BUILDING INDUSTRY RESEARCH ALLIANCE
... a catalyst for change

BIRAmeter

LEADING THE WAY TOWARD MARKETABLE ZERO ENERGY HOMES 3RD QUARTER | 2007

BIRA Website

BIRA has a new look @ www.BIRA.ws

BIRA's website has a new look and feel with better access to BIRA research and analysis. The recently improved BIRA website (BIRA.ws) is designed to highlight all of BIRA's research results as well as share important reports, publications, presentations, and case studies. BIRA.ws is designed to serve a broad audience from homeowners to building scientists. With the re-designed layout and updated content, the website aims to educate all stakeholders of the value of Zero Energy Homes and the Building America research process. BIRA.ws also provides marketing assistance for our partners through information and recognition of their participation in the Building America Program. Please visit BIRA.ws and see for yourself!

BIRA Presents

BIRA shares important findings with the building industry through presentations at national conferences throughout the year. The following are recent BIRA presentations which can be found at http://bira.ws/publications.php:

PCBC 2007

May 29 – June 1, 2007, San Francisco, CA

ConSol principal Rob Hammon presented with John Suppes, president of Clarum Homes, and David Springer, president of Davis Energy Group, on BIRA's unique four-home side-by-side test experiment in Borrego Springs, CA focusing on three different wall systems and three different HVAC systems.

ASHRAE Annual Meeting

June 23–27, 2007 – Long Beach, CA

Bruce Baccei's presentation on Near Zero Energy Homes highlighted research results and findings of past and current BIRA projects. Key topics focused on energy efficient features, peak demand, solar orientation and market transformation.

ASES Solar 2007 Conference

July 7-12, 2007 – Cleveland, OH

The title of Bruce Baccei's presentation speaks for itself: "Peak Electric Demand Increases the Importance of Thermal Mass and Passive Solar." This presentation displayed important findings from BIRA research that focused on pre-cooling with interior thermal mass for shifting peak electricity consumption in homes.

Ryan Kerr gave two presentations, the first focusing on the demonstrated value of zero energy homes (ZEH) displayed at the Premier Gardens community in Sacramento, CA. This community case study has been used extensively by building scientists throughout the country to show the utility bill savings, peak electricity savings, builder benefits, and overall impact of zero energy communities. The second presentation built on the first discussing the various stakeholder benefits of large scale zero energy home developments and how these benefits can be leveraged to build more ZEH communities in more affordable ways while benefiting more parties.

Building America U.S. Department of Energy
Research Toward Zero Energy Homes

CSIPS in Fresno, CA

The City of Fresno, CA is sponsoring a "Green Building Demonstration Project" aimed at displaying the feasibility of cost-effective green building. As part of this project, BIRA will be performing advanced monitoring at three homes, one of which will use a concrete structural insulated panel (CSIP) wall system along with other green building principles. Alvis Projects, the builder of all three homes and BIRA partner, is committed to finding real solutions to building energy-efficient, sustainable homes by utilizing innovative materials that increase energy savings and reduce labor to offset the cost of these innovative products.

Citihouse #1 has been built and has already shown a cooling benefit from the ductless plenum crawlspace system. Citihouse #2 will be built soon with a CSIP wall system. Lessons learned from the ongoing BIRA research in Borrego Springs, CA displays the value of thermal mass in maintaining comfort and shifting peak electricity use through pre-cooling in hot/mixed dry climates. Utilizing automated night-cooling, the mass in tight well insulated homes can carry the occupants through the peak electricity period with minimal or no cooling demand. This project is aimed at integrating the optimal amount of mass found in the CSIP walls, interior plaster, and a concrete floor to facilitate pre-cooling and passive solar heating with a clearstory.

The primary focus of the investigation will be on evaluating the whole-house performance and the contribution of the CSIP wall system to the overall energy efficiency of the home. Efficiency will be evaluated through multiple data gathering efforts including the use of thermocouples, current transformers, and a communicating data logging system. An additional aspect of the evaluation will be to assess the cost effectiveness and constructability of the CSIP wall system. Through monitoring and analysis, BIRA hopes to show similar results as found in Borrego Springs.

Electricity Feedback Systems

BIRA is undertaking an important research project with partners SMUD, GE, and California State University Chico to evaluate the impact of real-time electricity feedback meters in Zero Energy Homes. According to a Florida Solar Energy Center (FSEC) publication, "A compilation of available data on real-time feedback studies (Darby, 2000) suggests an average of 10-15% reduction in overall energy." However, the impact in highly efficient electric solar Zero Energy Homes is unknown. The meter being tested displays both whole house electricity consumption and production from the photovoltaic solar panels. The other important element of this experiment will be to better understand how feedback influences behavior, determining what electric loads are reduced contributing to savings. The experiment will take place at the Premier Gardens zero energy home community in Sacramento, CA and is set to begin at the end of 2007.

BIRA

The Building Industry Research Alliance (BIRA), a U.S. Department of Energy Building America team led by ConSol, produces the quarterly BIRAmeter. BIRA works with over 80 partners to produce marketable energy efficient solar homes and communities aimed at net zero energy by 2020. For more information please visit www.BIRA.ws or email BIRA@ConSol.ws.