



COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

Promoting and advancing the development of healthy, durable and sustainable shelter for Alaskans and circumpolar people through applied research.

Internet Web Site:
www.cchrc.org



CCHRC REPORT

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December 2006

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CCHRC STAFF

.....

- President/CEO**
Jack Hébert *jack@cchrc.org*
- Director of Research**
John Davies *john@cchrc.org*
- Assistant Research Director**
Cole Sonafank *cole@cchrc.org*
- RTF Project Director**
Mike Musick *mike@cchrc.org*
- Office/Financial Manager**
Gail Koepf *gail@cchrc.org*
- RTF Project Administrator**
Casey Schoen *casey@cchrc.org*
- Grant/Contract Manager**
Rose Baumes *rose@cchrc.org*
- Development Coordinator**
Jennifer Jolis *jennifer@cchrc.org*

Cold Climate Building & Infrastructure Research & Test Facility Opens



Jack Hébert addresses ceremony attendees

photo by Jeff Fay

The Cold Climate Housing and Infrastructure Research and Testing Facility (RTF) held an Opening Ceremony on September 23, 2007. The ceremony was attended by CCHRC members and supporters and industry sponsors. UAF Chancellor Steve Jones; Ms. Diane Hutchison for U.S. Senator Ted Stevens; U.S. Senator Lisa Murkowski; Senator Gary Wilken; Fairbanks North Star Borough Mayor Jim Whitaker; AHFC CEO Dan Fauske; Bill Allen of Alaska DCCED; and Colleen Bickford, Director, HUD Alaska Field Office all spoke at the opening along with Jack Hébert, CCHRC president and Clai Porter, CCHRC board chairman and Architect for the RTF.

Following the ribbon-cutting, public tours of the building were held with staff and industry representatives spaced though out the building lending their expertise on the many innovations in the design and building components. More than 1000 people took advantage of this opportunity to tour the RTF. The \$5.2 million, 15,000 square foot facility is part office, part research lab and an experiment in itself, with 400 imbedded sensors to track how the building components perform.

The building sits below the UAF campus on a two-acre lot off Fairbanks Street. It has a main floor with a library, a room for the UAF Cooperative Extension Service, and two large research labs, one of which will be leased to the UAF Institute of Northern Engineering. Upstairs are offices, classrooms and a boardroom. A spiral staircase leads from there to a rooftop garden planted with dozens of native grasses.

The RTF is about two-thirds more efficient than a standard building and working to get its LEED (Leadership in Energy Environmental Design) Gold certification. One of the highlights of the building is a 12,000 pound masonry heater sitting just inside the entrance. This wood fired fire-place captures heat that normally goes up a chimney and radiates it back via its massive stonework for over 24 hours.

BEES Revision Adopted by AHFC Board

John Davies

At their meeting on November 8th, the AHFC Board of Directors adopted changes to the Alaska Building Energy Efficiency Standard (BEES) proposed by a CCHRC work group. For a residential building to qualify for a low-interest loan from AHFC it must meet this standard. It had been more than a decade since this standard had been updated or changed in any way. Since the BEES is supposed to be updated at least every 3 years, significant changes had been made in the ASHRAE ventilation standard, and the cost of energy has risen dramatically, it was clearly time to consider revisions to the standard.

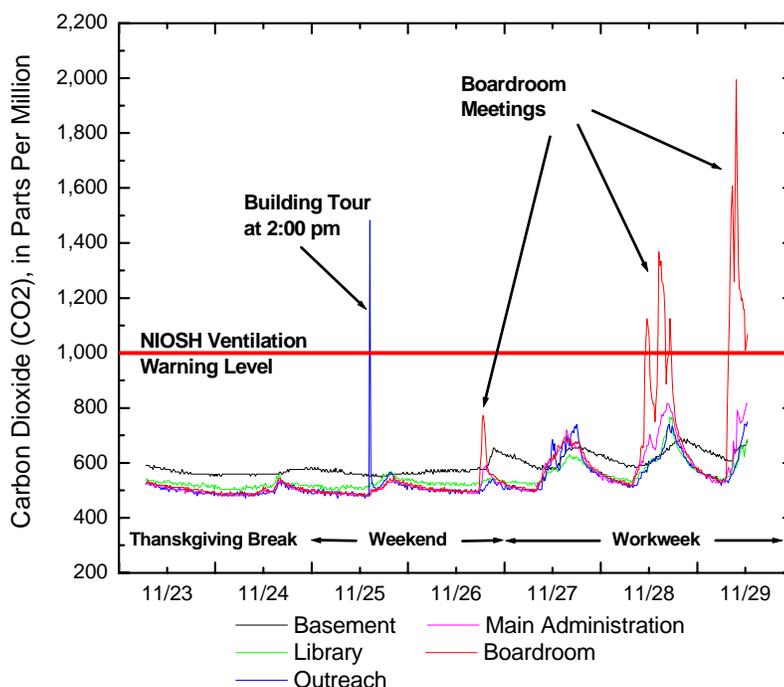
CCHRC was tasked last summer by AHFC to make recommendations for updating BEES. We put together a work group that reviewed the existing BEES, changes that were proposed in the previous review, other suggestions that had been made to AHFC for changes, the new ASHRAE residential ventilation standard, and the International Energy Conservation Code (IECC). While the BEES applies only to issues under AHFC purview, we also took note of the process undertaken by ASHBA to consider a statewide building code, in particular the fact that that group had determined to use the International Residential Code as the basis for their work.

After the above review, and considering the recurrent complaint that BEES was not written in “code language,” the work group decided to restate BEES in terms of the IECC 2006 and to include the new ASHRAE 62.2-2004 residential ventilation standard as part of that code for Alaska. We recognized that there would be several aspects of both the IECC 2006 and ASHRAE 62.2-2004 that would not work in Alaska so we proposed that there would have to be a set of Alaska-specific amendments to both that would need to be adopted by the AHFC Board along with the regulatory actions to redefine BEES.

In working on these amendments, we generally tried to follow the IECC standards and to not make any radical departures from the standards that had been set in the old BEES. We did have to compromise somewhat to fit the two together, and we had to extend the IECC climate zones to fit the range of conditions in Alaska. Recognizing the increased costs of energy, we dropped the special natural gas zone (2G) in the Anchorage area and we proposed an increase in the minimum R-values for windows and skylights. The process for the performance compliance path (energy rating) was unchanged.

The changes adopted by the AHFC Board are available on our web site in two documents: (1) *AHFC BEES Regulations*, and (2) *Alaska Amendments to IECC 2006 and ASHRAE 62.2-2004*. Note that the amendments are intended to be read along with the documents that they amend; namely, the International Energy Code 2006 and the ASHRAE Standard 62.2-2004 *Ventilations and Acceptable Indoor Air Quality in Low-rise Residential Buildings*. While the proposed changes were presented at many different meetings around the state over the past 12 months, it is natural that busy folks didn’t take the time to carefully review these changes until after the AHFC Board adopted them. There are several groups now taking a detailed look at the changes. We will consider their concerns early next year and will recommend additional changes to the Board.

Information on all projects available at: www.cchrc.org



CCHRC Research Snapshot Carbon Dioxide Monitoring in the RTF, Why Do We Fall Asleep at Meetings?

Siemens Building Technologies, Inc. Data Collection Network

The graph to the side is one of the first representations of the data from the monitoring and control systems placed in the RTF through partnerships with Siemens Building Technologies, Inc., Campbell Scientific Inc. and GW Scientific. Carbon Dioxide is monitored to help control air ventilation systems. This allows the RTF to be a “living lab” for looking at building usage impacts on air-quality and ways to build and manage ventilation systems to develop healthier building and homes in cold regions.

Obviously, the ventilation systems are still being modified! See www.cchrc.org for a better view.

CCHRC Update

Gail Koepf

Now that the Research and Testing Facility is complete & CCHRC is moved in, we plan to get this report out quarterly again. We are putting a stronger emphasis on membership and getting information out about our research.

After the RTF Opening in September, the CCHRC staff and Board of Directors attended the Alaska State Home Building Association Convention in Ketchikan in October. The CCHRC Annual General Membership Meeting and a board meeting were held in conjunction with the ASHBA Convention. Clai Porter, Charles Renfro & Oliver Drerup were re-elected to the Board.

The RTF has been actively used by homebuilders in the Fairbanks community. Mike Musick presented a 16 hour class on the National Association of Home Builders' Model Green Home Building Guidelines to about 40 builders on December 1st & 2nd. Bob Maxwell taught a Cold Climate Home Building course here on December 8th & 9th.

The UAF Cooperative Extension Service (CES) has opened its office on the ground floor of the RTF. Rich Seifert, the Energy Specialist at CES hired an Energy and Housing Program Assistant, Garrison Collette, to serve as a liaison to CCHRC. His duty will be to stay in touch with CCHRC's activities & provide accurate and timely information on that research to CES. Extension has a well-established system for disseminating research-based information to Alaska homeowners, builders and industry representatives through its publications, workshops, seminars and distance-delivered outreach. Through this clientele Extension will be able to help its partners at CCHRC direct their research efforts.

Sustainable Northern Shelter in a World of Diminishing Resources

CCHRC is planning an international Circumpolar Housing Forum to be held in fall 2007 in conjunction with the International Polar Year. We plan to bring outstanding international keynote speakers & panelists to Fairbanks. Panel sessions planned are: Building Science and Construction, Energy Systems and Infrastructure, and Appropriate Sustainable Design of Buildings and Communities.

We have added a new staff member as Development Coordinator/Special Events Director. Jennifer Jolis coordinated our Opening Ceremony for the RTF and is now working on membership and initiating a Circumpolar Housing Forum that CCHRC will host in fall 2007. (*See inset above*)

As a part of the membership drive, we have initiated the Industry Advisory Council (IAC) for businesses who wish to have input on the direction of CCHRC research and to establish an ongoing association with CCHRC. Membership in the IAC is contingent upon membership in CCHRC at the corporate level. We would like to welcome Thermo-Kool and Hébert Homes as corporate members and members of the IAC. For more information please contact Jennifer at (907) 750-1465 or Jennifer@cchrc.org.

With the opening of the RTF, CCHRC has committed to growth and greater research capabilities. A modified mission statement (*see front page*) reflects the importance of applied research. We hope you have been able to tour the facility so you can fully

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Message from the President/CEO

Jack Hébert

November is always cold in Fairbanks, but this year the average for the month was -10° while the normal average is 4°. I wish all of our members and supporters could be with us on these cold days to see what their commitment to the CCHRC and the Research and Testing Facility (RTF) has produced. The fire in our beautiful masonry heater is heating the building while its performance is being monitored so results can be analyzed and reported to the public. We enjoy both sunrise & sunset and the few hours of soft, low light in between due to a design which maximizes daylight flow throughout the building. Monitors are busily recording data which will help lead further research into developing healthy, durable and sustainable shelter for all of us that live in cold climates.

Many of you had a hand in the successful completion of CCHRC's new facility. Without your financial, material and personal support this project would not have been possible. It seems like only a few years ago that many of us shared the common vision that Alaskans could establish a housing re-

search center that would address the building industry's questions and concerns. That vision has become a solid reality and this impressive facility is a testament to all of you.

Going forward our goal is to expand the research aspect of our mission and to improve the dissemination of the information gained. We plan to have a 'best practices' manual on the REMOTE wall system available in January with other publications to follow. There is a considerable back log of material from several years of research studies that must be cleaned up and presented in a way that will be understood and incorporated into structures and their systems by northern builders. That is a primary focus for our efforts this year. If our work at CCHRC is not communicated to you, then it can't be effective applied research. It is your responsibility, however, to look at our website, visit the facility's library or contact us to get the reports and the best practice publications we will be producing. The local homebuilding association in your communities will also be supplied with our current material.

My sincere best wishes to you, my friends, in the year to come.



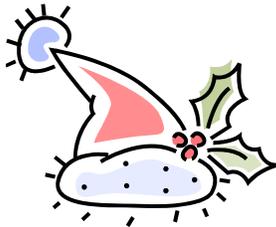
COLD CLIMATE HOUSING RESEARCH CENTER

P.O. Box 82489
Fairbanks, AK 99708-2489

Phone: 907-457-3454
Fax: 907-457-3456

**CCHRC has moved!
Please Note New Address**

**Internet Web Site:
www.cchrc.org**



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appreciate the huge step CCHRC has taken. If you have not yet toured the building, we strongly encourage you to join a public tour of the RTF given every Thursday at 2:00.

With all these changes, our members are more critical than ever to our success. Transitioning to this higher profile entity requires membership to keep us in touch with our roots while providing limited but very important unrestricted funding support for growth and development. CCHRC is a 501(c)(3) non-profit corporation so that a membership donation should be deductible to the fullest extent of the law. Please consider joining at one of our membership levels to show your support.

If your membership has lapsed, you will find a membership renewal form enclosed. Membership levels have changed somewhat. If you have any questions regarding membership, please contact Jennifer. Membership information is also available at our web site.

Current Project List

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| AK Warm Modernization | BEES Review |
| Rural Housing Assistance | Mobile Test Lab Study |
| Kenai Indoor Air Quality Study | |
| Legacy Monitoring Study | |
| Fairbanks Wood Energy Project | |
| Masonry Heater Efficiency Study | |
| Frost Protected Shallow Foundation Study | |
| Cook Inlet Housing Authority Energy Efficiency Study | |

The RAC is appointed by the Board of Directors to advise CCHRC on research projects. Contact a committee member in your area with your input and concerns.

Research Advisory Committee
Regional Chairs

- | | |
|----------------------|---|
| Southeast | Marquam George
8752 N. Douglas
Juneau, AK 99801
(907) 586-2060
blu@alaska.com |
| South Central | Bob Lutje
P.O. Box 111646
Anchorage, AK 99511
(907) 345-8861
bob.lutje@acalaska.net |
| Interior | Mike Musick
P.O. Box 170
Ester, AK 99725
(907) 479-6190
mikemusick@gci.net |
| Bush | John Woodward
P.O. Box 3407
Homer, AK 99603
(907) 235-6560
johnwood@ptialaska.net |

The CCHRC Report is sent to members, funding agencies and to those requesting information about CCHRC. Response to this report is welcome.