

ENERGY STAR[®] for New Homes
Sponsor and Utility Partner Guide
Appendices

- A. ENERGY STAR Qualified Homes Utility/Sponsor Fact Sheet
- B. First Annual ENERGY STAR Residential Program Sponsor and Utility Partner Meeting
 - a. Agenda
 - b. Presentations: Program Design
 - c. Presentations: Marketing and Implementation
 - d. Presentations: Evaluation
 - e. Priority Ranking Feedback: Best Practices and Lessons Learned
- C. WECC Homeowner Manual
- D. 2006 North Carolina ENERGY STAR Conference Agenda

Appendix A

ENERGY STAR Qualified Homes Utility/Sponsor Fact Sheet

ENERGY STAR® for New Homes: A Proven Solution for Reducing Peak Demand and Improving Energy Efficiency in New Homes

The U.S. Environmental Protection Agency (EPA) is partnering with thousands of builders nationwide to adopt energy-efficient technologies and “off the shelf” building practices that enable the homes they build to qualify for the ENERGY STAR. This complements the U.S. Department of Energy’s (DOE’s) Building America Research Program that works with a select group of builders and funded research teams to develop new techniques and products for the housing industry. ENERGY STAR qualified homes are at least 15 to 20 percent more efficient than prevailing energy code, and include additional energy-saving features that typically make them 20 to 30 percent more efficient than standard homes. The ENERGY STAR for New Homes program can be a cost-effective addition to an energy-efficiency program portfolio addressing homeowner needs to reduce energy costs and improve the health, comfort and durability of their homes, while simultaneously reducing energy demand. Demand savings vary widely with size, location, and orientation, but homes built to ENERGY STAR performance levels have been estimated to reduce peak demand by approximately 0.5-1.5 kW.

ENERGY STAR FOR NEW HOMES DELIVERS RESULTS

The stock of ENERGY STAR qualified homes has grown exponentially since the program’s inception in 1996. By the end of 2006:

- Over 3,500 partners—including more than half of the nation’s 100 largest builders—were voluntarily constructing homes to ENERGY STAR performance levels;
- Nearly 12 percent of all new homes nationwide were constructed to meet ENERGY STAR specifications, including over 25 major metropolitan areas and states with 20 percent or greater market penetration; and
- Over 700,000 homes earned the ENERGY STAR.

As a whole, ENERGY STAR qualified homes are saving American homeowners nearly 180 million dollars on utility bills, including over one billion kWh of electricity and 100 million therms of natural gas.

HOW ENERGY STAR FOR NEW HOMES WORKS

ENERGY STAR makes it easy for homebuyers to select homes that are much more energy-efficient than standard code and verified by an independent third-party. For builders, ENERGY STAR provides a widely recognized label of excellence that distinguishes the energy

It is estimated that almost 1.4 million single-family new homes will be constructed in the United States in 2007, according to the National Association of Home Builders (NAHB).

With a life expectancy for homes to serve many generations, a huge opportunity exists for persistent energy and peak demand savings. These savings can be squandered if homes are not constructed energy efficiently as many energy-efficiency measures cannot be added cost-effectively after a home is already built.

performance of their homes and helps reduce liability through the increased rigor of the energy-efficiency measures and additional subcontractor supervision.

ENERGY STAR technical requirements are developed by EPA based on extensive experience with the nation's home-building industry, detailed computer simulations, and a public review process with the home-building-industry stakeholders and Home Energy Rating System (HERS) industry. In 2006, EPA introduced new specifications for ENERGY STAR qualified homes. A home can qualify as ENERGY STAR using a performance path based on a maximum HERS Index Score, or a prescriptive path using an EPA-developed Builder Option Package (BOP).

The performance path threshold is referenced to a HERS Index rating system where a score of '100' approximates a 2004 International Energy Conservation Code (IECC) home and a score of '0' is a zero-energy home consuming no net energy. Each point below 100 represents a one-percent improvement in energy efficiency. The HERS Index threshold for ENERGY STAR qualified homes is 85 in the southern two-thirds of the country, or about 15 percent more energy-efficient than the reference home, and 80 in the northern one-third of the country, or about 20 percent more energy-efficient than the reference home. Mandatory requirements for air barrier details and right-sizing of cooling equipment contribute to the energy and peak savings.

The prescriptive path threshold provides a set of construction specifications that enable a home to qualify for the ENERGY STAR. These specifications are provided on one national BOP, or for convenience, on county-specific BOPs with detailed climate-specific requirements.

To qualify as ENERGY STAR, a home must be built to all requirements identified in a HERS plan analysis or appropriate BOP. Then, all these requirements must be field verified by a certified HERS rater who inspects and tests the home. For large subdivisions, a sampling protocol can be used for field verification with considerable cost savings.

EPA has developed separate program requirements for manufactured homes built to U.S. Department of Housing and Urban Development (HUD) requirements. This includes a unique verification protocol incorporating quality control processes already included in HUD code homes manufacturing plants.

HOW ENERGY-EFFICIENCY PROGRAM SPONSORS (EEPS) WORK WITH ENERGY STAR FOR NEW HOMES

In many markets, energy-efficiency program administrators can and do play a valuable role in accelerating the adoption of ENERGY STAR for New Homes and related business practices. The markets that are the strongest candidates for efficiency program sponsorship can experience one or more of the following barriers to energy-efficient building practices:

- Underdeveloped network of certified HERS raters;
- Building energy codes lagging far behind prevailing national building codes; and
- Builders not exposed to ENERGY STAR business strategies.

The following programs demonstrate how some energy-efficiency program administrators have developed effective regional solutions to help overcome some of these barriers to transform residential new construction and deliver ENERGY STAR qualified homes to a market.

CenterPoint Energy and Oncor Electric Delivery, Texas: Joining forces in Houston and Dallas respectively, these two utilities realized at the outset that their markets were dominated by large production builders. For both utilities it was critical in their markets to expand the HERS verification infrastructure and effectively market the benefits of energy efficiency to consumers. Both CenterPoint and Oncor implemented ENERGY STAR for New Homes with extensive efforts to recruit HERS providers in their respective markets, a rebate to builders, and a strong advertising campaign educating local home buyers about the benefits of ENERGY STAR qualified homes. As a result of their efforts, Dallas and Houston have approximately 50 percent market penetration for ENERGY STAR qualified homes for single-family and multi-family homes with fewer than four units.

New York State Energy Research and Development Authority (NYSERDA), New York: Transforming the home building industry in upstate New York presented substantial challenges for NYSERDA. This industry was dominated by widely-dispersed, hard to reach small- and mid-size regional builders. NYSERDA responded by developing a strong HERS industry across the targeted upstate New York region, providing extensive training to home builders, offering substantial rebates, and implementing an effective regional marketing campaign conveying the benefits of energy efficiency. Today, market penetration in New York's geographically dispersed market is over 10 percent and ENERGY STAR for New Homes is positioned for strong continued growth.

Las Vegas ENERGY STAR Partners, Nevada: A dedicated group of builders, utilities, HERS raters, and local home-building marketing professionals formed an alliance to promote ENERGY STAR qualified homes. This group has effectively implemented outreach campaigns advertising the benefits of ENERGY STAR to Las Vegas homebuyers, and worked together to develop and disseminate on-site marketing materials. They also provided technical and marketing training and promoted the results of their efforts to the industry-at-large at local builder conferences. As a result, consumer awareness for ENERGY STAR qualified homes is estimated at 90 percent and nearly 70 percent of all homes in Las Vegas earn the ENERGY STAR without any monetary incentives. Programs have succeeded in the past without rebates in other markets, such as in the Phoenix metro area (currently over 30 percent market penetration) and Indianapolis (nearly 10 percent market penetration) where, like Las Vegas, a strong champion (individual or group) effectively promoted the ENERGY STAR for New Homes program.

PROGRAM DESIGN AND IMPLEMENTATION

Before designing a new homes program, it's important to recognize key barriers to the adoption of energy-efficiency technologies in the home building industry. These barriers include:

High Cost: As with many industries, home builder decision-making is extremely focused on initial production costs in order to maintain affordability and to meet real estate agent and home buyer expectations regarding value on a cost-per-square-footage basis. This approach undervalues the utility bill savings and improved comfort, durability and indoor air quality delivered by energy-efficiency improvements.

Lack of Consumer Demand: The home-buying process is often overwhelming for consumers. There are so many critical attributes to consider, including quality of construction, adequate space and storage, preferred designs, maintenance requirements, quality of the local schools, proximity to work, family, and friends, and more. What is often under-appreciated is how energy-efficient homes can substantially reduce ownership and maintenance costs while delivering improved comfort, durability, and indoor air quality, while protecting future value. Consumers need a quick simple way to include energy efficiency among their many other considerations.

Lack of Sales Skills: While energy-efficient homes deliver impressive operating cost and performance advantages, this value is invisible to the average home buyer during a home walk-through. In contrast, other desired design features such as architectural appearance, finishes, and layout are highly visible. The typical real estate agent and builder sales professional has not been trained to sell the benefits of energy efficiency, yet they provide homebuyers most of their housing purchase information.

Industry Resistance to Change: Home builders are reluctant to adopt new technologies and construction practices because they are already confronted with so many changes that affect their business: updated codes and standards; cost and availability of land, labor and material; evolving architectural and material design trends; mortgage rate fluctuation; cost and availability of insurance; and underlying economic conditions that affecting the housing market. Moreover, the industry has been widely exposed to the risks of change where new technologies did not meet consumer expectations (e.g., early heat pumps) or led to building failures (e.g., exterior insulation finish systems).

Lack of Technical Infrastructure: Energy-efficient construction requires specialized building materials, construction practices, and quality-assurance programs. Often this technical infrastructure is not fully developed, including distributors stocking key products (e.g., energy efficient windows and equipment), vendors with trained crews (e.g., installation of high-performance building envelope systems and tight ducts), and HERS raters to verify home construction meets program specifications.

An effective ENERGY STAR for New Homes program must address these key market barriers and effectively bring forward the strong business case for builders to construct energy-efficient homes (see sidebar on this page).

Regardless of the final strategy chosen, EPA recommends a number of critical elements be emphasized during program development. First, it is essential to ensure the presence of a HERS verification infrastructure, and to develop and nurture it where not fully mature. Second, sales training and tools are extremely important to promote the benefits of energy-efficient homes. This is because builder sales teams are focused on promoting features you can see as opposed to energy-efficiency features and benefits that cannot be seen. Lastly, investments in effective marketing are crucial both to educate consumers and to help secure builder confidence in the program. With all of the program elements in place, sponsoring organizations, such as utilities, can have greater confidence their program will be successful and enjoy a built-in exit strategy. The influence of the ENERGY STAR brand and EPA program support allows for the continuation of the market transformation process even after regional programs are ramped down or phased out.

ENERGY STAR SUPPORT

EPA has developed a variety of proven off-the-shelf tools to help utilities start and implement ENERGY STAR qualified homes. These include:

- **Established Brand** – More than 65% of American households recognize the ENERGY STAR. Awareness is even greater – 75% – in areas where energy-efficiency program sponsors are actively promoting ENERGY STAR.

FOUR STEPS TO START A PROGRAM

Step 1: Conduct Market Research.

Consult national home builder publications for annual reports on top builders in your regions, including housing starts, predominant builder size, type, and geographic distribution, and growth forecasts. Additional research is needed to establish regional availability of key energy-efficiency technologies (e.g., high-efficiency equipment, windows) and construction practices (insulation installation quality, HVAC duct sealing). Lastly, it is important to understand the rigor of the prevailing energy code and how effectively it is enforced.

Step 2: Assess the Local HERS Infrastructure.

HERS providers and raters are essential third parties who verify homes as ENERGY STAR. Some programs needed to establish a strong HERS network while working with builders to construct ENERGY STAR homes. Consult the RESNET web site for a listing of all providers nationwide (www.natresnet.org).

Step 3: Benchmark Construction Practices.

Work with HERS rating industry to benchmark current construction practices. Evaluate availability of key energy-efficient technologies and construction practices and their cost; and identify regional health and durability issues.

Step 4: Design Program.

Based on research and other program objectives (e.g., health, durability, safety), determine final program design including technical requirements; best mix of incentives; marketing support; technical support; program delivery; and monitoring and evaluation. A key part of this process will be to develop sales and marketing tools. Use local marketing consultants specializing in the housing industry and in-house resources to research key marketing messages that resonate with local home buyers (e.g., energy costs, quality, comfort, health concerns); identify how to effectively attract home buyers using advertising, marketing materials, and displays; and develop sales training.

- **Cost-Effective Specifications** – Over a decade of experience and extensive industry input have been utilized to develop a technical threshold that helps ensure meaningful energy and peak demand savings conducive with home builder construction practices and constraints.
- **Technical Support** – A strong technical team at EPA provides guidance for implementing technical specifications and assists in developing regional variations. In addition, a comprehensive Thermal Bypass Checklist Builder Guide serves as an excellent reference for meeting new program requirements.
- **Marketing Tools** – EPA provides valuable marketing tools that have been extensively improved and refined based on partner feedback. These include:
 - ENERGY STAR Mark (licensed for free to all partners);
 - ENERGY STAR Marketing Toolkit allows each builder partner to produce within minutes a wide variety of point-of-sale flyers, web tools, and display cards customized with their name, logo, web site, preferred text, and images;
 - Annual ENERGY STAR Outreach Campaign leverages partner and EPA contributions in a coordinated consumer education effort with promotions tailored to regional mass market opportunities such as local newspaper real-estate sections, new homes guides, and radio;
 - ENERGY STAR Brochures for consumers, builders, and manufactured housing plants bring forward compelling benefits of buying and building energy-efficient homes;
 - ENERGY STAR Consumer Fact Sheets effectively explain the features and benefits of energy-efficient homes; and
 - ENERGY STAR Sales Training presentations help train builder sales staff and real estate agents on how to effectively sell energy-efficient homes.

MEASUREMENT AND EVALUATION

There are a number of metrics that are important to track to ensure key savings and peak-load-reduction targets are being met. These can include:

- Number of ENERGY STAR builder partners;
- Number of ENERGY STAR qualified homes;
- Field evaluations of the HERS verification process;
- Assessments of actual utility bills for qualified and control homes; and
- Measurements of peak energy-use for qualified and control homes.

Further breakdowns could compare relative performance of different geographic regions, market segments (e.g., affordable, entry-level, move-up, luxury) and housing types (e.g., single-family, multi-family, manufactured housing).

There are other metrics that are also important to evaluate which can help improve the program and reduce the cost of implementation. These include:

- Builder satisfaction with program services;
- Quantity of incentives and tools utilized;
- Measurement of consumer awareness before and after program marketing;
- Number of web-site visits and most-used pages;
- Relative effectiveness of different marketing tools (e.g., television, radio, print, and billboard advertising; bill inserts);
- Leveraged media coverage;
- Effectiveness of promotions (e.g., trade-show booths, coupon books); and
- Number and type of consumer complaints.

When planning measurement and evaluation activities, recognize that the HERS certification process includes oversight by the Residential Energy Services Network (RESNET). RESNET can be contacted to explore how to leverage results from their quality-assurance efforts.

COST EFFECTIVENESS

To assess cost-effectiveness, it is often easiest to identify estimated savings for a typical ENERGY STAR qualified home and then multiply the unit savings by the number of qualified homes. Energy-savings-analysis inputs used by EPA based on the new ENERGY STAR specifications are 2,030 kWh plus 131 therms for a 2,000 square foot home with electric cooling and gas heating, or approximately 3,500 kWh for an all-electric home. EPA also estimates approximately 1kW peak demand reduction per house. These values are only illustrative and will vary with geographic location and housing configuration. More refined analysis is often completed to assess the potential cost-effectiveness of a program for a particular service territory.

Cost-effectiveness has been documented by many of the more than 50 regional sponsors around the country implementing ENERGY STAR for New Homes. Using reported expenditures and program savings, the levelized cost of conserved energy was calculated for various utilities, assuming a 6% discount rate and lifetime of 18 years. Costs ranged from \$0.01-0.08 / kWh in hot and mixed climates, where a majority of ENERGY STAR qualified homes are constructed, and increased in cold climates, such as in Minnesota and Wisconsin, due to non-electric heating and little to no cooling load.

Note that ENERGY STAR qualified homes deliver both electricity savings and heating fuel savings. Thus, for programs with integrated electric and gas savings, the cost effectiveness will be even higher. Non-energy benefits such as improved comfort,

indoor air quality, and durability should not be overlooked because they address many key homebuyer concerns that add to the value of a home.

RESOURCES FOR ADDITIONAL INFORMATION

- ENERGY STAR for New Homes Web Site: www.energystar.gov/homes
- RESNET Web Site: www.natresnet.org
- U.S. DOE Building America Web Site: www.eere.energy.gov/buildings/building_america
- ENERGY STAR for New Homes Regional Web Sites:
 - New England: www.energystarhomes.com
 - Houston: www.houstonenergystarhomes.com
 - Dallas: www.myenergystarhome.com
 - Las Vegas: www.nevadaenergystarhomes.com
 - Phoenix: arizonaenergystarhomes.com
 - Pacific Northwest: www.peci.org/programs/eshnw.htm
 - Indianapolis: www.energystarhomesmidwest.com/test/index.html
 - New Jersey: www.njenergystarhomes.com
 - Colorado: www.e-star.com/coloradoenergystarhomes
 - California:
 - www.pge.com/res/energy_tools_resources/efficient_new_homes/index.html
 - www.sce.com/rebatesandsavings/builderandbuyer/energystarhomesprogram
 - www.socalgas.com/construction/ahp/

SOURCES

- Meisegeier, David; Howes, Matt; King, Doug; Hall, John D., "Potential Peak Load Reductions from Residential Energy Efficiency Upgrades." 13th Symposium on Improving Building Systems in Hot and Humid Climates. San Antonio, TX: Texas Building Energy Institute, 2002.
- US Census Bureau News – New Residential Construction in June 2007. Last updated: September 2007.
- EPA Office of Air and Radiation, Climate Protection Partnerships Division. National Awareness of ENERGY STAR for 2006: *Analysis of 2006 CEE Household Survey*. U.S. EPA, 2007.
- NAHB. The Housing Downturn Still Has Some Distance to Run. June 20, 2007. www.nahbmonday.com/eyeonecon/issues/2008-06-20.html.
- LIPA Clean Energy Initiative Report: www.lipower.org/pdfs/cei/vbdocument.pdf
- ACEEE, America's Best: Profiles of America's Leading Energy Efficiency Programs. (2003) <http://aceee.org/utility/5destarhmswi.pdf>
- 2006 CIP report filed with MN eDockets. Program web page: http://www.xcelenergy.com/XLWEB/CDA/0,3080,1-1-4_4531_8437_10607-9234-5_538_969-0,00.html
- PUC Filing for TXU Electric Delivery Company. "Annual Energy Efficiency Report To The Public Utility Commission of Texas In Accordance With Substantive Rule § 25.181(h)(4) and § 25.183(d)(2),(3)"

- <http://interchange.puc.state.tx.us/WebApp/Interchange/application/dbapps/filings/pqSearch.asp>. Project Number 33884.
- PUC Filing for Entergy Gulf States, Inc.. “Annual Energy Efficiency Report For Calendar Year 2006”
<http://interchange.puc.state.tx.us/WebApp/Interchange/application/dbapps/filings/pqSearch.asp>. Project Number 33884.
 - PUC Filing for CenterPoint Energy. “Annual Energy Efficiency Report Substantive Rule § 25.181(h)(4)”
<http://interchange.puc.state.tx.us/WebApp/Interchange/application/dbapps/filings/pqSearch.asp>. Project Number 33884.
 - CL&P and UI Conservation and Load Management Plan 2007-2008

Appendix B

First Annual ENERGY STAR Residential Program Sponsor and Utility Partner Meeting

- a. **Agenda**
- b. **Presentations: Program Design**
 - Developing a HERS Infrastructure
 - Reaching a Dispersed Builder Audience
 - Incentive Options
 - Augmenting Builder Skills with Technical Training/Education
- c. **Presentations: Marketing and Implementation**
 - Advertising, Promotions, and Awards
 - Engaging the Market
 - ENERGY STAR Homes Summit
 - Builder Seminars/Recruiting
- d. **Presentations: Program Evaluation**
 - Quality Control Monitoring/Evaluations
 - AEC Research Field Study
 - Outreach Campaign Evaluation
 - California Utilities Evaluation Studies
- e. **Priority Ranking Feedback: Best Practices and Lessons Learned**

ENERGY STAR® Residential Program Sponsor and Utility Partner Meeting

Location: Georgia Tech Hotel and Conference Center, Atlanta, GA

Date: April 26-27, 2007

Purpose of Meeting:

ENERGY STAR for Homes is being implemented by over thirty different utility and state administered programs across the country. As should be expected, there is a tremendous variation for program design, implementation and evaluation. Much of this variation is in response to regional characteristics (e.g., types of builders, geographic concentration of builders, available HERS infrastructure, consumer awareness, etc.), and much of it reflects preferences of program staff. EPA is inviting key decision-makers from these sponsored programs to share ideas and lessons learned, and upon review of this information to develop agreements on best practices for implementing ENERGY STAR for Homes.

Desired Outcome:

- List of regional factors to be considered for implementation
- List of lessons learned for program design
- List of best practice recommendations for program design
- List of lessons learned for program marketing and implementation
- List of best practice recommendations for program marketing and implementation
- List of lessons learned for program evaluation
- List of best practice recommendations for program evaluation
- After the meeting, EPA will assemble feedback from group into a 'Best Practices' report to be distributed to all attendees.

Meeting Strategy:

Presentations showcasing success stories implementing ENERGY STAR for Homes will be followed by facilitated discussion bringing in group experience and consensus on best practices.

AGENDA

Time	What	How
DAY ONE – April 26		
8:00 am – 8:15 am	Introductions	Around the Room
8:15 am – 8:30 am	Meeting Review	Sam Rashkin, EPA
ENERGY STAR for Home Program Design Strategies		
8:30 am – 10:00 am	Success Stories: <ul style="list-style-type: none"> • TXU/CenterPoint: Developing a HERS Infrastructure • NYSERDA: Reaching a Dispersed Builder Audience • Incentive Options: Comparison of Program Incentives • Wisconsin: Augmenting Builder Skills With Technical Training, Education 	Presentations: <ul style="list-style-type: none"> Brian Smith, ICF (with Price Robertson, TXU) Andrew Fisk, NYSERDA Stacey Patmore, EPA Greg Nahn, WECC
10:00 am – 10:30 am	Regional Factors for Program Design	Brainstorm
10:30 am – 10:45 am	BREAK	
10:45 am – 11:15 am	Program Design Strategies Lessons Learned	Brainstorm
11:15 am – 12:00 pm	Best Practice Recommendations	Consensus or N/3
12:00 pm – 1:00 pm	LUNCH	
ENERGY STAR for Homes Marketing and Implementation		
1:00 pm – 2:30 pm	Success Stories: <ul style="list-style-type: none"> • TXU/CenterPoint: Advertising, Promotions and Awards • Pacific Northwest: Engaging the Market • North Carolina State Energy Office: ENERGY STAR Homes Summit • Rocky Mountain Power: Builder Seminars/Recruiting 	Presentations: <ul style="list-style-type: none"> Brian Smith, ICF Anne Brink, NEEA (with Kendall Youngblood, Energy Trust of Oregon) Laurel Elam, Appalachian State University Blake Howell, Rocky Mountain Power
2:30 pm – 3:15 pm	Mktg./Implementation Lessons Learned	Brainstorm
3:15 pm – 3:30 pm	BREAK	
3:30 pm – 4:15 pm	Best Practice Recommendations	Consensus or N/3
DAY TWO – April 27		
8:00 am – 8:20 am	Day One Review	Sam Rashkin, EPA
ENERGY STAR for Homes Evaluation		
8:20 am – 9:50 am	Success Stories: <ul style="list-style-type: none"> • TXU: Quality Control Monitoring/Evaluations • AEC Research Field Study • Las Vegas Partners: Outreach Campaign Evaluation • California Utilities Evaluation Studies 	Presentations: <ul style="list-style-type: none"> Brian Smith, ICF Colby Swanson, AEC Paulette McGhie, NV ENERGY STAR Partners/Energy Inspectors Robert Kasman, PG&E
9:50 am – 10:00 am	BREAK	
10:00 am – 11:30 am	Evaluation Lessons Learned	Brainstorm
11:30 am – 12:00 pm	Best Practice Recommendations	Consensus or N/3
12:00 pm – 1:00 pm	LUNCH	
Wrap-up		
1:00 pm – 1:30 pm	Meeting Review (What Worked/Improved, Next Steps)	Discussion
1:30 pm	Adjourn	

Developing a HERS Rating Infrastructure

ENERGY STAR® for New Homes Utility Stakeholder Meeting
April 26 – 27, 2007

Presented by

Price Robertson
Manager, Energy Efficiency Programs
Oncor Electric Delivery Company

Brian Preston Smith
Project Manager
ICF International



Outline

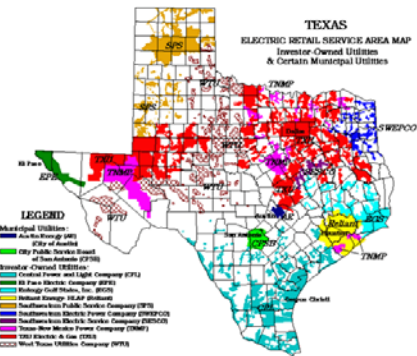
- Background
- Overview of HERS Rating Infrastructure
- Why a Market-based Infrastructure was Selected
- Steps Taken to Establish
- Advantages
- Disadvantages
- Program Results
- Lessons Learned

Background - Texas Electric Choice Act

- Utility Deregulation
- Load Growth Management
- Energy efficiency programs funded by rate payers
- ENERGY STAR Homes Program sponsored by IOU's:
 - CenterPoint Energy
 - Entergy
 - Oncor Electric Delivery Company (Formerly TXU Electric Delivery)
 - Texas New Mexico Power



Background – Service Territories



Oncor's Service Territory

- Large geographic area
- More than 47,000 new homes completed each year in service territory
- Diverse markets comprised of large metropolitan areas (Dallas and Ft. Worth) and small towns (Waco, Tyler)
- Majority of homebuilders complete 100+ homes per year
 - Some complete more than 1,000 per year
- Homebuilders are extremely competitive on price and luxurious amenities

ICF International. Passion. Expertise. Results. 5 icfi.com

Overview of HERS Rating Industry

- Consists of HERS Rating Providers and HERS Raters
- Must complete 40 hour Residential Energy Services Network (RESNET) approved accreditation training
- RESNET accredits HERS Rating Providers
- HERS Rating Providers are responsible for certifying HERS Raters
- Only HERS Rating Providers can verify homes meet ENERGY STAR guidelines and print ENERGY STAR certificates

ICF International. Passion. Expertise. Results. 6 icfi.com

Overview of HERS Rating Industry

Comparison of Services offered by HERS Rating Providers and HERS Raters:

Services	HERS Rating Provider	HERS Rater
Plan Analysis	YES	YES
Technical assistance to achieve ENERGY STAR guidelines	YES	YES
On-site inspection (Blower Door and Duct Blaster)	YES	YES
ENERGY STAR Verification	YES	NO
Printing ENERGY STAR certificates	YES	NO

ICF International. Passion. Expertise. Results. 7 icfi.com

HERS Rating Models

Single Administrator/Implementer.

- The utility, state agency, or program administrator provides all the services of a HERS Rater and Rating Provider to verify home performance.
- Program typically covers all of the costs associated with verification.

Single HERS Rating Provider.

- Either a non-profit organization, company, state agency designated as the program's "preferred" rating provider.
- Can include multiple HERS Rater companies competing to provide on-site testing services, or, the preferred provider conducting all services.
- Homebuilder typically covers the costs associated with verification.

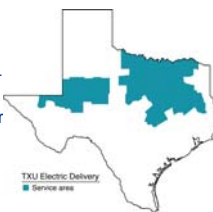
Competitive, Market-based Rating Infrastructure.

- Multiple HERS Rating Providers and HERS Raters competing in the market to provide verification services to homebuilders participating in the program.
- Homebuilder typically covers all of the costs associated with verification.

ICF International. Passion. Expertise. Results. 8 icfi.com

Why a Market-Based Approach?

- Aggressive energy efficiency goals
 - Goal of 7,400 kW and 24,600 MWh during first year
- Needed to offer through entire service territory
 - 88 counties and 372 cities
 - Approximately 45,000 new homes built annually



A competitive, market-based HERS rating infrastructure was viewed by Oncor and ICF as a solution to rapidly establish and expand the program to achieve aggressive goals

ICF International. Passion. Expertise. Results. 9 icfi.com

Steps Taken to Establish Infrastructure

- Sponsored HERS Rater trainings to quickly deliver accredited Raters to the market
 - 11 trainings delivered, more than 160 trained
- Offered scholarships for individuals in remote areas of service territory to attend HERS Rater trainings
- Delivered trainings on how to become an accredited HERS Rating Provider and own and operate a successful rating business
- Provided turnkey tools for raters to market and sell home verification services to homebuilders
- Guided raters through the process of becoming an accredited HERS Rating Provider
- Established the Texas Home Energy Organization

ICF International. Passion. Expertise. Results. 10 icfi.com

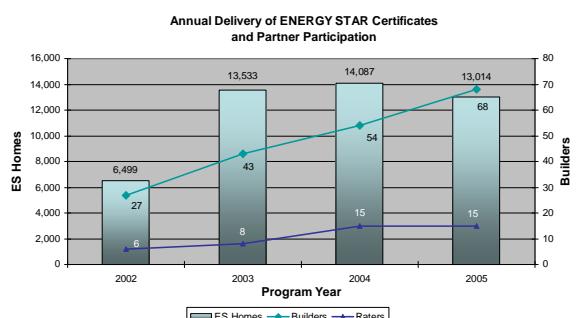
Advantages

- Quickly Established Infrastructure Needed to Support Program
 - 15 HERS Rating Providers and 164 certified HERS Raters during first four years
- Reduced Capital Costs and Operating Expenses
 - Shifted the capital costs and expenses associated with operating a home verification service to the private market
 - All investments to analyze, test, and verify home compliance with ENERGY STAR was made by the private HERS rating companies
- Allowed Utility to Focus on Critical Areas of Program
 - Monitoring production pipelines to ensure goal is achieved
 - Recruiting and maintaining partners
 - Advancing energy performance (improving cost efficiencies)
 - Expanding program to achieve increasing annual goals
- Achieved Rapid Expansion of Program Across Service Territory

ICF International. Passion. Expertise. Results. 11 icfi.com

Advantages

Annual Delivery of ENERGY STAR Certificates and Partner Participation



Program Year	ES Homes	Builders	Raters
2002	6,499	27	6
2003	13,533	43	8
2004	14,087	54	15
2005	13,014	68	15

ICF International. Passion. Expertise. Results. 12 icfi.com

Advantages

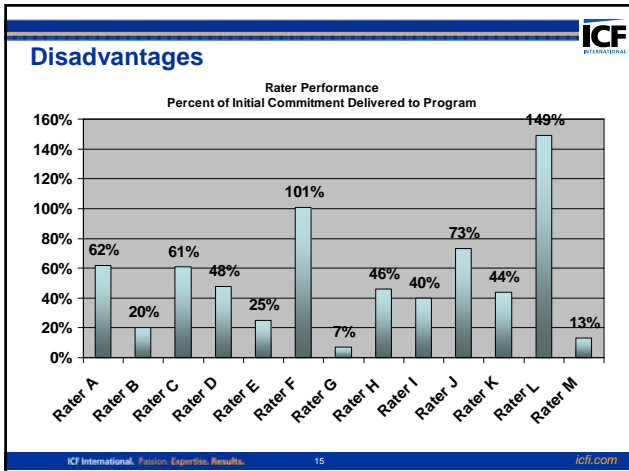
- Realized Market Improvements Through Increased Competition Between HERS Rating Companies:
 - Pre-sheet rock inspections to reduce risk of a home not passing the final verification test (prior to adoption of the Thermal Bypass Checklist)
 - Turnkey solutions for homebuilders (i.e. submit required program data to TXU Electric Delivery)
 - Performance-based pricing structures
- Reduced Risk of Achieving Annual Goals
 - Spread out risk among multiple raters
 - Reward raters who outperformed competitors
 - Increase number of individuals promoting the program to builders
- Contributed to the Economic Development of the Region
- Established Foundation of Companies that Can Support Future Residential Programs

ICF International. Passion. Expertise. Results. 13 icfi.com

Disadvantages

- Increased Risk
 - Lack of control of HERS ratings and company performance
- Intensified Level of Supervision and Management
 - Assist HERS Raters in becoming viable companies
 - Closely manage the activities of HERS Raters to ensure goals will be met
 - Established TXHERO to "self monitor"
- Increased Oversight on Quality Assurance
 - Verify HERS Raters followed RESNET guidelines and that homes meet ENERGY STAR specifications
 - 99.3% of passing rate in 2005 (2 failures out of 295 homes retested)

ICF International. Passion. Expertise. Results. 14 icfi.com



Program Results


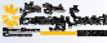
	2002	2003	2004	2005
Participating builders	29	43	54	68
Original home goal	3,000	10,000	11,000	16,000
Homes delivered	6,492	13,533	14,087	13,000
Total kWh savings (in million)	24.6	24.3	26.7	25.7
Total MW savings	7.4	29	31	29
Ave. kW / home	1.15	2.14	2.17	2.24

ICF International. Passion. Expertise. Results. 16 icfi.com





Lessons Learned

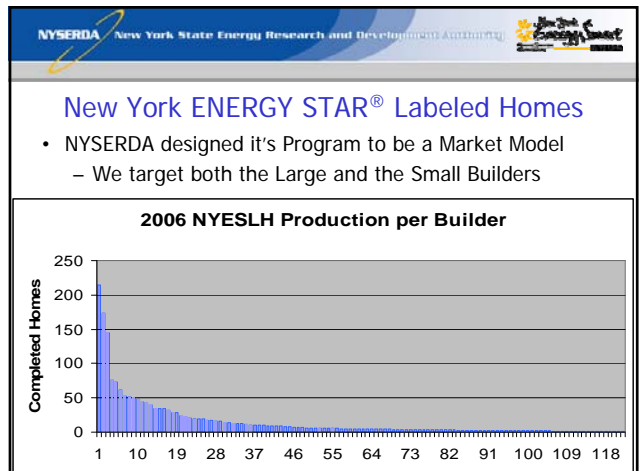
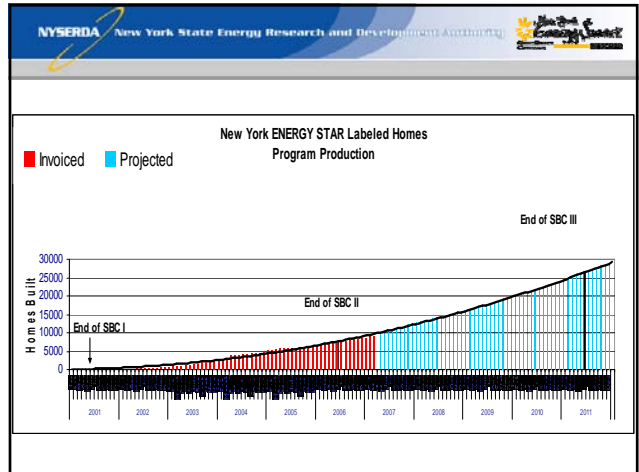
- A utility must closely monitor the performance of HERS rating companies to manage risks and achieve annual goals.
- Requires a significant amount of oversight to ensure annual goals are achieved, the industry continuously matures, and rating companies become self-sufficient.
- Quality of HERS ratings is not adversely affected when performed by independent and competitive HERS rating companies.
- HERS rating infrastructure can be leveraged and used for other residential energy efficiency programs (i.e. home performance).
- Allows the best HERS rating companies to prosper and grow while others slowly withdraw from the market.


 New York State Energy Research and Development Authority
 

Reaching a Dispersed and Diverse Builder Audience

Presented by Andrew Fisk
 Program Manager, NYSERDA



Specialized Marketing

- Marketing Activities are designed to be broad reaching and universally relevant
 - Utilize the "Push-Pull" effect of the Market
 - Cause demand from Customer and desire to supply from Builder
 - Energy Smart Communities
 - Television series on PBS
 - Print advertising
 - Cooperative Advertising Incentives

Create Demand - Marketing

The image displays several marketing assets: a television set showing a 'HOUSE FOR SALE' sign, the Energy Star logo, a screenshot of the Energy Star website, and a flyer titled 'Lower the HIGH COST of heating and cooling your home' featuring a house.

Teaming up with Market Players

- NYSERDA works closely with the New York State Builders Association to increase awareness and further penetrate the market
 - In 2006 we had a 11% market share.
- RESNET
- EPA

Technical Support

- NYESLH are tested to ensure the finest construction
 - Utilize on site support from Implementation, HERS Rater/Provider, and NYSBA REF

The image shows two individuals in a dark setting looking at a wall-mounted device, possibly a HERS Rater or REF. Below the image is the Energy Star Homes logo.

NYSERDA New York State Energy Research and Development Authority




- Raising the bar of excellence
 - Ideals of health, safety, comfort, environment, energy costs resonate well with Consumers and they request of builders
 - Builders in the Market have to raise up to deliver product requested of them and keep up with competitors

NYSERDA New York State Energy Research and Development Authority

Diverse outreach results in true success!

- The new construction market has as many types of business models as there are types of houses.
 - Key is to make customers ask for it and Builders automatically deliver
 - Don't limit yourself to the big players!



NYSERDA New York State Energy Research and Development Authority

THANK YOU!

1 (877) NYSMART
www.GetEnergySmart.org

(518) 862-1090 (Albany)
www.nyserda.org

1st Annual ENERGY STAR
Residential Program Partners Meeting
April 26-27, 2007



ENERGY STAR New Homes Sponsor & Utility Program Incentives

Types of Incentives Currently Offered:



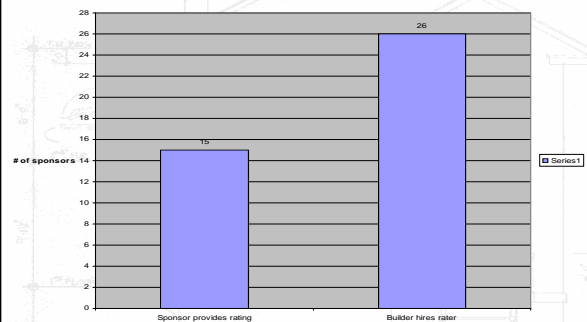
- Cash rebate for each ENERGY STAR home
- HERS rating
- Co-op advertising
- Sales training
- Marketing materials
- Discount on utility bills for homeowner
- Free CFLs
- Rebates for high efficiency furnaces, heat pumps, and water heaters
- Rebates for ENERGY STAR appliances
- Rebates for ENERGY STAR lighting fixtures
- Rebates for model homes

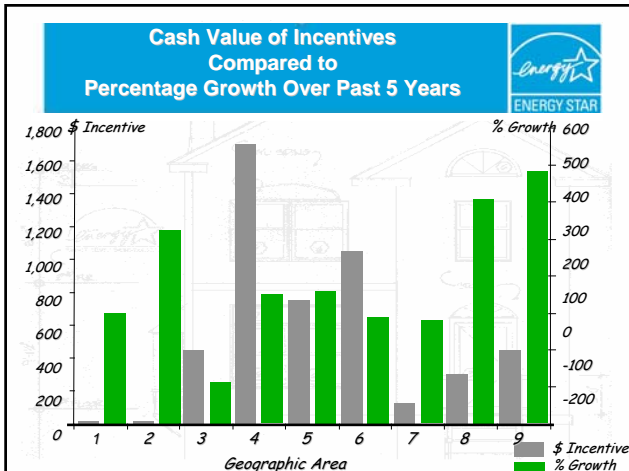
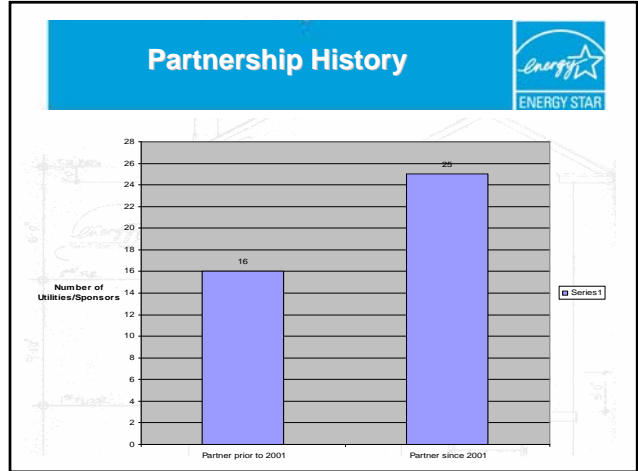
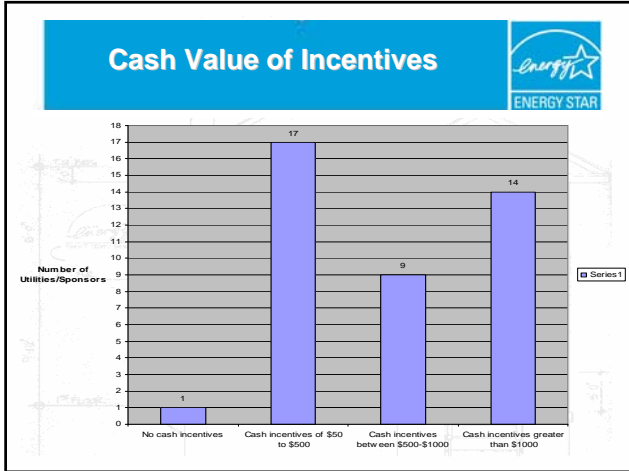
Other possible incentives?



- Discounted utility hook-up fees
- Expedited permits through local government

Who pays for the rating?





For More Information...

Contact
Stacey Patmore
Patmore.stacey@epa.gov or
(202)343-9407

www.energystar.gov/homes



ENERGY STAR for New Homes Utility Stakeholder Meeting

Program Design Track
April 26, 2007 Atlanta Georgia

Gregory A. Nahn
Wisconsin ENERGY STAR Homes Program
Wisconsin Energy Conservation Corporation



Wisconsin ENERGY STAR Homes Program

Program Review:

- Program Description
- Program Implementation and Intent
- Initial Research
- Key Needs to Address
- Program Design Considerations
- Objectives and Lessons Learned
- What is Working What is New



Wisconsin ENERGY STAR Homes Program

*Augmenting Skills with Technical Training and Education
... Investing in Success*

Education and training = sharing information

- Reasons to invest
- Ways to invest
- Types of training
- Results
- New Opportunities



Wisconsin ENERGY STAR Homes Program

Program Description:

The Wisconsin ENERGY STAR Homes Program provides unbiased, third party building verification, consulting, and testing services to the Building Industry on the construction of safe, comfortable, and durable energy efficient new homes.

Building Performance is verified through a certification process (for fee) that includes plan review, construction site visits, and final testing that address building performance beyond energy efficiency and in the best interest of the industry, occupant, and environment





Wisconsin ENERGY STAR Homes Program

Program Implementation and Goals:

The Program is designed, developed, and administered by Wisconsin Energy Conservation Corporation and delivered by private accredited consultants (advanced raters) with the partial support of Public Benefit funds (collected through rater payers).

The intent of the program is to set participants up for success and empower them through the sharing of building performance information and the development of marketing tools to create market awareness and differentiation – *market transformation*



Program Research

Initial Program Research:

Informal research involved:

- drawing on the experiences of developing and delivering an existing home rating program
- Early experience of “rating” new homes for Parade of Homes promotion
- Review of other national new construction programs



Key Needs

Key Needs Identified:

- Establish standards valuable to the building industry (*and buying public*) beyond energy efficiency. Standards that address the builder’s concerns (*and public need*) and build trust and credibility (SAFE)
- Add site visits during construction to address and document details that drive building performance and *provide an on-going platform for voluntary engagement and continuous improvement*
- Increase the credibility of the HERS infrastructure with expanded training and on-going support targeting new construction issues



Key to Address

Other Keys to Address:

- Increased costs (*upfront*) to the builder for the delivery of program services (*consultant fees*)
- Potential (*and perceived*) increases in material cost / upgrades necessary to meet (*or exceed*) energy (*and other requirements*) for certification
- Balance building consumer awareness and demand with builder participation (*capability and acceptance*) in meeting program standards





Design Considerations

Program Design Options:

- Require site visits and additional standards to address building performance – air tightness, ventilation capacity, combustion safety
- Require written site visit reports to builder. Provides added value to builder and transfers responsibility for implementing SV recommendations *in best interests of builder*
- Invest in outside “experts” for training consultants and building industry. Investment strengthens program/consultant credibility, builder buy-in, and develops *(later)* in-state resources and HBA recognition



Design Considerations

Program Design Options:

- Provide Consultant fee discounts and *(later)* Builder Certification rewards to *(initially, partially)* offset the builder's incremental cost of program services
- Include Rating (*score*) and *(later)* Technology rewards to *(partially)* offset the builder's incremental costs in meeting efficiency threshold and/or encourage upgrades for greater energy savings
- Develop marketing mechanisms to gain builder buy-in and potentially offset costs of participation, and building market awareness and differentiation – *in advance of consumer marketing*



Objectives and Lessons Learned

Program Goal:

To be viewed as credible and valuable in building industry and market

Lessons learned:

- address concerns building industry first
- standards are specific, achievable, assessable, and *proven* effective
- don't over promise what you (or the market) can deliver
- informed decisions are “better” choices



Objectives and Lessons Learned

Program Goal:

To deliver safe, comfortable, durable, and energy efficient homes

Lessons Learned:

- don't put energy efficient first
- construction details (not products) matter
- market message beyond new home “paradigm”
- provide homeowner's manual and follow-up survey





Objectives and Lessons Learned

Program Goal: *Increase electric system reliability*

Lessons Learned (in Wisconsin):

- builders don't decide / influence base and plug load decisions
- equipment run time and maintenance effect savings potential
- electric load increasingly >= heating load = lost opportunities
- Market Channel rewards / spiffs are better positioned to influence buyer / builder decisions



Objectives and Lessons Learned:

Program Goal: *Create infrastructure of professional service providers*

Lessons Learned:

- tend towards market cost training
- market program as a business opportunity
- require tight QC & QA, and customer services standards
- offset initial barrier to program participation at your own risk
- create opportunities to diversify consultant services



Objectives and Lessons Learned:

Program Goal: *Promote installation of renewable energy technologies*

Lessons Learned:

- small but growing potential market (*and market advantage*)
- cross promote installers / assessors / suppliers to facilitate market
- address "renewable ready" time of construction details
- reduce loads (first) to match technology



Objectives and Lessons Learned:

Program Goal:

To be recognized as market leader in new construction building performance

Lessons Learned:

- build on national ENERGY STAR for Homes platform
- integrate / infiltrate local home building associations
- provide venue and mechanism for participant recognition awards
- leverage PR campaigns, local industry champions, collateral marketing and training event opportunities





Investing in Builders Skill with Technical Training and Education

Reasons To Invest:

- To gain TRUST and CREDIBILITY in the building industry
- To develop "local" training resources (*trainers*) – phase out initial reliance on outside experts.
- To provide platform for continued improvement – training new topics, technologies, advanced trainings
- To engage Home Building Associations on training agenda topics of mutual interest.



Investing in Success

Ways to invest in Training:

- Direct training - Program resource
- Partnerships in Industry (*window manufacturer, product supplier*) with common goals (*cost sharing expense- greater market reach*)
- Sponsorships for local events (HBA conferences, trade shows, home shows). Provides value to HBA.
- Participant Scholarships for regional / national events (A.C, EEBA, RESNET)



Investing in Success

Types of training:

- Training series: In-class formal training (*informational, interactive*)
- In field small group training (*skill based, specific topic, short delivery, consultant led workshop*)
- Technical Exchange meetings: Voluntary participant driven quarterly meetings for consultants and builders (*talk shop*)
- Trainer the Trainer: Training for trainers on curriculum development and delivery (*teach not to lecture*)



Investing in Success

Training Series Results:

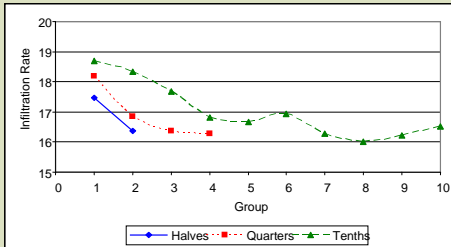
- Energy Center of Wisconsin Residential training series
- 2005-2006 Series: 8 topics, 26 events, 1,385 building professionals, average score A-, delivered (*mostly*) by local consultants
- 2000 to date: 178 events with over 8,000 building professionals (*residential and multi-family*) attending





Investing in Success

In-field Results: Builder performance trends over time
Build tight = energy efficient = building quality*



Investing in Success

New Opportunities :



ENERGY STAR for New Homes Utility Stakeholder Meeting Program Design Track

Gregory A. Nahn
New Construction Program Manager
Wisconsin ENERGY STAR Homes Program
Wisconsin Energy Conservation Corporation
608-249-9322 (office)
greg@weccusa.org





Marketing: *It's More Than Increasing Consumer Awareness*

ENERGY STAR® for New Homes Utility Stakeholder Meeting
April 26 – 27, 2007

Presented by
Brian Preston Smith
Project Manager
ICF International

ICF International. Passion. Expertise. Results.



Put Yourself in the Builder's Shoes

Builder's care about one thing:

- Maximizing profits

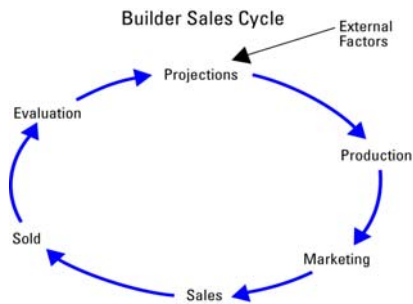
They accomplish this by:

- Minimizing cost of construction
- Selling at the highest price possible
- Moving inventory quickly

ICF International. Passion. Expertise. Results.



Put Yourself in the Builder's Shoes



ICF International. Passion. Expertise. Results.



What is Marketing?

- Marketing is a deliberate strategy that can directly contribute to a regional sponsor's energy efficiency goals

ICF International. Passion. Expertise. Results.





Why is Marketing Important?

- A marketing campaign increases consumer awareness and stimulates consumer preference
- As ENERGY STAR becomes the preferred consumer choice, builders feel compelled to build ENERGY STAR
 - They see value in every stage of the sales cycle
- Regional sponsors can leverage this dynamic to gain greater control over their program and the ability to manipulate the market to their advantage

ICF International. Passion. Expertise. Results.



The Benefits to Regional Sponsors

Marketing can help sponsors:

- Increase builder participation and homes committed to the programs
- Improve cost effectiveness over time
- Create greater stability during times of change to ensure you achieve annual goals

ICF International. Passion. Expertise. Results.



Increasing Builder Participation

- Production costs will always be a primary barrier
- Builders will participate in the program if they believe ENERGY STAR will help them compete in the market place
- A marketing campaign is a valuable recruitment tool because it:
 - Ensures consumer demand for their product
 - Provides builders with the exposure and differentiation they desire

ICF International. Passion. Expertise. Results.



Example - Texas

- Ad Campaign
 - Print
 - Radio
 - Billboards
- Builders received exposure based on number of units committed to program
 - Increased number of units committed to program

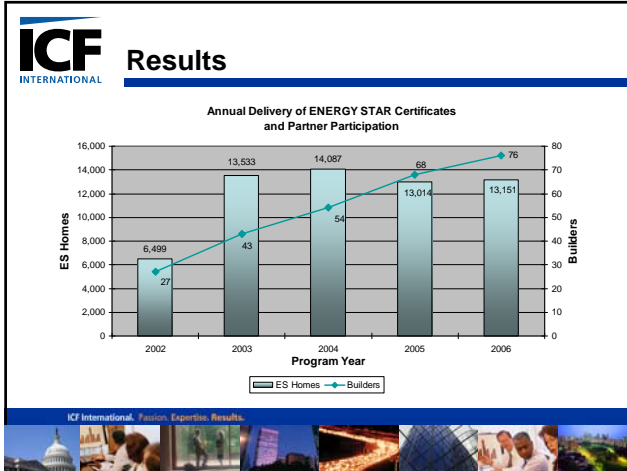
Houston's ENERGY STAR Homes
Like reducing pollutants by the weight of 10,000 elephants. Every year.

HoustonEnergyStar.com

CenterPoint Energy logo

ICF International. Passion. Expertise. Results.

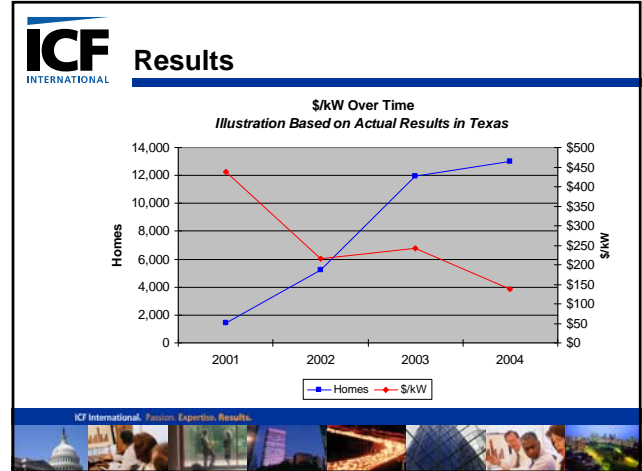
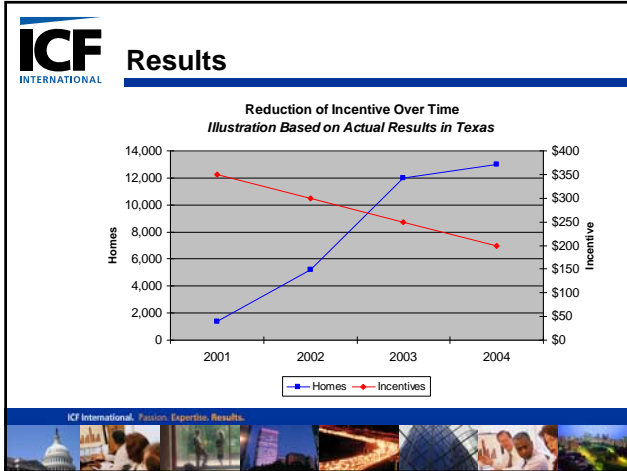




- ## ICF Results
- ### Anecdotes
- Kiella vs. Omega
 - Kiella outsold Omega 3 to 1 in same community
 - Omega joined ENERGY STAR
 - Kiella raising bar – increasing HERS scores to further differentiate
- ICF International. Passion. Expertise. Results.

- ## ICF Improving Cost Effectiveness
- As awareness increases, a *buzz* will be created in the market place
 - Builders will begin to realize that they can not compete with out ENERGY STAR
 - Once this is achieved, sponsors can begin to modify the program to improve cost effectiveness:
 - Reduce recruitment costs
 - Modify incentive structures (reduce, tier)
 - Purchase more homes (kW/kWh) for same amount of money
- ICF International. Passion. Expertise. Results.

- ## ICF Example
- Ad Campaign
 - Events
 - Mid-stream actors
 - Trainings
 - Sponsorships
 - Web site
 - Point-of-Sale
-
- ICF International. Passion. Expertise. Results.



ICF Results

Anecdote

- Choice Homes – Sales staff meeting
 - ENERGY STAR communities outselling non ENERGY STAR communities
 - Not being able to compete with ENERGY STAR competitors
- Choice makes decision to add more communities to ENERGY STAR
 - Provides regional managers with authority to make decision in future

ICF International. Passion. Expertise. Results.

ICF Results

Creating Greater Stability

- External factors will always affect programs:
 - Economic conditions (interest rates, cost of materials, demand, interest in green building, etc.)
 - Specification changes (EPA and RESNET)
- Increased demand makes it more difficult for builders to turn away from ENERGY STAR for fear of not being able to compete (especially in a down markets)
- This dynamic allows sponsors to thrive in good markets and maintain goals during down markets
 - ENERGY STAR is critical to builders success

ICF International. Passion. Expertise. Results.



Examples – Texas

Background - Texas

- Sponsors' implemented marketing campaign during past five years
 - Achieved high level of awareness
- Faced significant challenges in 2006 and 2007:
 - Changes to HVAC equipment and ENERGY STAR specifications
 - Market changing (slowing, interest rates, more competitive)
- Expectation was 50% of builders would drop out of program in 2007

ICF International. Passion. Expertise. Results.



Results

- More than 90% of builders returned to the programs
- Committed more than 20,000 ENERGY STAR qualified homes in 2007

ICF International. Passion. Expertise. Results.



Questions

ICF International. Passion. Expertise. Results.



ENERGY STAR® Homes Northwest

CHANGE FOR THE BETTER WITH ENERGY STAR

**Engaging the Marketplace
In the Northwest**

Anne Brink,
Market Manager
Northwest Energy Efficiency Alliance

Kendall Youngblood,
Residential Sector Manager
Energy Trust of Oregon, Inc.

2

Program Implementers

- Northwest Energy Efficiency Alliance (NEEA)
 - Non-profit funded by Northwest utilities and systems benefit administrators.
 - Encourages adoption of energy efficient technologies and services
- Energy Trust of Oregon
 - Non-profit organization, administer systems benefit charges collected from 5 utilities in Oregon
 - Cover 80% of the state

3

Program History

Program Launched in 2004

- 2,354 Northwest ENERGY STAR Homes built in 2006
- 237 Northwest ENERGY STAR active builders in 2006

Northwest ENERGY STAR Homes program includes Washington, Oregon, Idaho, and Montana




Key Market Players

- Builders/Developers
- Building Performance Specialists/Verifiers
- Realtors
- Suppliers to Builders – HVAC, Lighting & more




5



Builders/Developers Progress to Date

- Co-op Advertising/ Model Home Incentives
- Program-Sponsored Advertising
- Champion Builders/Developers
- Engaging Builder Associations
- Partnering with Green Building Programs
- Extensive marketing efforts and staff training on ENERGY STAR benefits



6



Co-op Advertising

- 50 builders leveraged \$110,000 in cooperative funding.
- 47 builders received model home incentives for opening 55 model homes.
- 80 builders in 8 markets leveraged \$183,000 in funding through EPA coop.

**Victory Homes—Spokane, Washington and
Holton Homes—Nampa, Idaho**




7



Program-Sponsored Ads

- Energy Trust's fall campaign showcasing ENERGY STAR builders with inventory.



8

Program-Sponsored Ads

9

Champion Builders

- 14 champion builders in 2007 received \$84,000
- Co-branding efforts with these builders included:
 - Fully integrated advertising campaigns
 - Public Relations campaigns
 - Upgraded presence on websites
 - Display installation in sales offices/model homes

10

Developers

Issaquah Highlands, Seattle Washington

- Featuring 100% ENERGY STAR and 4-star Built Green homes.
- 2500 homes over 10 years.
- Program support via co-op ads, model homes, discovery center and events.

11

Builder Associations

Working with Puget Sound Energy, Seattle Washington, on a joint partnership to sponsor local MBA associations that promote ENERGY STAR along with their Built Green program.

- King/Snohomish County
- Pierce County
- CWBGA

In Oregon, the program is working with the local Homebuilders Association (HBA).

12



Green Building Programs

Working with regional green building programs to co-brand and jointly promote energy-efficient building practices.

- Earth Advantage - ENERGY STAR preferred energy path
- Built Green - ENERGY STAR required for 4 star level



13



Green Building Trainings

In Oregon, co-sponsored with Earth Advantage a Green Building week hosted by the HBA. 60-80 people attended each session.

- Green Building 101
- Building to the federal tax credit
- Selling Green Homes
- Networking after hours event

14



Builders/Developers Next Steps

- Moving existing builders to 100% status.
- Actively working with builder associations and green building programs to encourage 100% ENERGY STAR.
- Positioning Champion Coop funding to be available to only 100% ENERGY STAR builders.
- Supporting quality project management in the field.

15



Realtors® Progress to date

ENERGY STAR in the Realtor Multiple Listing Service

- Oregon
- Washington

Continuing education courses for Realtors

- Idaho

The Oregonian

Local homes database turns 'green'

RMLS - Environmentally friendly information for Realtors signals good news for some buyers and sellers and starts a trend

16



Realtors® Next Steps

- Creating two continuing education courses
 - Two day course partnering with green building program
 - Four hour course on ENERGY STAR/energy efficiency overview
- Enlist marketplace instructors and partner with Title Companies on trainings
- Partner with Real Estate firms to market ENERGY STAR Homes

17



Engaging the BPS Progress to date

- 2004 and 2005
 - Program recruited builders and passed them off to the verifiers to inspect and label homes.
- 2006
 - Provided co-op marketing funds so verifiers could market their business.



Building Performance Specialists Next Steps

- Assist verifiers in expanding their business. Includes: assisting on equipment expenses, co-op marketing
- Encouraging verifiers to recruit builders. Providing training on sales, marketing and business development.
- Providing training to assist verifiers in adding services that increase their value to the builders and improve their revenue per house.

19



HVAC Contractors Progress to Date

- HVAC Pilot effort is targeting HVAC contractors and distributors as a way to encourage sales of high efficiency equipment and to recruit builders into the program.
- Gensco (Trane distributor) and Tri-County Temp Control working with Legend Homes.
- Legend Homes now planning a 34 unit development as 100% ENERGY STAR.

20



HVAC Contractors Next Steps

- Working with HVAC distributors to increase number of shops selling the ENERGY STAR Homes program.
- Discussion of specific pricing strategies and implementation logistics.
- Program assistance for HVAC contractors to market themselves as ENERGY STAR partners.

21



NC ENERGY STAR Conference

Laurel Elam
Appalachian State University




NC ENERGY STAR Conference

- December 8th, 2005
 - North Raleigh Hilton
 - 200 attendees
- December 6th, 2006
 - Hilton Raleigh-Durham Airport
 - 300 attendees
- November 15-16th, 2007
 - Marriott Durham at the Civic Center
 - We hope for 450 attendees

Key Objectives

- Bring people in the building industry together to explore ENERGY STAR Homes and high performance building
- Offer breakout sessions including diagnostics, green building, HVAC, program standards, marketing and education
- Networking and exhibits
- Increase number of ENERGY STAR Homes in the state



Steps to Successful Builder Event

- Keynote speaker
- Exhibits
- Interesting sessions
- Continuing education credits
- Reception
- Price
- Awards- 2007




Time and Resources



- One-two people part time 9 months prior to event
- One person full time starting 3 months prior to event and two people part time
- Graphic artist needed for brochure and program
- Volunteers to help facilitate breakout sessions and do registration check-in
- Grant money- \$29,000
 - Pays for labor



Agendas and Speakers



- Go to other conferences!
 - Meet speakers, take notes about what you like and dislike
- Look at other agendas and breakout sessions
- Feature hot topics in the industry
- Have at least 3 session tracks to choose from
- Seek out well known speakers
- Breaks for exhibits and networking

Attract Attendees



- Market to everyone involved in the building industry
 - Builders, architects, engineers, HERS raters, product representatives, researchers, appraisers, mechanical contractors, real estate agents, home inspectors, building code officials, utility representatives
- Interesting breakout sessions
- Continuing education credits
- Offer tests or other certifications
- Vendors and exhibits
- Keynote Speaker(s)
- Networking
- Website, email, blogs, and newsletters

Logistics and Registration



- Easy access to airport
- Central location in state
- Map of hotel in program
- Classroom set-up is preferred
- Plenty of space in exhibit hall
- Online credit card registration
- Look at other conference dates
- Early check-in helps rush the morning of the event
- Organize check-in lists, name tags and onsite registration



Registration Fees



- 2005- \$75 for regular registration
\$125 exhibit registration
» includes 1 pass and \$50 for additional registrations
- 2006- \$75 non-profit/\$125 regular
\$150 non-profit exhibit/\$250 reg.
» includes 1 pass and \$50 for additional registrations

Booths and Sponsors



- Get the word out any way you can
 - Email, newsletters, blogs, mailer
- Give plenty of time for exhibits and networking
- Give exhibitor information in program
 - Contact info and booth location
- Diversify sponsorship list
- Give sponsors exhibit space, free passes, and recognition in program and website

Initial Observations



- Attendance is growing
- Exhibitors happy with response from attendees
- Good feedback from conference surveys
- Expanded audience
 - Continuing education credits
- Hotel communication breakdowns
- Time of year
- Increase budget or sponsorship dollars to pay for speaker travel expenses



ROCKY MOUNTAIN POWER ENERGY STAR NEW HOMES PROGRAM

PROGRAM DESIGN

Program Description

Program design for the Rocky Mountain Power ENERGY STAR New Homes program began in early 2004, with a launch date set for January 2005 in the Rocky Mountain Power service territory. Ecos Consulting, a Portland based company with a strong commitment to preserving and enhancing the global environment was awarded the 5 year contract with PacifiCorp to conduct this program in two of the clients markets; Central Washington under the Pacific Power name and in Utah under the Rocky Mountain Power name (formerly Utah Power).

While both of the programs are critical to Ecos Consulting and PacifiCorp, the majority of comments in this discussion will focus on the successes that have been realized in the Utah market.

Not unlike other ENERGY STAR New Homes programs Rocky Mountain Power set out to transform the building industry throughout the state of Utah. From the largest production builder – a local company – to national home builders, to the individual home owner. Utah has seen an overall new home construction increase of about 25% over the past few years with new home permits now approaching 22,000 per year.

Program Research, Design and Findings

Ecos Consulting contracted with Ecotope in Seattle WA, to help model the PacifiCorp program. The Northwest's model of a prescriptive path for is used for ENERGY STAR homes in Washington. However Utah's homes are certified through H.E.R.S. raters and performance based testing. It is important to note that the Utah market is quite different from the Northwest in several aspects of home construction but particularly in the area of HVAC installation and equipment. Duct design and products used during installation is quite different in Utah versus what was modeled in the Northwest. This finding has resulted in the need to provide extensive ongoing training to the HVAC trade allies.

During the design and early implementation phases of the program it was also learned that the program would quickly outgrow the existing H.E.R.S. rater community. Within just a few months efforts were in place to bring additional raters into the market to keep up with the demand of homes that needed to be certified.

Program Selection and Implementation

It was decided jointly by Ecos Consulting and PacifiCorp to make the Rocky Mountain Power program a cash incentive program with the rebate going to the home builder. Due to the hiring of additional staff members and some changes in management at Ecos, the current program management team was not part of the program design and therefore does not know what other options were discussed prior to accepting the current program.

In addition to the cash incentives the management team has offered (and continues to offer) ongoing trade ally training ranging from sales agent training to HVAC and insulation training in order to provide an added value to the builder.

Program Goals

An aggressive goal structure was put into place in an attempt to jump-start the Utah market and quickly bring it in line with other New Homes programs.

Year	# of Homes	Cum # of Homes
Year 1	362	362
Year 2	1,780	2,142
Year 3	2,329	4,471
Year 4	2,874	7,345
Year 5	3,146	10,491

The resulting impact of this program will bring the savings of 17,361,000 kWh to the client over the 5 year period.

Though Utah's market is growing, the numbers above show that it is still a relatively small market for ENERGY STAR New Homes which in-turn indicates that there is a lot of potential for future programs.

Initial Observations

At a glance the Utah market seemed quite similar to other housing markets. However as the program developed, it quickly became apparent that some of the building practices were quite different or perhaps just behind the curve of other markets. In the area of HVAC alone this market is in need of vast modifications – not only to how ducts are installed, but in what material to use and how to size equipment. It has been discovered that Utah is not alone in the area of needed improvements, but more extensive research of the market prior to program launch may have impacted how the program was rolled out.

The program has been well received by builders in Utah. Early pioneers of ENERGY STAR New Homes and long time ENERGY STAR partners in Utah helped prepare the way for a successful start. The program management team's positive attitude toward the benefits of ENERGY STAR aided them in selling the program to Utah's top builders. By showing added value to the builder the account managers can easily explain the benefits and help form the builder's opinion towards energy efficient measures in their building practices.

Certainly there are areas that can be improved on. The Rocky Mountain Power team has shifted some of the focus from training the builders to educating the public. Cooperative marketing efforts continue to be important to the builders, but in addition there is a concerted effort being made to bring awareness to the consumer.

ROCKY MOUNTAIN POWER BUILDER SEMINARS

Key Objectives of a Builder Seminar – 2007 Program Preview Seminar

With the Thermal Bypass Checklist being introduced into the market in 2006 there were several questions on the minds of the builders as to what it would take to conform to the new standard. During the summer of 2006, the Rocky Mountain Power ENERGY STAR New Homes program identified the need to disseminate as much information as possible to as many builders as possible in as short as time as possible. With this in mind the program management team blitzed the builder community with an invitation to attend a 2007 Program Preview seminar to present new information about the ENERGY STAR New Homes program and answer questions that they might have.

Steps Taken to Organize an Event

The success that the team has enjoyed in Utah can primarily be attributed to communication with the builders and respect for their time. Below is a bare bones example of the steps necessary to host a successful event (details will change based on the specifics of your event – size, location, guest speakers etc.);

- Plan the event several weeks in advance (months in advance if it is a large event)
- Secure a location
- Offer something that the builder wants
- Communicate
 - Email blast 5 weeks in advance
 - Fax 3 weeks in advance
 - Post card 2 weeks in advance
 - 2nd email blast 3 days before event(This pattern of communication has been successfully used for a variety of different meetings and events associated with the program.)
- Feed those who attend (some will do anything for a free meal!)
- Tell them how long they will be there and then stick to it
- Plan the event around something that may draw the builders in
 - Another event
 - A prominent guest speaker
 - New incentives
 - etc
- Keep it short and to the point
- Add value to what they already offer as a home builder

Planning For an Event

How much time should be allocated to preparing is very event specific. A simple answer might be ‘as much time as you can afford to allocate.’ A successful event in September of 2006 in Utah was pulled together on a fairly tight budget with only the time and resources of the management team – no third party event planners. The majority of the steps above were followed and the outcome was phenomenal.

Attracting Attendees

Offering the home builders a reason to come to an event is critical. Offering multiple reasons is almost a guarantee for success. In the case of the 2007 Program Preview seminar in Utah, three or four compelling reasons were given to entice attendees;

1. Free Free Free - there was no charge for attending the 3 hour event
2. Continuing Education Credits were made available
3. Information about the 2007 New Homes program was presented (this equated to incentives dollars)
4. Free lunch
5. Nationally known guest speaker – Sam Rashkin of the EPA’s ENERGY STAR New Homes program

These simple guidelines were implemented at the ground level. Detailed follow through contributed to a very successful meeting that left the builders with a solid understanding of the new program plus an enthusiasm to carry them into 2007.

Evaluating HERS Ratings in the Lone Star State

Oncor's Quality Assurance and Quality Control Process

Presented by:
Brian Preston Smith



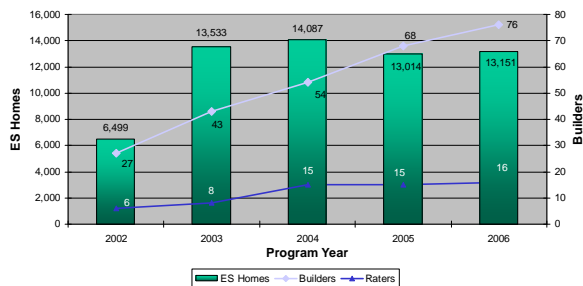
Background

Overview of HERS Rating Infrastructure:

- ◆ Established by Oncor ENERGY STAR Homes Program in 2003
- ◆ Rapid growth during five year period (1 to 16 companies)
- ◆ Many companies new to the home energy rating business
- ◆ These companies certified more than 60,000 ENERGY STAR qualified homes during a five year period

Background

Annual Delivery of ENERGY STAR Certificates and Partner Participation



Background

Rapid expansion of program and growth of rating infrastructure lead to certain questions:

- ◆ How are raters performing?
- ◆ Are they following RESNET standards?
- ◆ Are the homes truly meeting ENERGY STAR performance specifications?

Background

Program responses:

- ♦ Established Texas Home Energy Rating Organization in 2003 (Texas HERO):
 - Non-profit, industry association
 - Facilitates discussion on standards and best practices
 - Provides continuing education/training
 - Represents interests of HERS rating companies in TX and the U.S.
- ♦ Implemented QAQC Process in 2004

Goals of the QAQC Process

1. Validate the accuracy of the information reported to the Program by participating HERS Raters;
2. Confirm the data used by Oncor to calculate predicted kW and kWh savings reported to the PUCT; and
3. Help strengthen the ENERGY STAR for homes brand and the integrity of the HERS rating industry in the region.

Objectives to Achieve Goals

- A. Verify RESNET standards for home ratings are being followed by accredited HERS Raters and Providers;
- B. Identify inconsistencies and misinterpretations of national standards;
- C. Establish continuous feedback loop and facilitate corrective actions; and
- D. Encourage Texas HERO and RESNET to adopt best practices and clarify industry standards.

Design of QAQC Process

- ♦ Based on:
 1. Deming model of Plan, Do, Check, Act
 2. ISO 14000: Environmental Management Systems
- ♦ A systems approach to verify quality and achieve continuous improvements



ICF
INTERNATIONAL

Methodology

1. Determine acceptable variances;
2. Generate sampling protocol;
3. Collect necessary data from actual building plans and on-site inspections of tested and batched homes;
4. Generate *worst-case* QAQC results and compare to data generated and reported by HERS Raters;
5. Identify discrepancies and conduct further analysis to determine cause(s);
6. Share results with Texas HERO, rating providers and the EPA and RESNET when necessary; and
7. Develop corrective action plans to achieve continuous improvements in HERS rating process and industry.

Passion. Expertise. Results.

9

ICF
INTERNATIONAL

Methodology

Acceptable variances for the 2004 – 2006 QAQC process (as agreed to by Oncor, Texas HERO, and ICF):

- ◆ HERS score ⇨ +/- 0.5 point
- ◆ IECC score ⇨ +/- 3%

Note: Dual metric for ENERGY STAR for homes in Texas during 2004 – 2006 due to adoption of IECC in 2003.

Passion. Expertise. Results.

10

ICF
INTERNATIONAL

Sample Generation

- ◆ Includes all raters participating in the Program
- ◆ Sample Priorities:
 - 1st: proportionate to rater participation
 - 50% of homes in program = 50% of homes in QAQC sample
 - 2nd: proportionate to builder participation
- ◆ Sample goal: 300 homes (~2% of total homes delivered to Program each year.)
 - 50% batched
 - 50% tested

Passion. Expertise. Results.

11

ICF
INTERNATIONAL

Data Collection

Data collected from HERS rating providers:

- ◆ Final *REM/Rate* files with “confirmed” HERS score;
- ◆ Data submitted by raters through Program online reporting system (HERS score, floor area, equipment specifications, etc); and
- ◆ Building plans.

Passion. Expertise. Results.

12



Data Collection

Data collected by third party during on-site verification of *tested* and *batched* homes:

- Home location
- Number of stories
- Foundation type
- Home orientation
- Predominant exterior wall color
- Total duct leakage
- Duct leakage to the outside
- Whole house infiltration value from blower door test
- Blower door metric used
- Presence of radiant barrier
- Presence of p-stat
- Predominant window frame type and number of panes in windows
- HVAC coil and condenser brand, model, and serial number
- Qualitative assessment of attic insulation installation and HVAC installation quality
- Photograph of front orientation

Note: On-site verification was performed at least 72 hours after raters' final test

Passion. Expertise. Results.

13



Analyses and Evaluation

ENERGY STAR Performance Verification:

- A. HERS Score Analysis
- B. Percent Savings Above IECC Analysis

Additional Analyses Conducted:

- A. SEER Analysis
- B. Attic Insulation Analysis
- C. Number of Stories Comparison
- D. Square Footage Comparison

Passion. Expertise. Results.

14



Corrective Action Plan

1. Present initial findings and observations to Texas HERO and stimulate dialogue to clarify assumptions used by raters;
2. Meet with raters with greatest inconsistencies to review results, discuss causes of inconsistencies, and develop a corrective action plan;
3. Monitor raters' progress concerning specific inconsistencies;

Passion. Expertise. Results.

15



Corrective Action Plan

4. Present final results and recommendations to TX HERO and encourage the adoption of industry standard or best practices; and
5. Discontinue accepting certificates for ENERGY STAR qualified homes from rating providers who continuously deliver inconsistent results, even after intervention.

Passion. Expertise. Results.

16



Three Years of Results

	Number of homes that did not meet ENERGY STAR qualifications*	Passing Rate
2004	22	92.40%
2005	2	99.30%
2006	4**	98.70%

*HERS Score of 86 and 15% above IECC
 **Failure is below a HERS 87 due to incentive structure



Corrective Action Plan at Work

2004		
8% of homes failed to meet ENERGY STAR qualifications		
Issue	Action Taken	Result
14 homes lacked attic insulation at time of inspection	<ul style="list-style-type: none"> Discussed findings with TX HERO Improved home verification scheduling (72 hour window) 	<ul style="list-style-type: none"> The issue has virtually disappeared
Roughly one third of the homes used inconsistent climate zone for analysis	<ul style="list-style-type: none"> Discussed findings with RESNET, TX HERO Increased the awareness of climate zone usage and the selection of correct weather files to use in plan analysis and software modeling Track rating providers' climate zone usage 	<ul style="list-style-type: none"> Standard practices were established by TX HERO and RESNET clarified language in specifications No longer an issue
Result		<ul style="list-style-type: none"> Passing rate increased from 92% in 2004 to 99% in 2006



Corrective Action Plan at Work

2005		
1% of homes failed to meet ENERGY STAR qualifications		
Issue	Action Taken	Result
Many raters did not enter valid coil and condenser data for HVAC systems	<ul style="list-style-type: none"> Discussed findings with TX HERO Discussed with raters and providers with greatest failure rates 	<ul style="list-style-type: none"> Issue has somewhat improved However, still a minor issue
There was a discrepancy between HERS scores reported online and final REMRate files	<ul style="list-style-type: none"> Discussed findings with TX HERO Discussed with raters and providers with greatest failure rates 	<ul style="list-style-type: none"> Issue has somewhat improved However, still a minor issue



Corrective Action Plan at Work

2006		
2% of homes failed to meet ENERGY STAR qualifications		
Issue	Action Taken	Result
Many homes did not have a valid ARI SEER match	<ul style="list-style-type: none"> Discussed findings with TX HERO Redesigned online system to require ARI reference number upon submission of home 	TBD
61.7% of homes had a different HERS scores in the REMRate files vs. the online system	<ul style="list-style-type: none"> Discussed findings with raters Suggesting improvements in data collection and reporting 	TBD
A large percentage of homes had a different floor area reported in the REM file, online system and the QAQC calculated floor area	<ul style="list-style-type: none"> Discussed findings with TX HERO Working with TX HERO to establish acceptable variance for floor area New RESNET standards should address 	<ul style="list-style-type: none"> Proposing acceptable range of 75 – 100 sqft for approval by all stakeholders

Trends & Challenges

For the Rating Industry:

- Raters are generally following RESNET standards.
 - Discrepancies typically result when there are ambiguities in standards that lead to misinterpretations.
- The efficiency of equipment is NOT being verified in the field.
 - However, efficiency levels used in ratings are almost always conservative.
- There seems to be a difference between the actual number of stories of a completed home and the stories used in energy modeling.
 - Need to evaluate more to determine cause.
- The EPA sampling protocol is working.
 - Batched homes are meeting ENERGY STAR specifications.

Trends & Challenges

For Sponsors of Regional Programs:

- Almost all raters participating in the utility sponsored program submit home data at the last minute.
 - This makes it very difficult to evaluate homes and implement timely corrective actions.
- Often times the REM/Rate files used to generate the final home energy rating does not match the data submitted the Program.
 - Important to streamline data collection process to reduce potential for data reporting errors.
 - Look for ways to encourage and reward frequent transfer of data and reporting by raters to the program.
 - Good news is raters use worst-case scenarios which results in conservative reporting.

Conclusions

The Systems-Based QAQC Process Has Been Effective In:

- Validating information reported by HERS Raters;
- Verifying peak energy demand and savings;
- Strengthening the HERS rating industry;
 - Improving the quality of home energy ratings;
 - Influencing positive changes in the national RESNET guidelines;
 - Establishing industry standards and best practices; and
- Improving the design and implementation of the Oncor ENERGY STAR Homes Program.

Thank You.


Questions?

Advanced ENERGY


THE BUSINESS CASE FOR HIGHER PERFORMING HOMES

A Report By Advanced Energy

The business case for higher performing homes means designing products that people actually want to buy, and that builders actually make a profit on—instead of persuading them to do things they'd rather not do...




For Homeowners (in 2004)...




"We didn't pay any attention to energy when we bought our house. We were just thinking about the size of the house, the number of bedrooms..."

"A lot of people buying my homes today are driving Hummers. Why in the world would they care about saving energy?"




For Builders...



"The main question is, am I going to get pay back out of this?"

"If you really have to sell it to the customer, then what's the advantage?"



For The Power Company...



*"Promote it with a rebate.
If it's gonna cost \$3,000,
I'd like someone to share
the hit."*



The Business Case Requires...

- ❖ Homeowners have to prefer a high performance house, even at a higher price
- ❖ Builders must become convinced they can earn a higher ROI with a high performance house
- ❖ Power companies must see a benefit



Our Agenda...

Home Energy Efficiency Study (EPA)

Have energy efficiency programs in new home construction resulted in a reduction of energy consumption (HVAC)?

Homeowner Satisfaction Survey (DOE)

Are owners of program homes more satisfied than owners of baseline homes?

The Business Case



EPA Methodology

Lots of variables, lots of houses [7141]

House classifications

- Baseline [B]
- Energy Star [ES]
- Guarantee performance [GP]

Final data set [gas, no swimming pool]

House characterization [vintage, sq. ft., window type, HVAC type, orientation, pool/no pool, fuel]

Monthly utility data [1998-2004]



Phoenix, Arizona - Home Energy Efficiency Study (EPA)



2004 NEW HOME MARKET	SINGLE FAMILY PERMITS ISSUED
Phoenix, AZ	57,360
Atlanta, GA	57,316
Dallas-Fort Worth, TX	45,908
Houston, TX	45,103
Orange County, CA	43,142
Chicago, IL	35,810
Las Vegas, NV	31,741
Orlando, FL	27,493
Washington, DC	26,940
Miami, FL	24,653
Charlotte, NC	17,722
Raleigh, NC	12,083
The Triad	8,154
Wilmington, NC	6,861
Asheville, NC	3,138

Source: U.S. Census Bureau, "New Privately Owned Housing Units Authorized in 2004 (Unadjusted) by Metropolitan Area"



Baseline Homes...

Baseline Homes are homes built to local code. Baseline homes built after 1998 were anecdotally considered to be 20% more efficient than homes built to 1993 Model Energy Code (MEC) standards in Phoenix.



Energy Star® Homes...



Energy Star® Homes meet or exceed the energy efficiency standards set by the EPA's Energy Star program. By definition, Energy Star qualified homes are independently verified to be at least 30% more energy efficient than the same home built to 1993 MEC, or 15% more efficient than the state code, whichever is the strictest.



Guaranteed Performance Homes...

Guaranteed Performance Homes are designed to go beyond the Energy Star program by using advanced energy efficient materials and construction techniques to lower residential energy use even further. The standards and testing protocols are more stringent than for Energy Star.



What "extra" went into an EFL home...

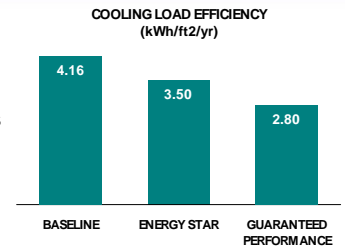


- ❖ Construction Techniques
- ❖ Training
- ❖ Guarantees
- ❖ Feedback Loops



Improved Cooling Efficiency

For cooling, GP homes are 20% more efficient than Energy Star homes and 33% more efficient than baseline homes...

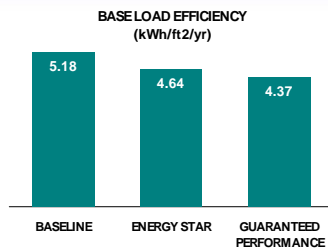


Note: Data are for a home heated with gas and no swimming pool.



Improved Base Load Efficiency

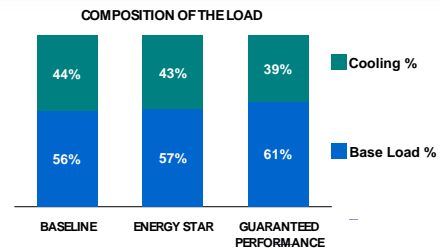
For base loads, GP homes are 6% more efficient than Energy Star homes and 16% more efficient than baseline homes...



Note: Data are for a home heated with gas and no swimming pool.



Base Loads Are Critical

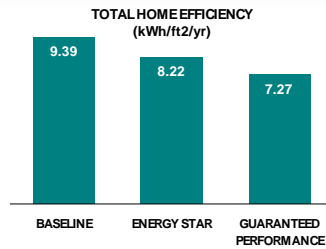


Note: Data are for a home heated with gas and no swimming pool.



Improved Overall Efficiency

Overall, GP homes are 12% more efficient than Energy Star homes and 23% more efficient than baseline homes...



Note: Data are for a home heated with gas and no swimming pool.



Conclusions...

- ❖ Energy Star and Guaranteed Performance homes are more efficient
- ❖ Base loads amount to almost 60% of total energy consumed



The DOE Homeowner Satisfaction Survey

Are owners of program homes more satisfied than owners of baseline homes?



Methodology

Phoenix market [same sample as EPA study]

House categories [B, ES, GP]

Qualitative research

- Homeowners, builders, contractors – what drives satisfaction?
- Focus groups

Quantitative research

- Survey sent to 7,000 homeowners [10% response]
- Limitations



Over 700 Phoenix homeowners were surveyed...

DEMOGRAPHIC	BASELINE HOMES	ES HOMES	GP HOMES	TOTAL SURVEY
Average household size	2.7	2.9	2.5	2.7
Percent of household occupants under the age of 18	28%	32%	20%	27%
Percent of homes with household incomes over \$50,000	60%	67%	77%	68%
Percent of respondents under the age of 45	47%	58%	33%	46%
Percent of homes over 1,600 square feet	53%	60%	86%	68%



It's Not Just About Efficiency



Performance isn't just about energy efficiency. It's also about comfort, reliability and healthiness...

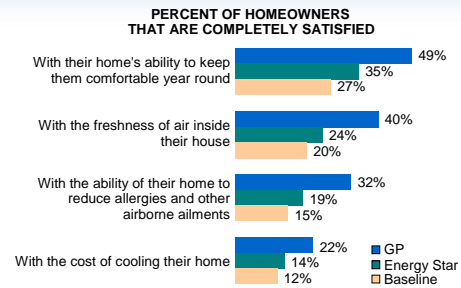


It's Not Just About Efficiency

PRIMARY NEED	DRIVERS OF SATISFACTION
COMFORT	The ability of your home to keep you comfortable year round
	Evenness of temperatures from room to room in the summer and winter months
	The ability of your air conditioner to cool your home down quickly
	The ability of your heating system to warm your home up quickly
ENERGY EFFICIENCY	The ability to regulate temperatures during all seasons
	The freshness of the air inside your home during those times you keep doors and windows shut
RELIABLE PERFORMANCE	The cost of cooling your home
	The cost of heating your home in winter
HEALTHINESS	The reliability of your heating & cooling system (i.e., repair frequency)
	The noise of your heating & cooling system when running
	The ability of your heating & cooling systems to reduce allergies and other airborne ailments in your home

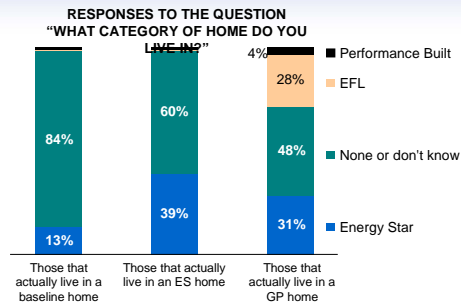


Homeowners Are More Satisfied...



Lack Of Awareness

They're often not even aware of the type of house they own...



Energy Management

Behavior	% Of Baseline Homeowners	% Of ES Homeowners	% Of GP Homeowners
I don't adjust the thermostat; I leave it set on a fixed temperature even if the house is empty for the day	33%	43%	52%
I adjust the thermostat by a few degrees, and then return it to the desired setting when I return home.	62%	54%	46%
I turn the thermostat off until I return later in the day	5%	3%	3%



Conclusions...

- ❖ Consumer satisfaction rests on comfort, reliability and perceived healthiness...as well as efficiency
- ❖ Energy Star and Guaranteed Performance homeowners are more satisfied with comfort, energy cost and healthiness than baseline homeowners
- ❖ Homeowners are still largely unaware of the various energy programs
- ❖ Homeowners in higher performing homes manage their thermostats differently



Requirements...

- ❖ Homeowners have to prefer a high performance house, even at a higher price,
- ❖ Builders must become convinced they can earn a higher ROI with a high performance house, and
- ❖ Power companies must see a benefit.



A Major Consumer Marketing Opportunity

The lesson from the Phoenix projects is that there is latent consumer demand for the idea of higher performing homes. However, the value proposition should **not** be based solely on energy-efficiency; it should be based on comfort, perceived healthiness, reliability and economy...



An Opportunity For Brand Leadership

There is an opportunity for utilities, builders, and equipment manufacturers to build brand awareness and identity. Leadership is up for grabs on several fronts—product leadership, brand leadership, and even “thought leadership,” where an enterprise becomes indelibly associated with the idea of higher performing “robust” homes.



The Case For Utility Benefits



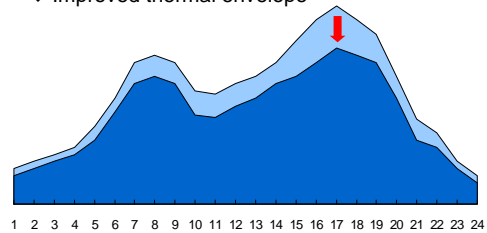
- ❖ Homeowner satisfaction
- ❖ Stronger partnerships with builders
- ❖ More rational use of energy in the housing sector



The Case For Utility Benefits

Our hypothesis is that peak demand is reduced in a higher performing home...

- ❖ Downsized HVAC systems
- ❖ Improved thermal envelope



Think About
Your Future

THINKENERGYSTAR.COM



**Nevada ENERGY STAR® Partners
Marketing Campaign
2001-2007**

Think About
Your Future

THINKENERGYSTAR.COM



Our Beginnings

“The Breakfast Club” was formed in 2001, partnering with EPA to launch the very first Nevada ENERGY STAR campaign.

The diverse steering committee included: utility companies, HERS providers, three builders and a new home magazine owner/representative



Think About
Your Future

THINKENERGYSTAR.COM



Mission

The steering committee's mission was to develop a marketing campaign that increased consumer awareness of the ENERGY STAR brand and promoted the building of ENERGY STAR homes to the local homebuilders.



Think About
Your Future

THINKENERGYSTAR.COM



Steps in Building a Successful Campaign

- **Steering Committee** designs the strategic approach each year based on budget and needs of builders & the market. Sets the timeframe of the campaign.
- **Steering Committee** corresponds with builders and supporting businesses, promoting the partnership 2-3 months in advance of campaign launch. This correspondence helps the committee determine the interest for the annual campaign's membership drive.



Think About Your Future

THINKENERGYSTAR.COM

Primary Campaign Outline

- **Kick-off Meeting:**
 - Power Point presentation of Nevada ENERGY STAR Partners' planned campaign
 - EPA key speaker
 - Call for commitment
 - Call for committee members
 - Applications are distributed.
 - Q & A

Think About Your Future

THINKENERGYSTAR.COM

Advertising and promotion

Geared to drive consumer to www.thinkenergystar.com

- **Advertising Campaign** promoting brand, partners & designed to drive traffic to ENERGY STAR builders
- **Public Relations Campaign** promoting ENERGY STAR brand, promoting partners & educating consumers

Think About Your Future

THINKENERGYSTAR.COM

- **Website Campaign** education; promote builders with links; link to www.energystar.gov; post events
- **Radio & Television Campaign** branding, education and drive to website
- **Signage Campaign** billboards drive to website; on-site bootleg signs at subdivisions to promote the ENERGY STAR brand

Think About Your Future

THINKENERGYSTAR.COM

- **Events** – participate in local outreach events (e.g. Earth Day Faire, builder trade shows), schools (e.g. art contest), home showcases; passport promotion; retail coupon book promotions for ENERGY STAR products
- **Training Seminars** sponsor well-known experts to train builders & tradespeople on proper implementation of energy efficient building practices; train subdivision sales agents on selling techniques for high performance homes

Think About Your Future

THINKENERGYSTAR.COM

Nevada ENERGY STAR Partners' Accomplishments

2001

- 7 Partners
- 5 Builders
- 2 Business Partners

2002

- 32 Partners
- 17 Builders
- 14 Business Partners
- 20% Penetration Rate of ENERGY STAR homes
- 17% ENERGY STAR consumer awareness



2003

- 34 Partners
- 19 Builders
- 15 Business Partners
- 46.4% Penetration Rate of ENERGY STAR homes
- 76% ENERGY STAR consumer awareness

2004

- 39 Partners
- 20 Builders
- 19 Business Partners
- 58.7% Penetration Rate of ENERGY STAR homes
- 87% ENERGY STAR consumer awareness

2005

- 42 Partners
- 23 Builders
- 19 Business Partners
- 60% Penetration Rate of ENERGY STAR homes
- 88.9% ENERGY STAR consumer awareness



Think About Your Future

THINKENERGYSTAR.COM

2006

- 55 Partners
- 28 Builders
- 27 Business Partners
- 67% Penetration Rate of ENERGY STAR homes
- 90% ENERGY STAR consumer awareness

Awards

Nevada ENERGY STAR Partners received the EPA's National Awards:

- Partner of the Year: 2003
- Sustained excellence: 2004, 2005, 2006, 2007



Think About Your Future

THINKENERGYSTAR.COM

The framework of the Nevada ENERGY STAR Partnership...

The formula for SUCCESS!



Nevada ENERGY STAR Campaign Committees & Responsibilities

Steering Committee

Consists of all committee chairs and honorary committee members
Role is strategic planning for the annual campaign
Chairperson is responsible for partner correspondence, reporting & organization of campaign
Chairperson is responsible for correspondence between all committee members
Meets bi weekly 3 months prior to campaign roll out, monthly thereafter
Update of all committees' progress by each chairperson at meetings



Think About Your Future

THINKENERGYSTAR.COM



Advertising Committee

Develops and places all media advertising

Las Vegas Review Journal 13 week campaign,
Saturday/Sunday 26 ads
Possible special section, RJ as media sponsor

Las Vegas New Homes Guide
Full page builder ad (June-August)
Full page partner ad (June-August)
Pull out insert/map (July)



Think About Your Future

THINKENERGYSTAR.COM



PR Committee

Develops and oversees all PR stories and activities

Las Vegas Review Journal 13 weeks, Saturdays/Sundays = 26 stories
Las Vegas New Homes Guide
New Homes Guide Platinum Business Partners Advertorial (July)
ENERGY STAR Month – declarations from all major municipalities in southern Nevada



Think About Your Future

THINKENERGYSTAR.COM



Website Committee

Updates www.thinkenergystar.com website with new consumer educational information

Maintains the website's builder links, events, public relation articles, partner support



Think About Your Future

THINKENERGYSTAR.COM

Technical/Education Committee

- **Training seminars** specific to building industry (including builder's construction, purchasing, design departments,) trade companies & buildin officials.
Houses that Work by Gord Cooke through EEBA
New ENERGY STAR guidelines including Thermal Bypass Checklist
- **Sales & Marketing Training** to all builders' and trade companies sales & marketing teams.
Selling the High Performance Home by Gord Cooke through EEBA

ENERGY STAR Qualified Homes Thermal Bypass Checklist **Manual** produced by Nevada ENERGY STAR Partners

Note: Training Seminars – *Exclusive to Nevada*
ENERGY STAR Partners



Think About Your Future

THINKENERGYSTAR.COM

How do you initiate & drive a partnership within your market?

It's all about the people behind the campaign. Seek out strong & passionate marketing, networking, market and utility experts to drive the campaign.

Builders, trade contractors, HERS providers & raters, utilities, bank & mortgage companies, PR firms, advertising firms, energy efficient product/material suppliers, state & local government entities & builder associations



Think About Your Future

THINKENERGYSTAR.COM

2007 Campaign Goals

Designed to provide a *sustained local presence* for ENERGY STAR and help *build consumer awareness* of the *benefits* of ENERGY STAR qualified homes and the *builders* who offer them

- **Generate and drive traffic** to builders ENERGY STAR communities
- **Educate and train** construction, sales and marketing teams about the construction practices as well as features and benefits of ENERGY STAR qualified homes
- **Globally position Nevada** as the leading ENERGY STAR state as well as the *forerunner* in energy efficiency and environmentally friendly living



Think About Your Future

THINKENERGYSTAR.COM

Salute to our 2006 Nevada ENERGY STAR® Builder Partners

Amstar Homes
American Premiere
Astoria Homes
Avante Homes
Celebrate Homes
Centex Homes dba
Real Homes
Concordia Homes

Desert Wind
Homes
Distinctive Homes
Engle Homes
KB Home
Lennar EI
Meritage Homes
Pardee Homes



Think About
Your Future



THINKENERGYSTAR.COM

Salute to our 2006 Nevada ENERGY STAR® Builder Partners

- | | |
|-------------------------------|-------------------------------|
| Pulte Homes | Sopra Homes |
| Rhodes Homes | Standard Pacific Homes |
| Rimini Home | Storybook Homes |
| Royal Const./Spinnaker | Toll Brothers |
| Ryland Homes | Warmington Homes NV |
| Signature Homes | Westmark Homes |
| Southwest Homes | Woodside Homes |



Think About
Your Future



THINKENERGYSTAR.COM

Salute to our Nevada ENERGY STAR® 2006 Business Partners

Platinum Partners

- | | |
|-----------------------|---|
| Builders Choice | Environments for Living |
| Countrywide Home Loan | Howard Hughes Corp/Summerlin Nevada Power |
| Dupont/Tyvek | |
| Energy Inspectors | |

Gold Partners

- Milgard Window
- Sierra Air
- Southwest Gas



Think About
Your Future



THINKENERGYSTAR.COM

Silver Partners

- | | |
|---------------------------|--------------------|
| Consol – Comfort Wise | Rocky Top |
| Energy Conservation Group | Move.com |
| F. Rodgers Insulation | Select Build |
| K&K Framers/KB Framers | Wholesale Lighting |
| Redrock Insulation | |

Honorary Partners

- Faiss Foley Warren PR
- Lamar
- MSI
- PIE Design & Marketing
- Southern NV Home Builders Assoc.
- Southern NV New Homes Guide
- SCINC Marketing



Think About
Your Future



THINKENERGYSTAR.COM

Contact information for Nevada
Energy Star Partners @
www.thinkenergystar.com





 Pacific Gas and Electric Company

Evaluation Measurement & Verification (EM&V) of California Energy Star New Homes: Energy Savings Methodologies

Robert Kasman
Strategic Research & Evaluation
Customer Energy Efficiency
Pacific Gas & Electric Company
Tel: 415-973-4094
Email: rekl@pge.com


Energy Star for New Homes Utility Stakeholder
Meeting Atlanta, GA April 26-27, 2007


 1

 Pacific Gas and Electric Company

Presentation Highlights

- ◆ Purpose of evaluation
- ◆ Challenges of evaluation
- ◆ Prerequisites for effective impact evaluation
- ◆ General approach to evaluation
- ◆ Impact evaluation methodologies used, advantages and challenges (billing, metering, modeling)
- ◆ Select findings
- ◆ Conclusions


 2


 Pacific Gas and Electric Company

Overview of California 04-05 Energy Star Homes Evaluation Activities

Objective	On-site inspections	Billing Analysis	Metering Analysis	Modeling Analysis	Participant market actor surveys	Non-participant market actor surveys	RNC Baseline Study
Impact Evaluation	x	x	x	x	x	x	x
Process Evaluation	x				x	x	

- ◆ Market actors include builders, homeowners, utility staff, Home Energy Rater registry staff, and plan check consultants


 3

 Pacific Gas and Electric Company

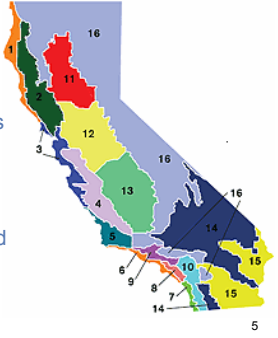
Background

- ◆ Statewide program PG&E, SCE, SDG&E, SCG
- ◆ 2004-05 evaluation performed by RLW Analytics, Inc.
- ◆ Energy Star Homes in CA means > 15% Title 24
- ◆ Evaluation background
 - CA Evaluation Framework (document)
 - CPUC defined and approved SOW, utilities managed evaluation
 - 04-05 Evaluation begun after program close in 2006
- ◆ Number homes/dwelling units

Utility	2004-05 Dwelling Units			Total
	Single Family	Multi-Family	High Rise	
PGE	12,309	2,758	269	15,336
SCE	13,297	2,791	504	16,592
SCG	1,191	6,322	602	8,115
SDGE	4,316	7,257	733	12,306
Total	31,113	19,128	2,108	52,349

 4

California Energy Star Homes Title 24 and 16 Climate Zones (CZ)



- ◆ Widely varying energy usage in each CZ
- ◆ Title 24 requirements vary by CZ
- ◆ Energy Star program requires HERS inspections
- ◆ Coastal = CZ 1-7
- ◆ Inland = CZ 8-16
- ◆ Single family units 86% inland
- ◆ Multi-family units 59% inland

5

Purpose & Goals of Evaluation

- ◆ To help ensure good decision making for energy program resources (\$)
- ◆ Estimate specific program effects, for example:
 - Program cost effectiveness?
 - Are savings “real”?
 - What are gross and net savings (impact evaluation)? **(Focus of this presentation)**
 - And many others
- ◆ Attempt to understand how program effects occurred to make recommendations for increased program effectiveness
- ◆ To fulfill requirements

6

Fundamental Challenge of Impact Evaluation

- ◆ Measuring energy use that *didn't happen*
- ◆ For Energy Star New Homes:
 - Estimating program effects of new Energy Star homes compared to non-participant homes
 - Determining appropriate participant classes for evaluation (e.g. by utility, climate zone, SF vs. MF, single story/multi-story, end-uses, energy types, others)
 - Estimating energy savings of even a single home is challenging!
- ◆ Evaluation is part science and part art

7

Program Timing

- ◆ Time to build-out projects typically (1-3 years)
- ◆ Participant accounting is critical
 - California program impacts are accrued when they are realized (built/installed, inspected, approved)
 - This can be years after the program application is completed for new construction
 - Building code changes can occur every few years
- ◆ Net result: ES homes evaluated in 2006 may be from program years '03, '04, '05, '06 and span more than one building code

8

Pacific Gas and Electric Company

Approach to Evaluation

◆ Sequential vs. Integrated Evaluation

```

    graph TD
      subgraph Sequential
        SD[Program Design] --> PI[Program Implementation]
        PI --> PE[Program Evaluation]
      end
      subgraph Integrated
        ID[Program Design] --> IPI[Program Implementation]
        IPI --> IPE[Program Evaluation]
        IPE --> ID
      end
  
```

◆ Evaluation results 2+ years after program cycle do not support timely decision making

9

Pacific Gas and Electric Company

Prerequisites for Effective Evaluation

- ◆ A well-conceived program theory and logic model
- ◆ Complete and accurate program tracking data

10

Pacific Gas and Electric Company

California Energy Star Homes '04-'05 Evaluation Activities

- ◆ Billing Analysis
- ◆ Metering Analysis
- ◆ Modeling Analysis

11


Pacific Gas and Electric Company

Billing Analysis


- ◆ Approach and advantages
 - Examine the billed energy use of the participants and non-participants
 - Uses existing metered consumption data
 - Possible to have very large sample sizes (both P and NP)
- ◆ Challenges
 - Data acquisition - Multiple fuel types provided by multiple sources
 - Data management
 - De-aggregating billing data (example: cooling)
 - Large variability of household usage (variance can swamp differences)
 - Controlling for differences in participants vs. non-participants (e.g. floor area, occupancy, income, stories)
 - Behavior - how do participant intentions and behavior affect energy savings? E.g., snap-back, energy efficiency attitudes, etc.
- ◆ Responses
 - Use regression analysis to statistically control for other factors affecting energy consumption
 - Carefully select large samples of participants and non-participants
 - Careful data QA/QC

12

End-use Metering Analysis




- ◆ Approach and advantages
 - Directly meter energy usage on specific end-uses of interest (space heating, cooling, and water heating)
 - Focuses on the affected measures and end-uses to reduce variation and bias from other factors
 - Examine the installed measures in a sample of the participants and use the engineering model and site-specific data to the savings at each site.
- ◆ Challenges
 - Data acquisition – Cost, time, losses, access to homes
 - Variance of usage still very large
 - Sample size(s) – how many participants (and NP's) for meaningful results?
 - Sample bias – are the samples representative?
 - Measurement plan – what are the key factors affecting use or savings? Behavior – how do participant intentions and behavior affect energy savings? E.g., snap-back, energy efficiency attitudes, etc.




13

Modeling Analysis




- ◆ Approach and Advantages
 - Use energy modeling to simulate usage and savings
 - Takes advantage of models created for code compliance
 - Can be performed on entire population of participants
 - Can compare
- ◆ Challenges
 - Compliance software (models) not intended to estimate energy consumption
 - Data acquisition -- Requires obtaining/modeling representative non-participant homes (Requires a baseline study)
 - Trickier for multifamily housing
 - Homes often not built exactly as modeled
 - Program compliance is also through modeling, so not an independent verification




14

Select Results (1)




- ◆ Billing, metering, and modeling methodologies showed some conflicting results
- ◆ Metering analysis showed less overall energy usage than models predicted
- ◆ Billing analysis sometimes showed greater energy usage in Energy Star homes
- ◆ Metering and billing analyses showed large variance in usage (as expected)



15

Select Results (2)




- ◆ Orientation of homes can have a significant impact on modeled energy savings
- ◆ Production homes usually modeled N, E, S, W

Climate Region	End Use	Single Family	Multifamily
		B-Ratios for Orientation Adjustments	B-Ratios for Orientation Adjustments
Coastal	Cooling	1.46	1.35
	Heating	1.24	1.14
	Water Heating	1.00	1.00
Inland	Cooling	1.25	1.27
	Heating	1.17	1.07
	Water Heating	1.00	1.00

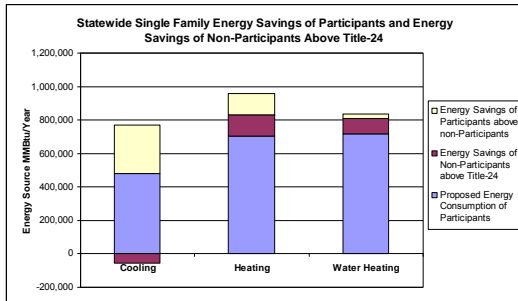
Ratios of energy savings from average orientation to worst orientation

- ◆ Example: Inland cooling modeled energy savings averaged over N, E, S, W is 25% greater than the worst orientation's energy savings



16

Select Results (3): Single Family Free Ridership Varies by End Use



Total height of bar represents Title 24 Standard design energy use

Conclusions

- ◆ Integrated approach to evaluation preferred over sequential
- ◆ Single family impact analysis is complex, multifamily even harder
- ◆ Critical for program (and evaluation) to define "savings" as inclusive or exclusive of occupant behavior (take-back)
- ◆ Large variance in individual energy usage challenging particularly for metering methodologies
- ◆ Evaluators must carefully consider participant classes for evaluation (results may vary by end-use, fuel type, other classes)
- ◆ Modeling software appears to be a poor predictor of consumption, but may be good at estimating average savings
- ◆ Home orientation can have a significant impact on energy savings – large opportunity for savings in simple passive solar design
- ◆ The cost of engineering approaches depends on the accuracy of the tracking estimates of savings
- ◆ Final report available at www.calmac.org in May

First Annual ENERGY STAR® Residential Program Sponsor and Utility Partner Meeting Feedback

Following the First Annual ENERGY STAR Residential Program Sponsor and Utility Partner Meeting in April 2007, attendees were asked to provide feedback on topics discussed during brainstorming sessions in the areas of builder barriers, program design, marketing and implementation, and program evaluation. 31 stakeholders provided input and identified what they believed were the highest-priority items in each category, which are noted below in the form of a tally and corresponding percentage.

PART 1: BUILDER BARRIERS

Tally	Percentage	
25	81%	Lack of education among builders, subcontractors, builder sales staff, and homebuyers
21	68%	Overall cost to participate in the ENERGY STAR program
18	58%	Perception that there is no consumer demand for ENERGY STAR
16	52%	Challenge of selling the value of the invisible
16	52%	Complexity of the qualification process and added "hoops" to obtaining return on investment (e.g., money, time)
16	52%	Turnover of subcontractors
15	48%	Resistance to change in the homebuilding industry
14	45%	Builder's perception of the level of effort required to build efficiently
13	42%	Difficulty in securing an "internal champion" and internal coordination to keep the builder on-board
12	39%	Builder's perception that they already build efficiently
12	39%	Lack of builder awareness of the bigger picture (e.g., energy efficiency, the environment)
12	39%	First-cost barrier in soft market conditions
11	35%	Perception that business is considered "good enough" without ENERGY STAR
9	29%	Lack of technical staff infrastructure, including subcontractors
9	29%	Challenge of selling non-energy benefits (i.e., perception that ENERGY STAR is just an energy program, lacking other key aspects, such as indoor air quality (IAQ), durability, etc.)
8	26%	Lack of quality subcontractors in the market
8	26%	Risk to participate
8	26%	Administering and understanding new program requirements, such as the Thermal Bypass Checklist
8	26%	Changing market conditions (e.g., industry slowdown)
8	26%	The "chicken-and-egg" dilemma, where a HERS infrastructure is required to establish a strong builder base
7	23%	Lack of appraisers who recognize the value of ENERGY STAR
6	19%	Existence of competing programs (e.g., green programs)
6	19%	Lack of a commitment to quality in new construction
5	16%	Difficulty to ensure tight ducts
4	13%	Regulators not recognizing the value of marketing
4	13%	Value of ENERGY STAR relative to the value of "green"
4	13%	Design challenges exist for some housing types
4	13%	Lack of support from state officials (e.g., economic, development, code)
4	13%	Lack of tangible involvement by financial institutions
3	10%	Fear of the unknown

3	10%	Complexity of qualifying multi-family dwellings, particularly in markets where they are common
3	10%	Difficulty to ensure proper HVAC sizing and maintenance
3	10%	Integrated risk management in builder operations
2	6%	Navigating recent changes within RESNET (e.g., HERS score to HERS index)
1	3%	Increase in high-rise multi-family dwellings
1	3%	Building performance specification infrastructure

PART 2: REGIONAL FACTORS MOST IMPORTANT TO CONSIDER IN PROGRAM DESIGN

Tally	Percentage	
22	71%	Maturity of the HERS infrastructure in a market.
22	71%	Overall profile of builders in a market including demographics and size (e.g., production, custom)
19	61%	The rigor of current state and/or local building code
17	55%	Existing awareness of the ENERGY STAR for New Homes program
14	45%	Cost-effectiveness to implement ENERGY STAR from the sponsor's perspective
13	42%	Size of the market
12	39%	Building practices of subcontractors in the market
12	39%	Existing awareness of residential energy efficiency
11	35%	Presence of other programs in the market (e.g., green programs)
11	35%	Prevalent housing type (e.g., multi-family, single-family)
10	32%	State of the economy and strength of the housing market
8	26%	Technical maturity of the building industry
8	26%	Existence of other collaborative efforts (e.g., the activities of current players in the energy-efficiency industry)
7	23%	State regulations regarding utility implementation
7	23%	Availability of funds to design and implement a program
7	23%	Program growth rate, which can help tremendously with consumer buy-in
5	16%	Presence of other utility programs that overlap
4	13%	Utility rates in the region
4	13%	Cost recovery factors when determining the level of investment in a program (e.g., performance bonuses as opposed to strict revenue requirements)
4	13%	Availability of other state incentives
3	10%	Type and number of climate zones in the region, which can affect design

PART 3: PROGRAM DESIGN LESSONS LEARNED

Tally	Percentage	
23	74%	Since no cookie-cutter approach exists, the approach must be modified and adapted according to individual markets
23	74%	Understand the market before designing the program
23	74%	Develop relationships with builders and keep in touch
23	74%	Build your ability to leverage other stakeholders, including manufacturers and suppliers, for training
19	61%	Communicate with partners regularly
19	61%	Facilitate a strong, established HERS infrastructure
16	52%	Understand that markets are different, even within a region or state
15	48%	Consider the value of engaging with allies, such as home builders associations (HBAs), but do not allow this involvement to become a hindrance
14	45%	Establish your educational training platform prior to program launch
12	39%	Allow market research to drive goals and design
11	35%	Manage change effectively
11	35%	Understand that a direct correlation does not exist with regard to the amount of incentives offered and market growth
11	35%	Focus on helping your serious partners be successful (e.g., first adopters of the program)
10	32%	Consider a diversity of incentives
10	32%	Design your program to be flexible, as consumers respond differently and can be difficult to reach
10	32%	Do a good job of telling good news (e.g., avoid delivering only bad news)
9	29%	Do not overlook the affordable housing market to help jump-start a program
9	29%	Changing behavior is difficult. Therefore, consider coupling ENERGY STAR with other existing energy-efficiency programs.
8	26%	Consider your long-term plan; avoid relying on being too reactive
7	23%	Realize that single-year programs are more challenging than multi-year programs
5	16%	Embrace change, even if it's uncomfortable
5	16%	Having an infrared camera can encourage better quality construction
4	13%	Sell change as substantive value
4	13%	Realize it is challenging to sell the value of ENERGY STAR to home energy raters in a small housing market (i.e., a market with low housing starts)
3	10%	Establish goals. Help partners achieve goals and have your own clear energy goal to reduce peak demand, which is helpful when code changes
1	3%	Do not rely on the home energy rater to determine the market for you
1	3%	Only address customers you can serve (e.g., only apply incentives to specific geographic areas)
1	3%	Comparing energy efficiency in homes is challenging as homes vary on multiple levels. It is best to compare homes with similar size, plug load and construction type

PART 4: PROGRAM DESIGN BEST PRACTICES

Tally	Percentage	
21	68%	Understand the local housing market
18	58%	Integrate allies (e.g., local HBAs)
17	55%	Develop a strong HERS infrastructure
15	48%	Leverage partners for training
15	48%	Provide advance notification (e.g., six to 12 months) before making changes
15	48%	Ensure tight QA/QC
14	45%	Provide technical support to partners
13	42%	Offer sales training to builder's staff
13	42%	Provide reasons for builders to participate
12	39%	Consider all of your options for incentives; the high-cost option is not necessarily the best option
10	32%	Integrate builder networking into your program (e.g., quarterly round table discussions)
10	32%	Incorporate a tracking system/database to ensure you are meeting your goals
10	32%	Provide incentives for builders to educate and market to consumers to increase consumer awareness
10	32%	Incorporate a homeowners manual and/or customer satisfaction survey
10	32%	Incorporate partner recognition (e.g., awards)
9	29%	Use HERS raters as sales force to deliver the program
9	29%	Provide training seminars to HERS industry and other contractors so they can later train (e.g., train-the-trainer)
9	29%	Incorporate a continuous improvement feedback mechanism to obtain feedback from builders
8	26%	Understand the differences between large and small builders
8	26%	Provide HERS rater training
8	26%	Incorporate a performance improvement feedback loop to builders (e.g., trades, products, testing trends)
8	26%	Do not offer free ratings as an incentive; offer cash or marketing instead
7	23%	Develop consumer testimonials
7	23%	Invest in experts
7	23%	Plan for the long-term and avoid being too reactive
6	19%	Attempt to achieve a balance of ENERGY STAR homes to consumer demand (e.g., avoid creating customers when there is no supply, or creating supply when there are no customers)
5	16%	Tailor incentives based on actual home performance or program participation performance
5	16%	Monitor the HERS infrastructure
4	13%	Provide incentives in the form of vouchers (e.g., give \$500 vouchers to the builder for rating services)
2	6%	Perform technical research (e.g., understand how technology works or fails and whether you can afford it)
2	6%	Design an incentives program for cooperative advertising in a voluntary or mandatory manner

PART 5: MARKETING AND IMPLEMENTATION LESSONS LEARNED

Tally	Percentage	
24	77%	Network with all partners, including builders and raters
16	52%	Integrate local allies, including HBAs
15	48%	Understand each builder's production cycle and gain familiarity with their subcontractors.
13	42%	Coordinate with builder's advertising and promotional campaigns
12	39%	Incorporate continuous improvement
12	39%	Engage local Realtors
12	39%	Integrate builder feedback up front
10	32%	Do not allow the key marketing message to get too technical (but don't avoid technical information entirely)
9	29%	Focus your efforts on champion builders
8	26%	Allow for six-month notification before changes
8	26%	Respond to external forces as best as possible (e.g., Title 24, Thermal Bypass Checklist)
7	23%	Invest in experts who can facilitate trainings, etc.
6	19%	Create an assortment of marketing materials for builders to choose from and be able to customize (if you give a builder \$300 worth of brochures they don't select for themselves, they may just throw them out after an event)
6	19%	Link incentives to the builder sales person so they are motivated to sell
3	10%	Limit the quantity of materials you distribute (e.g., don't provide 400 copies of a brochure to a partner unless you're relatively certain they will use this volume and type)
1	3%	Provide a technical story for the "engineer-type" buyers to gain their interest

PART 6: MARKETING AND IMPLEMENTATION BEST PRACTICES

Tally	Percentage	
24	77%	Provide consumer education on the value of ENERGY STAR
20	65%	Incorporate builder sales training
19	61%	Recognize partners (e.g., awards)
16	52%	Sponsor events (e.g., ENERGY STAR Builder Summits, Seminars)
16	52%	Provide technical training and leverage funding from partners
15	48%	Provide performance feedback to builders (e.g., improvements or regression in duct tightness)
15	48%	Create a homeowner manual
13	42%	Develop consumer testimonials
13	42%	Integrate ENERGY STAR in regional MLS on-line real estate database
12	39%	Provide technical support
11	35%	Ensure tight QA/QC
11	35%	Incorporate tracking systems to evaluate efficacy
10	32%	Provide marketing and implementation training
10	32%	Provide guidance on how to use marketing tools
9	29%	Measure the impact of marketing efforts
9	29%	Emphasize public relations (e.g., local TV stations, events). Consider showcasing stories about specific builders and inform local media about events like builder summits and seminars
8	26%	Coordinate and co-market with green programs available in the market
8	26%	Provide incentives and allocate a portion of incentives to marketing
8	26%	Link with events like Parade of Homes
8	26%	Publish articles and ads in local HBA monthly newsletters to outreach to many players in the market including builders, remodelers, and suppliers
8	26%	Cross market with ENERGY STAR products (e.g., offer coupons)
7	23%	Create incentives in the form of branding materials for use in model homes to promote ENERGY STAR (e.g., using model homes to show and sell the attributes of ENERGY STAR)
5	16%	Administer training to HERS industry and other contractors so they can later train (e.g., train-the-trainer)
5	16%	Monitor complaint rates and types of complaints
5	16%	Formulate an advertising campaign
5	16%	Design a Web site for the regional program
5	16%	Participate in EPA's ENERGY STAR Outreach Campaign
4	13%	Collect customer surveys
4	13%	Utilize and encourage use of EPA's ENERGY STAR Marketing Toolkit
3	10%	Use utility bill inserts to provide information and updates to consumers
3	10%	Publish articles and ads in professional publications that reach the local building industry

PART 7: PROGRAM EVALUATION BEST PRACTICES

Tally	Percentage	
23	74%	Establish baseline energy costs
19	61%	Monitor how HERS raters are performing ratings
19	61%	Track program data (e.g., core metrics)
18	58%	Evaluate the success of marketing efforts
16	52%	Incorporate a corrective action plan
15	48%	Understand that there is no "silver bullet" to program evaluation, and that you must work within your limits
15	48%	Enforce QA/QC with builders
15	48%	Conduct customer satisfaction surveys
15	48%	Conduct on-going research
14	45%	Ensure that program implementation is integrated with program evaluation
14	45%	Ensure that program goals are aligned with program-evaluation activities
13	42%	Perform utility billing analysis to evaluate real savings
12	39%	Involve stakeholders in every step of the process to keep them informed
11	35%	If available, involve the regional HERS association (e.g., Texas HERO)
11	35%	Tailor the evaluation so that it is proportionate to participation
11	35%	Determine the return on investment for marketing
10	32%	Utilize builder surveys to assess builder's perspective
10	32%	Utilize homebuyer surveys of those who have purchased new homes in the market
8	26%	Tailor the evaluation so that it is proportionate to the participant profile (e.g., climate zones, housing types)
8	26%	Collaborate with other stakeholders
7	23%	Use outside, independent raters to perform the technical evaluation
6	19%	Leverage allies to perform the evaluation
6	19%	Consider integrated versus sequential evaluations
6	19%	Research evaluation options and other evaluations that have already been done to avoid reinventing the wheel
5	16%	Define your own acceptable "tolerance" for accuracy
5	16%	Place importance on conducting research, which can back up the technical underpinnings
4	13%	Consider all options for program evaluation
3	10%	Consider the sample size, as this is critical to billing analysis

Appendix C

WECC Homeowner Manual

WISCONSIN



Wisconsin ENERGY STAR® Homes

Owner's Manual



Congratulations.

Welcome to your new high performance Wisconsin ENERGY STAR Home. This home is unlike any other you've ever lived in. It's tighter. Smarter by design. Safer. And most importantly, this house has been evaluated, built and tested to help make it a comfortable, safe, durable and energy efficient home for you and your family.

Your new Wisconsin ENERGY STAR Home gives you the power to...

- **Control indoor air quality and comfort**
- **Manage moisture, odor and condensation**
- **Enhance combustion safety and building durability**
- **Lower your energy bills** saving you money by saving energy

Orchestrate the performance.

Your new Wisconsin ENERGY STAR Home was designed, built and tested for exceptional performance. Think of it as a symphony of individual systems that work together seamlessly. The walls and windows, heating, cooling and ventilation equipment, even the finishes and furnishings you choose all work together to affect you and your comfort.

Now you're in control.

Because of its special characteristics, your new Wisconsin ENERGY STAR Home requires some special care. After all, it can only work as well as you can maintain and respect its design and performance characteristics. This Owner's Manual will help you maintain and control its systems for optimal performance.

Read the following pages carefully and follow the recommended tips. If you have any questions about your home's performance or operation, notify your builder or contact Wisconsin ENERGY STAR Homes at **800.762.7077**.

Wisconsin ENERGY STAR Homes is a voluntary program of Focus on Energy. Its goals are to enhance your comfort and safety in a durable, energy efficient new home. Because of variations in individual care, operation and maintenance, Wisconsin ENERGY STAR Homes makes no warranties, expressed or implied, as to safety, comfort or durability of program homes. Your concerns and comments are always welcome. **800.762.7077** focusonenergy.com

Ventilation.

Every Wisconsin ENERGY STAR Home is built and tested to be “tight,” meaning that unwanted and uncontrolled air movement is virtually eliminated. This draft-free design and construction is one of the primary reasons why your home is more comfortable, durable and energy efficient. It also means you have to control the movement of air in your house through appropriate use of the mechanical ventilation equipment. Read the Certification Report in this folder for details on the ventilation equipment and tested capabilities specific to your home. For optimal comfort and indoor air quality, follow these tips:

Use a hygrometer.

A hygrometer is an electronic instrument that measures relative humidity (RH). For ideal comfort and indoor air quality, regularly monitor the relative humidity in your home with a hygrometer.

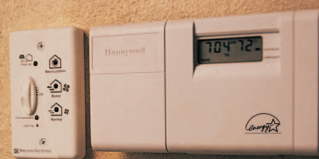
- **In winter**, operate your ventilation equipment to maintain an indoor RH between 30 percent and 40 percent at 70°F.
- **In late spring, summer and early fall**, higher indoor RH is normal and can be controlled using air conditioning and/or a dehumidifier.

Watch your windows.

Excessive or repeated condensation on your windows is a sign you may not be managing your house properly. Either there's too much moisture in the air or the window surface is too cool.

- **Reduce moisture** in the house by using your ventilation equipment.
- **Increase the indoor air temperature** until the condensation disappears.

In some new homes, a little condensation along the bottom edge of a window may appear during the first and sometimes second heating seasons. This is due to the additional moisture from drying concrete and other building components. Don't worry. Just wipe off the moisture to protect the window, wood and finish. Then



operate your ventilation equipment a little more frequently to eliminate the extra moisture. If the problem continues, notify your builder and contact Wisconsin ENERGY STAR Homes at 800.762.7077.

Use window coverings wisely.

Interior screens, blinds and other coverings block air flow to the window and significantly cool the glass surfaces. In winter, this increases the potential for condensation and associated problems. It's better to let air periodically circulate in front of the windows during the winter.

- **Remove interior screens** where and when possible.
- **Avoid leaving curtains or blinds drawn** for long periods of time.

Ventilate for people.

Most people benefit from fresh air. Operate your ventilation equipment periodically when your house is occupied. See your Certification Report for details.

Vent during household activities.

Cooking, bathing, cleaning and using the bathroom produces moisture and odors as well as other potential indoor air pollutants. Use your ventilation equipment located in those areas during and for about 20 minutes after each activity to help control the buildup of such contaminants.

Pre-set your thermostat.

Throughout the year, try to avoid extreme temperature settings and/or large swings in indoor air temperature. Doing so can help reduce your heating and cooling costs while maintaining consistent comfort and control over relative humidity and possible window condensation. Whether you have a programmable thermostat or a manual one...

- **Keep temperature changes to around 5°F** for at least an eight hour period.
- **Follow manufacturer's recommendations** for setting and use of the thermostat.
- **Avoid indoor air temperatures below 65°F or above 78°F** for long periods of time.



Combustion.

An important safety feature of your Wisconsin ENERGY STAR Home is the type of combustion equipment that has been installed, such as heating, water heating and/or any fireplaces. This equipment is specifically designed to prevent harmful combustion gases from possibly spilling back into the home, causing safety and indoor air quality concerns. For additional safety, durability and energy efficiency, follow these tips:

Read the manufacturers' instructions.

Be sure to follow manufacturers' recommendations for care and maintenance of all combustion equipment. Maintenance and inspections often include (but are not limited to):

- **Inspect** and change or clean furnace and range hood filters.
- **Clean** ranges and ovens periodically to avoid grease and food accumulation.
- **Schedule** professional inspections and tune-ups.
- **Inspect** air intake and exhaust ports. Keep them clear of any obstructions such as overgrown shrubbery, grass clippings, insects, bird nests and snow.

Keep wood burning fireplace doors closed.

Burning wood produces carbon monoxide (CO). To prevent this harmful gas from entering your home, keep the fireplace doors closed and latched during operation. This forces the fire to draw its air from outside the home (as designed), and expels combustion by-products up the chimney instead of into your home. Make sure the fireplace doors are tightly closed and latched before retiring for the night.

Use your range hood.

Cooking releases moisture and other unwanted indoor air pollutants, especially when you first turn on the range or oven and/or when you use your oven's "self-cleaning" mode. Use the ventilation equipment or fan during and for 20 minutes after cooking (with the range or oven), and for the entire duration of self-cleaning mode.

Carbon monoxide.

Carbon monoxide (CO) is a colorless, odorless, tasteless gas that has potentially harmful health effects. This gas can be produced by a variety of combustion equipment (gas water heater, range and/or oven, furnace, boiler and gas/wood fireplace), as well as vehicles. To protect you and your family, your Wisconsin ENERGY STAR Home was built with combustion equipment that meets specific combustion safety standards. Your home also features a CO detector on every floor that has a bedroom. Follow these tips to protect yourself further:

Listen to your monitor.

If the alarm on your CO monitor sounds, heed the manufacturer's recommended actions. Always follow the manufacturer's care and maintenance recommendations. Routine checks include (but are not limited to):

- **Check** the batteries.
- **Monitor** the continuous and/or peak level read out function (if applicable).
- **Replace** old units every three to five years, per manufacturer's recommendation.

Look for the ENERGY STAR label.

Because of the way it's built, your Wisconsin ENERGY STAR Home is already more energy efficient than homes built to Wisconsin's Uniform Dwelling Code. You can further enhance the energy efficiency of your home, save on energy costs and save resources by using ENERGY STAR qualified appliances, electronics and lighting. By using less energy, they not only save you money, but also reduce pollution and are better for the environment.



- **Get a list** of ENERGY STAR qualified equipment at energystar.gov.
- **Find a local retailer** that carries ENERGY STAR products at focusonenergy.com or 800.762.7077.

Focus on Energy is a public-private partnership offering energy information and services to energy utility customers throughout Wisconsin. The goals of this program are to encourage energy efficiency and use of renewable energy, enhance the environment and ensure the future supply of energy for Wisconsin. 800.762.7077 focusonenergy.com



Appendix D

2006 North Carolina ENERGY STAR Conference Agenda

AGENDA

DECEMBER 6, 2006
RALEIGH, NC

TUESDAY, DECEMBER 5TH

2:00-8:00	Early Check-In and Exhibit Set-Up
2:00-4:00	HERS Rater Recertification Test
5:00-8:00	Reception

WEDNESDAY, DECEMBER 6TH

7:30-8:30	Registration and Breakfast (SPONSORED BY PROGRESS ENERGY)
8:30-8:40	Welcome
8:40-9:00	ENERGY STAR Update - Sam Rashkin, EPA
9:00-9:45	Keynote Address - David Pressly, National Home Builders Association
9:45-10:30	Exhibits and Refreshments (SPONSORED BY PROGRESS ENERGY)

DIAGNOSTICS

If you can't find it, you can't fix it
Classroom One

GREEN BUILDING

It's not just the color of the paint
Classroom Two

MAKING IT WORK

Tips, tools, and tactics
Classroom Three

HVAC

Get your ducts in a row
Classroom Four

10:30-11:20	Moisture and Mold Mitigation <i>Francis Conlin, mSolve</i>	NC HealthyBuilt Homes Update <i>Tommy Cleveland, NC Solar Center</i>	ENERGY STAR Homes & Tax Credit "The Basics" <i>Scott Suddreth, Southface - NC</i>	ENERGY STAR HVAC Requirements <i>Steve Baden, RESNET</i>
11:30-12:20	IR for Energy Applications <i>Bret Monroe, Monroe Infrared</i>	ENERGY STAR Indoor Air Package <i>Sam Rashkin, EPA</i>	ENERGY STAR Software <i>Dave Roberts, Architectural Energy Corporation</i>	HVAC Sizing & Design <i>Jeff Tiller, Appalachian State University</i>
12:30-1:30	LUNCH			
1:30-2:20	ENERGY STAR Insulation Inspection <i>Steve Baden, RESNET</i>	Green Materials & Site Concerns <i>Joseph Crocker, ASU Energy Center</i>	Selling ENERGY STAR Homes <i>Keith Aldridge, Advanced Energy</i>	Innovative HVAC Strategies <i>Anthony Stamatopoulos, Ibacos</i>
2:30-3:30	EXHIBITS AND REFRESHMENTS (SPONSORED BY DUKE ENERGY)			
3:30-4:20	ENERGY STAR Thermal Bypass Checklist <i>Sam Rashkin, EPA</i>	Sealed Crawlspace & Attics <i>Shaun Hassell, Advanced Energy</i>	Home Performance with ENERGY STAR <i>Patricia Plympton, DOE/NREL</i>	Troubleshooting HVAC Problems <i>Mike Lyons, Honeywell</i>

2006 North Carolina ENERGY STAR Conference



AGENDA

A-103