Home Energy Makeovers – Motivating Existing Homeowners to Make "Whole House" Energy Saving Improvements

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Abstract

Building code enhancements are making new homes more energy efficient, but how do we encourage owners of existing homes to take a comprehensive approach to home improvement rather than just replacing a furnace when it

breaks? Several utilities and energy organizations are demonstrating that a comprehensive "whole house" approach can achieve energy savings of 50% or more in existing buildings.

These "whole house" demonstrations are being achieved by conducting Home Energy Makeover Contests, modelled after reality television shows. The contest takes a building science-based approach to the selection of a home that best demonstrates the potential for energy savings based on BTU/m^2 and other factors. The winning home receives a makeover using energy-saving products and services donated by local suppliers. Then, all contest entrants (i.e., contest losers) and other community members are invited to tour the newly improved, winning home and learn how to conduct their own energy makeover at their own expense using the local suppliers. In all cases, the winning homeowners make a compelling case to the home visitors and media for the non-energy benefits that the improvements achieve in comfort, health, safety and more.

This innovative contest approach illustrates that there is a viable market to encourage homeowners to make more comprehensive home energy improvement choices. This presentation will compare and contrast Home Energy Makeover Contests conducted in the United States of America in the states of Colorado, Maine, California and Oregon, as well as a workshop variation conducted in Colorado and Wyoming.

Introduction

Building code enhancements are making new homes more energy efficient. However, a large percentage of housing stock in the United States were built prior to modern energy efficiency standards, and some states still do not have a state wide building code or any energy efficiency code. Existing homes built before modern energy efficiency standards present opportunity for significant savings if comprehensive energy improvement measures are installed. Homeowners must be encouraged to take a comprehensive approach to home improvement rather than pursuing single measures that do not solve either energy or comfort issues in a comprehensive fashion. Homeowners are encouraged through communication, education, and presentation of a viable market solution available to them through qualified independent contractors who are trained to identify and solve energy and comfort challenges.

Motivating Existing Homeowners: Contests and Workshops

Utilities and energy organizations in four states demonstrated that a comprehensive "whole-house" approach can achieve energy savings of up to 50% or more in existing buildings by conducting Home Energy Makeover Contests. Utilities and organization in two states used a smaller scale Home Energy Makeover Workshop to educate consumers through short on-site educational seminars and an energy exposition that introduced them to vendors of viable solutions and contractors qualified to help with energy efficient installations.

Home Energy Makeover Contest

This innovative contest approach demonstrates that a viable market exists to encourage homeowners to make more comprehensive home energy improvement choices. Ed Thomas has been a consultant to several Program Sponsors in the United States of America. The contest is used to demonstrate energy-saving, cost-effective home improvements that can reduce energy costs, improve comfort and indoor air quality and enhance the appearance and value of a home by showcasing the benefits of home energy efficiency through the eyes of a real, local homeowner. The contest takes a building science-based approach to the selection of a home that best demonstrates the potential for energy savings based on British thermal units per square meter (Btus/m^2) which is determined by converting the home's annual electric, natural gas, propane and/or fuel oil usage into the fuel-neutral equivalent in BTUs and then dividing this total by the total amount of conditioned space. This allows the home to be compared to others of equal size regardless of the fuel used. Other factors considered in selecting the winning home can be:

- Home being in need of improvement or replacement of all/most major energy systems and appliances;
- Typical nature of the home and occupants to ensure that others will identify with the winning home being just like theirs and the occupants being just like them;
- Evidence that the homeowner might have had the financial resources to have made the home improvements on their own in a cost-effective manner if they had taken a comprehensive approach and financed the improvements with the projected energy savings (i.e. not a charity case);
- Willingness to open their house and lifestyle to the media and general public;
- Willingness to allow contest sponsors to monitor and publish home's before-and-after energy use; and
- Willingness to be responsible for tax consequences of accepting the prize.

The winning home receives a makeover using energy-saving products and services donated by local suppliers. Then, all contest entrants (i.e., contest losers) and other community members are invited to tour the newly improved, winning home and learn how to conduct their own energy makeover at their own expense using the local suppliers. In all cases, the winning homeowners make a compelling case to the home visitors and media for the non-energy benefits that the improvements achieve in comfort, health, safety and more.

Implementation in 4 American States

Colorado

Delta-Montrose Electric Association (Colorado) Home Energy Makeover Contest (Thomas and Bony 2005) was used to test the readiness of consumers to invest in whole-house solutions. The contest also served to demonstrate the viability of the local market to potential contractors.

Maine

The Maine Home Performance "Whole House" Contest (Thomas and Thomas 2006), used the contest to stimulate the launch of a pilot program by generating qualified and interested leads for program offerings and participating trade allies/contractors and as a first step toward recruiting new contractors in preparation for moving from a local pilot to a state wide Home Performance with ENERGY STAR® initiative.

Oregon

Energy Trust of Oregon Home Energy Makeover Contest to be launched in March 2009 (Thomas et al. 2009), will involve the makeover of four homes in different utility service areas across the state of Oregon to promote the expansion of a robust Home Performance with ENERGY STAR program. This contest also provides a model for effective collaboration between utilities and trade allies. State wide consumer awareness and recruitment of co-sponsor participation are similar to the goals of the Maine program.

California

Electric & Gas Industries Association (EGIA) and Ed Thomas provided a turn-key contest administration to Anaheim (California) Public Utilities Home Energy Makeover Contest (Thomas, et al. 2008), to demonstrate the elements and benefits of a home energy audit and related Home Improvement Package that showcased sponsor utility rebate programs and energy efficiency financing interest rate buy-downs.

Contest Methods

The Contests followed a similar path for planning and administration within a predefined territory to enhance awareness among consumers in an innovative manner, and engage participating trade ally sponsors. To implement the contest, the Program Sponsors solicit promotional support from area businesses to present a contest in which the homeowner(s) with the greatest potential to demonstrate energy savings will have the opportunity to be awarded a prize package of energy-related home improvements. The home improvements may be donated from manufacturers and distributors with labor by local contractors. In addition, comprehensive home performance analyses without improvements are awarded as consolation prizes. Copies of all the home performance analysis reports are made available to all consumers to review and compare with their own home.

The Contest projects generally center on four primary tasks: Task 1: Contest Planning; Task 2: Co-sponsor Recruitment; Task 3: Contest Administration; and Task 4: Winning Home Documentation and Lessons Learned.

Task 1: Contest Planning (1-3 months)

Program administrators must first prepare an overall contest plan with detailed action items, target dates, and stakeholder responsibilities. The planning begins with a literature review of prior Home Energy Makeover Contests and examples of media coverage, descriptive press releases, program marketing materials, program rules, contestant qualification criteria, on-line customer sign-up process, customer interview questions, web site development, sample sponsor agreements, technology fact sheets/case studies and more.

A stakeholder planning session should be conducted to reach consensus on stakeholder roles and responsibilities. At the meeting, the agenda should include discussion of: Assignment of deliverables and due dates for activity completion; Timing for contest entries; Criteria for winner selection and open house/workshop(s); Contest winner, finalist and consolation prize bundles to be awarded; Potential for local home show, media, and other promotional tie-ins; Integration of overall residential energy efficiency program messaging with Home Energy Makeover Contest messaging; and Development of a preliminary marketing/customer communication plan.

Task 2: Co-sponsor Recruitment (1-3 months)

This task include drafting a co-sponsor prospectus to be used as a solicitation document to recruit equipment sponsors that will donate equipment or in-kind contributions that will enable installation of efficiency measures such as: space heating, ventilation, and cooling systems; water heating (tankless, storage, and/or solar thermal); insulation and air sealing (ceiling, wall, floor as required); energy efficient lighting; high performance windows; energy efficient appliances; water efficiency measures; and other measures that may be identified.

The prospectus is distributed to prospects with an invitation to attend a co-sponsor recruitment meeting and webinar(s) to kick-off the co-sponsor recruiting process. By inviting a wide range of potentially competing sponsors, the Program will create a sense of urgency that will drive them to quickly commit or risk being left out.

The Program Administrator should negotiate and generate signed Co-Sponsor Agreements with each co-sponsor that clearly describes their commitments/responsibilities and articulates the Program Sponsor commitment to provide visibility to the co-sponsor through makeover contest promotional materials, media advisories, consumer communications, and program related events.

Task 3: Contest Administration and Winner Selection (2-3 months)

Development of a program dedicated website is imperative. The website must be dynamic and evolve throughout the duration of the contest. It should include but not be limited to the following: overall contest description and objectives; legal posting of "Official Contest Rules"; online customer contest registration with receipt confirmation; examples of program marketing materials; press releases and media coverage as applicable; fact sheets/case studies (once installation is complete), and sponsor and co-sponsor recognition.

The planning and implementation of a multi-faceted campaign that extends beyond website development should include methods to promote the contest as an integral part of the Program Sponsor's overall residential energy efficiency program marketing efforts. The Program Management Team should assume the lead responsibility for planning consumer-oriented marketing activities that may include the following elements: contest announcement via news release and outreach to major media markets; advertising via print and online; direct marketing through bill inserts and/or mailings distributed in collaboration with participating contest sponsors; contest-related stories placed in targeted print and electronic newsletters and blogs; printed contest flyer for distribution at events and targeted locations and via program trade allies and contest sponsors; contest promotion at home shows and events; video(s) on the winning homes for web posting and use by participating contractors; open houses/workshops to showcase winning home following the completed makeovers, and follow-up with contest entrants through an outreach campaign designed to leverage awareness of home performance and drive inquiries to participating contractors.

The winner selection process begins with scoring all contract entrants based on BTU/m^2 (assuming the ability to coordinate energy usage interface with area utilities) and/or other measure determined by the Program Management Team and rank applicants based on energy use intensity. A telephone customer survey is used to contact the top homeowners to gather additional information (e.g., special usage characteristics, in-home business, number of occupants) and determine homeowner availability based on the Project Management Team's installation schedule and review "Contest Rules" regarding accessibility to the media and installing contractors, potential tax liabilities, and post-installation usage monitoring. Based on the results of the telephone survey, the Program Sponsor sets a ranking order of the top candidate homes based on energy saving potential and homeowner characteristics. A quality assurance contractor or other designated program personnel conducts a comprehensive home analysis of each of the 5 to 20 semi-finalist candidates to determine how the homes are currently performing in order to recommend the home best suited to demonstrate deep energy savings and comprehensive measure integration. A contest winner selection meeting is attended by key stakeholders for selection of the grand prize contest winner and to schedule prize package installation. It is recommended that the quality assurance contractor oversee installation of targeted measures in the winning home to assure compliance with program requirements.

Task 4: Documentation of Winning Home and Lessons Learned (1-2 months)

The final task includes collaboration with stakeholders to assess the winning home's overall energy-saving performance, and develop a plan for post installation documentation and consumer education material development. This can include the drafting and publication of fact sheets covering each measure installed, describing the "before" condition, efficiency measure installed, actual or forecasted energy savings and homeowner quotes on how they perceive the measure has impacted their home (e.g., comfort, safety, energy savings). The development of an overall program case study should include documentation of lessons learned through contest planning and administration, and a project summary documenting all key program findings (e.g., summary of applicant demographics, summary of key findings from top 20 home analyses, impact of program marketing and media outreach).

The Program should conclude with the facilitation of a half-day workshop where all contest entrants and other invited participants may: learn more about the improvements made to the winning home; learn how to conduct a home energy makeover on their own home, and meet contest sponsors and local home efficiency improvement contractors. Workshop goals should be to leverage the knowledge gained from contest entries, finalist findings, and winning home achievements as well as insight gained from contest co-sponsor and utility interaction in order to maintain the momentum gained through the contest activity to encourage contest entrants and other to "do their own home energy makeover."

Home Energy Makeover Workshops

As an alternative to conducting a Home Energy Makeover Contests, several organizations have produced Home Energy Makeover Workshops and Expos. Workshops are designed for programs with smaller budgets to provide program education and create consumer awareness of local programs. The events are designed to attract 50-250

area residents as well as trade allies who display energy-related products/services. Admission tickets are available for purchase at the door or in advance from select non-profit community groups. The modest admission price includes refreshments and door prize drawings, and assures that those who attend are motivated to learn how home energy-saving improvements can pay for themselves.

Implementation in 2 American States

Colorado

The Home Energy Makeover Workshop & Expo, Fort Lewis College, Durango, Colorado (Thomas and Schwantes 2008), was co-sponsored by two local electric utilities and their wholesale power provider. This workshop and product exposition was designed for consumers interested in energy/water efficiency, smart meters, demand response, and renewable energy. The workshop agenda was designed to showcase the utilities' entire residential customer program portfolio and the products and services of participating trade allies with 15-30 minute presentation topics which included: weatherization/insulation, green home remodeling, water heating, space heating/cooling, solar energy, windows, lighting, low-income energy assistance, and water conservation techniques.

Wyoming

The Home Energy Makeover Workshop & Expo, Laramie County Community College, Cheyenne, Wyoming (Thomas and Adolf 2008) was hosted by the local Home Performance with ENERGY STAR® sponsor in response to consumer concerns over how to manage rising energy prices and also to stimulate consumer interest in the Home Performance with ENERGY STAR program and the Wyoming GEOSmart loan program for energy efficiency improvements. This program sought to educate the public on the elements and benefits of a home energy audit and whole-house improvements by showcasing qualified participating contractors and trade allies with 15-30 minute presentation topics which included: low-cost/no-cost weatherization tips, insulation, thermal water heating, duct sealing, high-efficiency windows, space heating, and residential solar and wind energy. Local utilities also participated to showcase on-line energy audits, and local energy efficiency equipment rebate programs.

Workshop Methods

The Workshops followed a similar path for planning and administration within a predefined territory to enhance awareness among consumers in an innovative manner, and immediately engage participating trade ally sponsors. Goals of the half-day to one-day workshop are to allow participants to learn whole-house energy efficiency improvements; to learn how to conduct a "home energy makeover" on their own home; and to meet sponsors and local home efficiency improvement contractors.

The Workshop generally centers on four primary tasks: Task 1: Event Planning; Task 2: Agenda Development and Co-sponsor Recruitment; Task 3: Workshop Production; and Task 4: Follow-up Consumer Surveys.

Task 1: Agenda Development (1-2 months)

This task includes the preparation of an overall plan with detailed action items, target dates, and stakeholder responsibilities. The planning process should begin with a literature review of prior Home Energy Makeover Workshops and examples of media coverage, descriptive press releases, program marketing materials, program rules, contestant qualification criteria, on-line customer sign-up process, customer interview questions, web site development, sample sponsor agreements, technology fact sheets/case studies and more.

As with the Contests, a stakeholder planning session should be facilitated to reach consensus on stakeholder roles and responsibilities. The agenda should include: Assignment of deliverables and specific due dates for activity completion; admission ticket pricing thresholds; potential for local home show, media, and other promotional tie-ins; integration of overall residential energy efficiency program messaging with Home Energy Makeover Workshop messaging; and development of a preliminary marketing/customer communication plan.

Task 2: Agenda Development and Co-sponsor Recruitment (1-2 months)

This task would include drafting a “conceptual” seminar agenda with a co-sponsor prospectus to be used as a solicitation document to recruit sponsors that will present their equipment or services at the workshop and energy exposition, including: space heating, ventilation, and cooling systems; water heating (tankless, storage, and/or solar thermal); insulation and air sealing (ceiling, wall, floor as required); energy efficient lighting; high performance windows; energy efficient appliances; water efficiency measures; and other measures that may be identified.

The prospectus should be distributed to prospective sponsors with an invitation to attend a co-sponsor recruitment meeting and webinar to kick-off the co-sponsor recruiting process. By inviting a wide range of potentially competing sponsors, the Program will create a sense of urgency that will drive them to quickly commit or risk being left out. The Workshop Manager should negotiate and generate signed Co-Sponsor Agreements with each co-sponsor that clearly describes their commitments/responsibilities and articulates the Program Sponsor commitment

to provide visibility to the co-sponsor through makeover contest promotional materials, media advisories, consumer communications, and program related events.

Task 3: Workshop Production (1-3 months)

Developing a program dedicated website provides a central online location helps to promote attendance, offer sponsor recognition, and project the program messaging beyond just the workshop attendees. The website must be dynamic and evolve throughout the duration of the event. It should include, but not be limited to, the following: evolving agenda; list of participating nonprofits as ticket sources; location and date information; examples of program marketing materials; press releases and media coverage as applicable; and sponsor and co-sponsor recognition.

Beyond the website, the planning and implementation of a multi-faceted marketing campaign should promote the Workshop as an integral part of the Program Sponsor's overall residential energy efficiency program marketing efforts. The Program Management Team should assume the lead responsibility for planning consumer-oriented marketing activities that may include the following elements: workshop announcement via news release and outreach to major media markets; advertising via print and online; direct marketing through bill inserts and/or mailings distributed in collaboration with participating sponsors; workshop-related stories placed in targeted print and electronic newsletters and blogs; printed workshop flyer for distribution at events and targeted locations and via program trade allies and sponsors; workshop promotion at home shows and events; and follow-up with workshop attendees through an outreach campaign designed to leverage awareness of home performance and drive inquiries to participating contractors.

Task 4: Follow-up Consumer Surveys (3-12 months)

To demonstrate the consumer response to the workshop as a motivating factor in their home energy improvement decision-making, surveys of workshop attendees should be conducted at three to six months and one year following the event. Survey information may include questions on lessons learned at the event, overall impression, actions considered, do-it-yourself measures implemented, and professional services selected with subsequent measures installed. The survey results should be incorporated into the development and publication of an overall program case study documenting lessons learned through contest planning and administration, and a project summary documenting all key program findings (e.g., summary of applicant demographics, summary of key findings from consumer surveys, impact of program marketing and media outreach).

Conclusion

Each program sought independently to generate public awareness and media interest to support market transformation toward a sustainable market where homeowner take a more comprehensive, energy efficient approach when hiring home improvement contractors. A common goal shared by the programs was to articulate to community leaders, potential utility and program sponsors, and professional contractors in the local area both the public readiness for whole-house solutions and the viability of energy efficient retrofit as a viable business model.

Home Energy Makeover Contests demonstrate powerful ways to save energy and improve a home by capitalizing on homeowner and media interest in energy savings in ways that leverage the popularity of shows like ABC's *Extreme Makeover: Home Edition*. In addition, the Contests offer exciting sponsorship opportunities to raise visibility for a range of energy-saving products and services. Each Contest resulted in a very satisfied homeowner providing positive public feedback through open houses, case study documentation, and extensive media coverage. The winning homeowners reported significant energy savings as well as improved health as a result of safety conditions identified by comprehensive assessments and addressed as part of whole-house improvements.

Home Energy Makeover Workshops educated local homeowners and showcased contractor and utility programs in a manner that captivated homeowners and engaged trade allies.

Follow-up surveys of both contest entrants and workshop participants are underway to determine the impact of the education and actual measures installed as a result of the workshops.

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