet bid specifications and code requirements. With the CMA Software Tool (CMAST), the design community will be able to quickly and simply generate simulated ratings for different products.

Currently undergoing internal testing, CMAST is set to be reviewed by dedicated testers to assess the functionality of the software application. Later this month, NFRC also plans to provide access to this application to subject matter experts who have been assisting with the development of the software requirements, says Jessica Ferris, NFRC's CMA program manager.

Ferris also notes that a second phase of testing, involving the Web-based part of the application, will begin in the fall, followed by a six-month pilot project scheduled to begin in January 2009.

Charlie Curcija, of Carli, Inc., will demonstrate CMAST at the NFRC Summer Membership Meeting in Chicago. "It's not

completely functional yet, but it has all the core functionalities in place," says Ferris. "We'll be able to show the membership how, in essence, this software application will work and give them a good idea of what it's going to look like," she adds.

CMAST offers many benefits to users, including client-based and Web-based functionalities. It can maintain libraries of component data, define projects, assemble components, and calculate whole-product ratings.

CMA and BIM

The design and construction industry is increasingly turning its attention to Building Information Modeling (BIM). Ferris recently attended a workshop on the subject at the American Institute of Architect's annual conference and she thinks that CMA could play an important role in BIM.

"It was exciting to see how potentially we could fit in from the energy analysis side of a building and how that data can be used from the CMA end," says Ferris.

Ferris explains that NFRC is starting to explore how it can get involved with the development of the National BIM Standard™, which seeks to create standards that facilitate the interoperability of software and data.

NFRC expects to implement the CMA program – including software, technical documents, standards, and procedures – in August 2009.

NFRC Discusses Energy Codes and Fenestration at AIA Show

Standing before a crowd of architects at the American Institute of Architect's (AIA) 2008 National Convention and Design Exposition, NFRC Executive Director Jim Benney explained the role NFRC can play in helping architects design more energy-efficient buildings. Benney also fielded several questions about energy codes and the performance standards of windows during his hour-long talk, which drew an audience of over 150 people.

The AIA National Convention and Design Exposition is widely considered to be one of the premier industry events for architects and building professionals.

During Benney's session, "Energy Codes and Fenestration," he discussed fenestration's role in energy efficiency and building design. More than 44 states and the District of Columbia reference or require NFRC ratings in their energy codes.

"I'm incredibly pleased that I was able to be a part of this event," said Benney. "Architects are one of the many important stakeholders of NFRC and we value the relationship we have built with AIA."

Show organizers encouraged all attendees to help make the expo "greener" to be certain it was an environmentally responsible show. One example was a reduction in printed materials. Exhibitors and attendees saved paper by making two-sided copies whenever possible and using more environmentally-friendly materials such as soy/vegetable-based ink on post-consumer recycled paper.

In keeping with the effort, NFRC eliminated paper all together by providing many of its fact sheets, standards, and a specifiers guide on a compact disc.

NFRC Membership Meeting Set for Chicago, Illinois



NFRC will be holding its Summer Membership Meeting at the Conrad Chicago in Chicago, Illinois July 28-31. Both NFRC members and participants are welcome to attend the hard working meeting where a diverse group of volunteers

continue to work on the many program areas managed by the NFRC.

The meeting hotel is directly on the Magnificent Mile – steps away from the finest dining, shopping, beaches, and other activities Chicago has to offer in the summertime.

Key Dates to Take Note

The deadline to reserve a room under NFRC's discounted room block is June 25, 2008. Reservations can be made by dialing 1-800-705-7129.

Everything you'll need to get organized for this upcoming meeting – registration forms, schedules, detailed agendas, etc. – can be found online at the NFRC's Upcoming Meeting page at <http://www.nfrc.org/upcomingmeeting.aspx>.

If you have any questions, please send a note to www.meetings@nfrc.org or call us at 301-589-1776.

DOE Completes Initial Analysis for Proposed ENERGY STAR® Criteria Revisions



The U.S. Department of Energy (DOE) intends to revise the criteria by which windows, doors, and skylights qualify as ENERGY STAR® products, and plans a phased approach for implementing the revised criteria. The new criteria would become effective

in 2009, 2012, and 2015.

DOE announced on May 2 it had completed the initial energy analysis for the proposed criteria revisions to the ENERGY STAR Windows Program. Two weeks later, DOE released the preliminary criteria revisions to doors and skylights and explained that it may be revised as analysis continues.

"The analysis has pointed out a clear path for the 2009 criteria, but also the need for additional cost and feasibility research before establishing the 2012 and 2015 criteria," explained ENERGY STAR Program Manager Richard Karney in the May 2 letter to stakeholders.

To receive feedback from industry, DOE will hold a stakeholders meeting on the ENERGY STAR on August 13, in Washington, D.C. "The meeting agenda and Initial Criteria Revision Analysis will be released in advance of the

meeting," wrote Karney.

Earlier this year, DOE announced changes to the proposed revisions. They included an updated climate zone map; a longer transition period; and near-term requirements that could be met by existing products or by making "feasible manufacturing modifications" to those products. Karney provided an update of the criteria at the NFRC 2008 Spring Meeting in Nashville, Tenn.

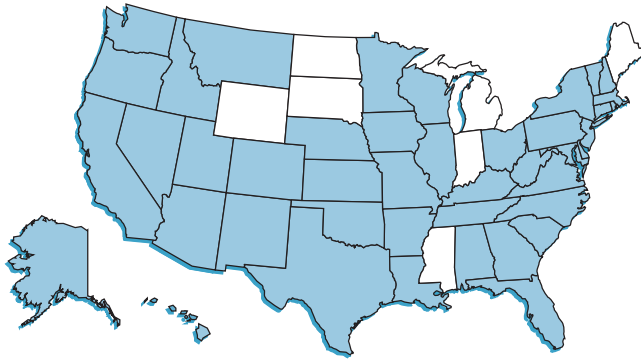
DOE plans to issue the preliminary analysis and proposed criteria for windows prior to NFRC's summer meeting, set for July 28-31, in Chicago. The presentation, which Karney will deliver, will take place during the Regulatory Affairs and Marketing Committee block on Wednesday, July 30.

Final criteria are expected to be announced in September. DOE reports that the new criteria could take effect as early as June 2009.

"Our members are following the process closely and look forward to hearing more about the latest developments during our upcoming membership meeting," says NFRC Executive Director Jim Benney.

Fenestration products must use NFRC's rating, certification, and labeling procedures for U-Factor and solar heat gain coefficient to be eligible to earn ENERGY STAR status.

Codes Update



Several states have adopted new energy codes in 2008, and many others have taken action to implement code changes.

Here are some of the recent code developments as reported by the Building Codes Assistant Project (at www.bcap-energy.org) and the Responsible Energy Codes Alliance (RECA):

Earlier this year, the **Alabama** House of Representatives passed legislation adopting the 2006 IECC as a minimum requirement for commercial buildings. It is currently awaiting consideration by the state Senate.

In March, the **Arizona** House of Representatives passed legislation creating energy efficiency goals for residential and commercial construction, schools, and state buildings. The bill also requires all state agency buildings constructed on or after July 1, 2009, to meet LEED rating standards or an equivalent green rating standard. The legislation is still under consideration in the state Senate.

Connecticut lawmakers introduced legislation that would revise the State Building Code to include the most stringent energy standards available. In March, the House Environment Committee passed the legislation and it is now awaiting debate in the House Committee on Public Safety and Security.

A legislative proposal in **Illinois** would require the state to adopt the most recent version of the IECC one year after each update. Debate on the proposal is expected to resume in November

Maine adopted a new statewide building energy code that establishes the most up-to-date versions of the IECC, IRC, IBC, and IEBC. Enforcement of the code will begin June 1, 2010.

The **Missouri** legislature is considering two bills that would adjust energy efficiency requirements for public buildings, create home improvement energy efficiency incentive programs, and provide incentives for environmentally sustainable buildings.

In March, **Ohio** rolled back rules requiring compliance with the 2006 IECC for one-, two- and three-family dwellings to the 2003 IECC until further study of the 2006 IECC can be completed.

A new bill in **Oklahoma** would require all new construction and major renovation of state buildings to meet the LEED standard. The legislation passed the state House earlier this spring.

Tennessee enacted a law making the 2003 IECC a mandatory residential code, marking the first code update for the state in 15 years. The legislation also included provisions making the 2006 IECC a voluntary code for both commercial and residential building.

In March, **Vermont's** governor signed the Energy Efficiency and Affordability Act of 2008 into law, requiring code updates to be made promptly after new standards are issued for commercial and residential buildings under the IECC. At a minimum, the code must be updated every three years. ■



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In the most recent issue of *Natural Home* magazine, columnist Umbra Fisk explains the various aspects of a window's energy efficiency and offers advice on how to choose the best system for a reader looking to replace windows in an old home.

Fisk suggests that readers consult the NFRC's rating system to evaluate window systems based on U-Factor, SHGC, condensation resistance, and visible transmittance.

YAHOO! FINANCE

Yahoo! Finance was one of many Web sites to feature Sonya Stinson's March 2008 article, [Six Home Renovations with Major Payoffs](#).

Stinson listed installing energy-efficient windows as number four on her list.

"For energy efficiency, the National Fenestration Rating Council's voluntary certification and ratings system is the gold standard. To qualify for the federal government's Energy Star label, a window must first have the NFRC's stamp of approval on its energy efficiency."



Scottsdale Magazine dedicated its April 2008 issue to "Living Green." In addition to green building and water conservation, the magazine emphasized the importance of choosing energy-efficient window products in the effort to reduce carbon emissions.

Statistics provided by NFRC member Chris Mathis were used to support the need for eco-glass:

"While we love lots of windows in our homes to enjoy the beautiful views the valley has to offer, glass is responsible for nearly 10 percent of the total carbon emissions in the nation annually and is a major contributor to global warming."

StarTribune.com

Minneapolis - St. Paul, Minnesota

On Friday, March 7, an article featured in the *Star Tribune* gave readers the inside scoop on home renovation.

Jason Hammond, a special contributor to the paper, said when it comes to home renovation, "The first thing you should do is make your house as energy efficient as possible." Hammond provided readers his personal 'tool box,' which included a link to NFRC's Web site.