Building America Update – December 7, 2012

This announcement brings you the latest information about news, activities, and publications from the U.S. Department of Energy's Building America program.

Register Now for the 2013 Technical Update Meeting

Join the U.S. Department of Energy's Building America program at the 2013 Technical Update Meeting scheduled for April 29-30, 2013, in Denver, Colorado. This meeting will showcase Building America's world-class building science expertise for high performance homes, presented in a dynamic format. This Technical Update Meeting will use a mix of expert presentations, panel discussions, and audience participation to update the industry on the latest technologies and practices. This meeting is free and open to the public. Space is limited, so please register as soon as possible!

New Publications from Building America

The Building America Publications Library offers an extensive collection of technical reports, measure and strategy guidelines, case studies, and other resources to help you boost energy efficiency in new and existing homes. Here is a sampling of some of our most recent publications:

Building America Energy Renovations: A Business Case for Home Performance Contracting
This research report gives an overview of the needs and opportunities that exist in the U.S. home performance contracting industry. The report discusses industry trends, market drivers, different business models, and points of entry for existing and new businesses hoping to enter the home performance contracting industry. Case studies of eight companies who successfully entered the industry are provided, including business metrics, start-up costs, and marketing approaches.

Cost Effectiveness of Home Energy Retrofits in Pre-Code Vintage Homes in the United States
This analytical study examines the opportunities for cost-effective energy efficiency and renewable energy retrofits in residential archetypes constructed prior to 1980 (pre-code) in fourteen U.S. cities. These cities are representative of each of the International Energy Conservation Code (IECC) climate zones in the contiguous United States. The analysis is conducted using an in-house version of EnergyGauge USA v.2.8.05 (named CostOpt) that has been programmed to perform iterative, incremental economic optimization on a large list of residential energy efficiency and renewable energy retrofit measures. The principle objectives of the study are to determine the opportunities for cost-effective source energy reductions in this large cohort of existing residential building stock as a function of local climate and energy costs; and to examine how retrofit financing alternatives impact the source energy reductions that are cost effectively achievable.

Evaluation of Northern Illinois Residential Retrofit Delivery Practices
Using a detailed BEopt analysis, the Building America research team, Partnership for Advanced Residential Retrofit (PARR), has developed packages of measures following a 'loading order' appropriate for cold climates at increasing levels of savings. Packages of measures to provide 'good, better, best' energy savings were determined based on predicted source energy savings, safety issues, program costs and simple payback for customers.

Hot Water Distribution System Model Enhancements
This project involves enhancement of the HWSIM distribution system model to more accurately model pipe heat transfer. Recent laboratory testing efforts have indicated that the modeling of radiant heat

transfer effects is needed to accurately characterize piping heat loss. An analytical methodology for integrating radiant heat transfer was implemented with HWSIM. Laboratory test data collected in another project was then used to validate the model for a variety of uninsulated and insulated pipe cases (copper, PEX, and CPVC). Results appear favorable, with typical deviations from lab results less than 8%.

Residential Ground Source Heat Pumps with Integrated Domestic Hot Water Generation: Performance Results from Long-Term Monitoring

Ground source heat pumps (GSHPs) show promise for reducing house energy consumption, and a desuperheater can potentially further reduce energy consumption where the heat pump from the space conditioning system creates hot water. Two unoccupied houses were instrumented to document the installed operational space conditioning and water heating efficiency of their GSHP systems. This report discusses instrumentation methods and field operation characteristics of the GSHPs, compares manufacturers' values of the coefficients of performance calculated from field measured data for the two GSHPs, and compares the measured efficiency of the desuperheater system to other domestic hot water systems.

Retrofit Audits and Cost Estimates: A Look at Quality and Consistency

Retrofit NYC Block by Block is an outreach program targeting owners of one- to four-family homes, the most common building type in New York City, with more than 600,000 structures citywide. Administered by the Pratt Center for Community Development and implemented by four nonprofit, community-based organizations, Block by Block connects residents, businesses, and religious and civic organizations in predominantly low-and moderate-income neighborhoods with one or more of a half-dozen public and private financial incentive programs that facilitate energy-efficiency retrofits. This research project sought to evaluate the approach, effectiveness, and the energy use reductions accomplished by the Retrofit NYC: Block by Block program.

West Village Community: Quality Management Processes and Preliminary Heat Pump Water Heater Performance

West Village, a multiuse project underway at the University of California Davis, represents a ground-breaking sustainable community incorporating energy efficiency measures and on-site renewable generation to achieve community-level Zero Net Energy (ZNE) goals. When complete, the project will provide housing for students, faculty, and staff with a vision to minimize the community's impact on energy use by reducing building energy use, providing on-site generation, and encouraging alternative forms of transportation. This focus of this research is on the 192 student apartments that were completed in 2011 under Phase I of the West Village multiyear project. The numerous aggressive energy efficiency measures implemented result in estimated source energy savings of 37% over the Building America B10 Benchmark. This research seeks to evaluate performance and efficiency of the central heat pump water heaters as a strategy to provide efficient electric water heating for net-zero all-electric buildings and where natural gas is not available on site. In addition, effectiveness of the quality assurance and quality control processes implemented to ensure proper system commissioning and to meet program participation requirements is evaluated. Recommendations for improvements that could improve successful implementation for large-scale, high performance communities are identified.

Visit the Building America Publications Library to access the entire catalog of publications to help improve efficiency of new and existing homes.

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