

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



Table of Contents

Acknowledgements	5
Introduction	7
Using this Guide	9
Background	11
Builder Barriers to Energy-Efficient Construction	15
Module 1: Program Design	17
1.1. Introduction	17
1.2. Lessons Learned	17
1.3. Program Design Best Practices	21
1.4. Success Stories	22
New York State Energy Research and Development Authority (NYSERDA)	22
Oncor Electric Delivery – Dallas, Texas	23
Wisconsin Energy Conservation Corporation (WECC)	24
Module 2: Marketing and Implementation	25
2.1. Introduction	25
2.2. Lessons Learned	25
2.3. Marketing and Implementation Best Practices	27
2.4. Success Stories	29
CenterPoint Energy – Houston, Texas	29
Northwest Energy Efficiency Alliance (NEEA) and Energy Trust of Oregon	30
Appalachian State University (ASU) Energy Center – North Carolina	31
Rocky Mountain Power – Salt Lake City, Utah	32
Module 3: Program Evaluation	33
3.1. Introduction	33
3.2. Program Evaluation Lessons Learned	33
3.3. Program Evaluation Best Practices	34
3.4. Success Stories	34
Nevada ENERGY STAR Partners – Las Vegas, Nevada	34
California Independently-Owned Utilities	36
Oncor Electric Delivery – Dallas, Texas	37
Advanced Energy Corporation (AEC) – Phoenix Field Research Study	38
References and Sources	39
Appendices	41
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	

Acknowledgements

The ENERGY STAR for New Homes Sponsor and Utility Partner Guide would not be possible without the input of EPA's partners in the industry. This group includes the ENERGY STAR for New Homes sponsor partners and stakeholders listed below. These individuals contributed their time and expertise at the First Annual ENERGY STAR Residential Program Sponsor and Utility Partner Meeting in April 2007, which was invaluable to the creation of this Guide.

Colby Swanson, Advanced Energy
Kristi Jeffcoats, Advanced Energy
Laurel Elam, Appalachian State University
Cheryl Bowman, CenterPoint
Harold Crowder, Dominion Power
John Shuler, Duke Energy
Blake Howell, Ecos Consulting
Dave Backen, Ecos Consulting
Kendall Youngblood, Energy Trust of Oregon, Inc.
Holly Duquette, Florida Power & Light
Dean Harless, Georgia Power
Ted Jones, Georgia Power
Tony Donald, Georgia Power
Jerry Lyle, Home Energy Concepts
Brian Smith, ICF International
Shelley Martin, Idaho Power
Amy Bryan, Jackson EMC
Lisa Hollingsworth, Jackson EMC
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Introduction

ENERGY STAR is the government-back symbol for energy efficiency. The mark identifies new homes, buildings, and more than 50 types of consumer products that are energy efficient and offer the features, quality, and performance that today's consumers expect.

Homes that earn the ENERGY STAR meet strict guidelines for energy efficiency set by the US Environmental Protection Agency (EPA). ENERGY STAR qualified homes are at least 15-percent more energy efficient than homes built to the 2004 International Residential Code (IRC) and include additional energy-saving features that typically make them 20 to 30-percent more efficient than standard homes. Qualified homes can include a variety of energy-efficient features, such as effective insulation, high performance windows, tight construction and ducts, efficient heating and cooling equipment, and ENERGY STAR qualified lighting and appliances.

Through ENERGY STAR, builders and other home industry professionals can differentiate themselves in the market, as well as increase revenue, enhance customer satisfaction, and gain national recognition as industry and environmental leaders. ENERGY STAR and its partners — builders, home energy raters, rating providers, utilities, state and regional sponsors, and lenders — work together to promote the benefits and increase sales of energy-efficient homes.

The ENERGY STAR for Homes program was initiated in 1996 and has experienced exponential growth. By the end of 2006, over 3,500 homebuilder partners were active in the program and nearly 750,000 qualified homes had been built. Nearly 12 percent of all new housing starts in 2006 were ENERGY STAR qualified and, in many areas, ENERGY STAR qualified homes represented 20 percent or more of local home starts.

In concert with EPA's efforts to promote and administer ENERGY STAR for New Homes nationally, ENERGY STAR also is implemented on a regional and local level by sponsor partners, including utilities, state energy offices, or other energy-efficiency program sponsors (EEPS). Much of the success of the ENERGY STAR for New Homes program can be attributed to the work of these sponsors across the country.

While there is significant variation in how sponsors have designed, implemented, marketed, and evaluated their local or regional ENERGY STAR Homes programs, all share a goal of leveraging the ENERGY STAR brand to improve the energy efficiency of new residential construction in their market.

In April 2007, EPA brought together representatives from a number of local and regional ENERGY STAR Homes programs for a two-day session in Atlanta, Georgia to identify lessons learned and best practice recommendations for new program sponsors and existing sponsors looking to improve on their programs. This Guide was prepared based on the extensive input provided during this meeting, as well as EPA's decade-plus of experience working with diverse stakeholders to implement the program nationally.

Using this Guide

This Guide is intended to be a reference for sponsor partners to use when developing a new program or improving an existing program. It illustrates how different approaches have been applied by program sponsors across a variety of markets and conditions to promote their ENERGY STAR Homes programs and improve the performance of new homes across their target area.

The Guide is organized into three modules, each of which addresses a key step in developing a local or regional ENERGY STAR Homes program:

- Program Design;
- Program Marketing and Implementation; and
- Program Evaluation.

Within each module, the following areas are addressed:

- **Introduction** with a general overview of the topic;
- **Lessons Learned** that highlight key points for consideration;
- **Best Practices** that summarize specific guidance; and
- **Success Stories** that demonstrate effective application of best practices and lessons learned.

The summary tables included in each module can serve as a checklist that sponsors can use to identify how their programs align with lessons learned and best practice recommendations from successful programs across diverse markets. However, this Guide is not meant to be a 'one-size-fits-all' manual for developing a successful ENERGY STAR Homes program, as regional factors and organizational preferences always must be considered.

Background

Program Benefits

Increasingly, utilities and states are looking to offer energy efficiency programs to meet regulatory obligations, reduce peak demand, and contribute to environmental protection. Voluntary partnerships are a key option for meeting these goals because energy efficiency delivers an impressive value proposition to both consumers and businesses.

Organizations considering implementing local or regional residential energy efficiency programs can leverage EPA's ENERGY STAR for New Homes program platform to provide:

An off-the-shelf proven solution

It can be expensive and time consuming to develop and implement a residential energy efficiency program from scratch. ENERGY STAR provides a great off-the-shelf option with a long track record of success. Today, over 65-percent of households recognize the ENERGY STAR (according to a 2006 survey conducted by the Consortium for Energy Efficiency (CEE)) and over one billion ENERGY STAR qualified products sold. By the end of 2006, Americans, with the help of ENERGY STAR, had saved about \$14 billions on their utility bills and reduced greenhouse gas emissions equivalent to those of 25 million vehicles. By tapping into ENERGY STAR, program sponsors can leverage a powerful brand advantage, along with fully-developed technical specifications, implementation policies, marketing tools, sales training, and technical support available from EPA at no cost. A detailed discussion about many of these implementation tools is provided later in this section.

Increased customer value

Sponsors' constituents are increasingly concerned about environmental issues and rising energy costs. Co-branding outreach and educational efforts with ENERGY STAR allows utilities and states to demonstrate a strong commitment to action. In addition to protecting the environment, ENERGY STAR qualified homes offer significant cost savings and better performance for homebuyers.

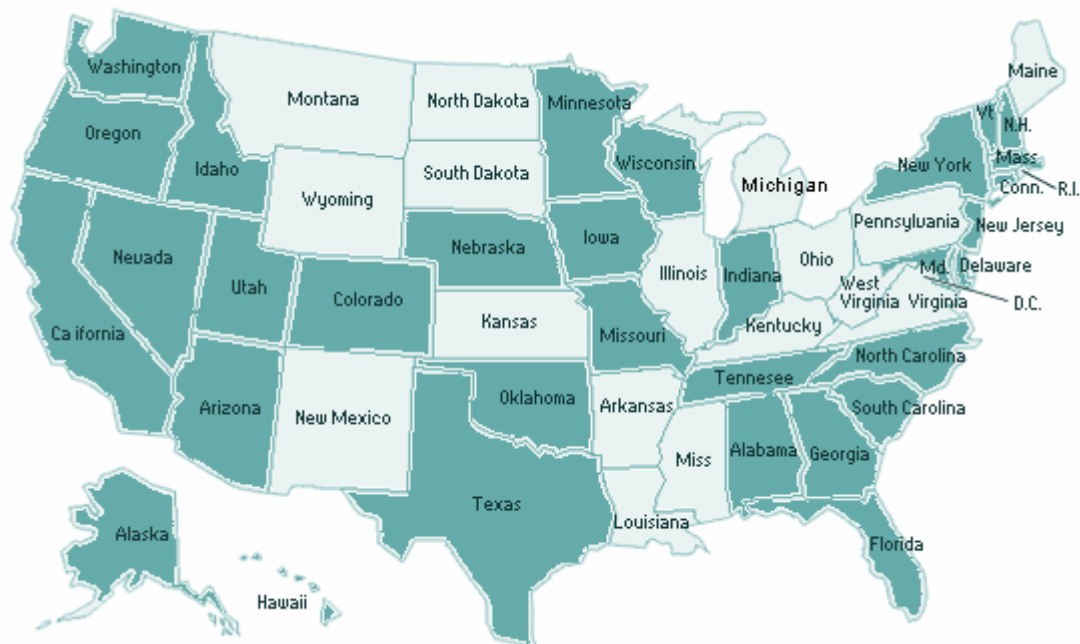
Address business objectives

Building new power generation facilities can be costly and contentious for utilities. By encouraging the construction of ENERGY STAR qualified homes, program sponsors can help to manage peak demand, even as their customer base increases. Additionally, many public utility commissions are mandating significant investments in energy efficiency programs. Many organizations are meeting their demand-side management commitments by sponsoring ENERGY STAR initiatives.

Growth of New Homes Program Sponsors

Prior to 2001, only 16 organizations partnered with EPA as regional ENERGY STAR program sponsors. Since that time, the number of active utility and sponsor partners has grown to over 80 partners across 33 states – representing a 400-percent increase in six years. These locally-sponsored programs contributed over 430,000 ENERGY STAR qualified homes by the end of 2006. States with strong participation by sponsors implementing a local ENERGY STAR Homes program in 2006 are shown shaded in Figure 1.

Figure 1. States with Active ENERGY STAR Sponsors in 2006



EPA Support

At the national level, EPA offers a variety of tools for recruiting builders, marketing to homebuyers, training builders and subcontractors to meet technical requirements, and training sales professionals. These tools are offered free-of-charge to program sponsors and discussed further below:

Outreach Partnership Campaign: For the past six years, ENERGY STAR partners, including homebuilders, home energy raters, and utilities, as well as other local supporters, have pooled resources to increase consumer demand for ENERGY STAR qualified homes in their markets through the ENERGY STAR Outreach Partnership. The Outreach Partnership is designed to provide a sustained local presence for ENERGY STAR and help build consumer awareness on the benefits of ENERGY STAR qualified homes and the builders who offer them.

In markets where partners use EPA-created advertising to cooperatively promote ENERGY STAR qualified homes in a major local newspaper or new homes guide, on billboards, through radio advertisements, or in other media, EPA will complement that commitment with a separate, equivalent outreach effort. The resulting frequency of messaging about ENERGY STAR qualified homes has proven very effective at both increasing consumer awareness and engaging non-participating builders to join the program.

Marketing Toolkit: Field observations indicate that builder sales staff and real estate agents often do not effectively convey the benefits of energy efficient homes to potential homebuyers. In addition, many builders are reluctant to use generic consumer materials that do not adequately highlight their own brand. The ENERGY STAR for Homes Marketing Toolkit is designed to address both of these issues by providing an easy-to-use Web tool that allows builders to quickly produce a wide variety of customized ENERGY STAR point-of-sale materials featuring the builder's name, logo, web site, images, and editable text that can precisely match their construction practices and preferred language.

Brochures and Fact Sheets: For builders who prefer to use pre-printed consumer materials from EPA, ENERGY STAR offers a consumer brochure and several fact sheets that highlight the features and benefits of qualified homes to homebuyers. These brochures can be ordered through the ENERGY STAR Web site (www.energystar.gov/homes).

Technical and Sales Training: EPA staff and consultants have trained thousands of builders on a variety of issues related to constructing and selling ENERGY STAR qualified homes. Sample presentation materials are available on the ENERGY STAR Web site. In addition, EPA offers on-site training and/or train-the-trainer sessions on a limited basis.

Partner Locator: EPA's ENERGY STAR for New Homes Web site features a Partner Locator that lists all active partners, including builders, home energy raters, lenders, and program sponsors. Each listing includes contact information and accomplishments with regard to qualifying homes – both cumulatively and within the last 12 months. Partners that meet ENERGY STAR's Web Linking Policy can also have their listing 'hot-linked' to their own Web site. The Partner Locator is very effective in directing homebuyers to participating builders, builders to the regional rating infrastructure, and all stakeholders to regional sponsor programs.

Partner Recognition. EPA has a variety of awards that recognize committed program partners throughout the year. These include: 100% award plaque for builders that commit to constructing all of their homes to ENERGY STAR requirements; Outstanding Achievement Awards given to builders, home energy raters, and sponsors that have qualified a threshold number of homes in the past year; and the annual Excellence in ENERGY STAR Promotion and Partner of the Year Awards for outstanding efforts by builders, home energy raters, and sponsoring programs for their contribution to increasing consumer awareness of ENERGY STAR in the market.

Builder Recruitment Toolkit. EPA is developing an ENERGY STAR Builder Recruitment Toolkit to help sponsor and home energy rater partners recruit builders and promote ENERGY STAR for New Homes. Components of the Toolkit will include a builder recruitment presentation, a "Top Ways to Reach and Retain Homebuilders" fact sheet, a compilation of success stories collected from current ENERGY STAR builder partners, an ENERGY STAR builder recruitment brochure, and a "Guide to Understanding the Home Building Industry." Look for this Toolkit at the end of 2007.

ENERGY STAR for New Homes Sponsor and Utility Partner Guide: This Guide is intended to be a reference for sponsor partners to use when developing a new program or improving an existing program. It illustrates how different approaches have been applied by program sponsors across a variety of markets and conditions to promote their ENERGY STAR Homes programs and improve the performance of new homes across their target area.

Annual ENERGY STAR Sponsor and Utility Partner Meetings: Building on the successful initial ENERGY STAR for New Homes Sponsor Partner meeting held in April 2007, EPA will continue to co-sponsor annual partner meetings to explore topics pertinent to the implementation of regional programs and facilitate an open exchange of ideas and strategies among stakeholders. These meetings are by invitation only to active and prospective sponsors. The next meeting is tentatively scheduled for the spring of 2008.

Builder Barriers to Energy-Efficient Construction

In many markets, builders must be ‘convinced’ of the business advantages of constructing ENERGY STAR qualified homes. This requires an effective value proposition that overcomes builders’ perceived, and often unfounded, barriers to participation.

At the First Annual ENERGY STAR Residential Program Sponsor and Utility Partner Meeting, participants brainstormed about the challenges they have experienced in promoting energy efficient construction practices to the home building industry. This resulted in an extensive list of barriers that can be sorted into five broad categories: high cost, lack of consumer demand, lack of sales skills, industry resistance to change, and lack of technical infrastructure. ‘Lack of education’ was cited most frequently by meeting participants as a high-priority builder barrier to overcome, followed by ‘overall cost to participate.’



Table 1. Builder Barriers to Energy-Efficient Construction

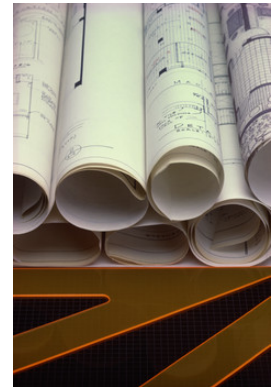
1. High Cost	2. Lack of Consumer Demand	3. Lack of Sales Skills	4. Industry Resistance to Change	5. Lack of Technical Infrastructure
<ul style="list-style-type: none"> • Higher first-cost of construction • Overall cost of participating 	<ul style="list-style-type: none"> • Perception that consumers do not value energy efficiency • Lack of homebuyer education • Lack of education of key players involved in home sales process (real estate agents, appraisers, lenders) 	<ul style="list-style-type: none"> • Energy and non-energy benefits of energy efficiency are harder to sell because they are not visible to home buyers • Lack of trained sales agents to sell the value of energy efficiency 	<ul style="list-style-type: none"> • Risk/fear of the unknown • Risks associated with changing requirements and codes • Perception that builders are already building efficiently • Changing market conditions (e.g., transitioning from a seller’s to a buyer’s market) • Difficulty securing/keeping internal champions • Perceived program complexity and changes • Confusion with competing programs (e.g., green) 	<ul style="list-style-type: none"> • Local HERS infrastructure is not matched to the number of builders in a market • Lack of quality subcontractors and/or subcontractors’ high turn-over rate • Lack of technical solutions for all housing types (e.g., multi-family) • Lack of local building-science experts

The following modules of this Guide address how new ENERGY STAR Homes program sponsors can apply lessons learned and recommended best practices into their program design, marketing, implementation, and evaluation to successfully overcome each of these common builder barriers.

Module 1: Program Design

1.1. Introduction

The key to a successful Program Design process is having a thorough understanding of the market; and then effectively addressing the most important regional factors and builder barriers. It also is important at this time to consider what information will be needed later in the process for program evaluation so that tracking systems and other data collection processes can be designed from the start.



1.2. Lessons Learned

Key lessons learned from successful program sponsors concerning Program Design include:

- Every market is different; thoroughly research your own market before moving forward.
- A working home energy rater infrastructure is critical; do not start a program without one.
- Incentives can help address critical barriers, but larger incentives are not always better.
- Always include a strong program marketing component.
- Establish effective communication with all program stakeholders from the beginning.
- Builder training should be ready to launch as early as possible.
- Address evaluation needs during Program Design.

1.2.1 Every market is different; research your own market before moving forward.

There is no 'one-size-fits-all' approach to Program Design. Some markets are represented by mostly small regional and custom builders, while others are dominated by large production builders; some markets have a strong home energy rater presence, while others have minimal or no rater infrastructure; some markets will have a large multi-family construction sector, while others are predominantly single-family; and some markets would benefit from energy efficiency programs addressing affordable housing, while others already have a strong local or state affordable housing program. Therefore, adequate marketing research is critical, including analyzing current market trends, the local homebuilding industry, and the local economy.

A summary of important regional factors to consider are provided in Table 2 below, organized according to the five builder barrier categories. Nearly 80 percent of meeting participants ranked understanding 'predominant builder profiles in the market' and 'maturity of home energy rating infrastructure' as the most important issues to address during Program Design.

Table 2. Regional Factors to Consider

1. High Cost	<ul style="list-style-type: none"> • Impact of regional construction costs and availability of energy-efficiency measures on cost-effectiveness from builder perspective • Cost-effectiveness from utility perspective • Utility rates
2. Lack of Consumer Demand	<ul style="list-style-type: none"> • Existing awareness of energy efficiency and ENERGY STAR • Presence of other programs and incentives in the market (e.g., green, utility, tax credits, state) • Availability of collaborative partners
3. Lack of Sales Skills	<ul style="list-style-type: none"> • Baseline level of builders promoting energy-efficient homes • Degree at which energy efficiency is promoted in the sales process
4. Industry Resistance to Change	<ul style="list-style-type: none"> • Rigor of prevailing state or local code • The state of the economy • The state of the housing market • Builder geographic distribution • Builder size profile • Builder production processes (e.g., project sequencing, material availability, subcontractors)
5. Lack of Technical Infrastructure	<ul style="list-style-type: none"> • Maturity of HERS infrastructure • Technical maturity of builders and subcontractors • Prevailing housing types (e.g., single-family, multi-family) • Prevailing construction (e.g., duct type/location, foundation) • Type and number of climate zones in region that may affect design
Utility Planning Process	<ul style="list-style-type: none"> • Size of market • State regulations regarding utility implementation • Availability of funds • Cost-recovery factors • Capacity constraints • Funding cycle: single-year programs are much more challenging than multi-year programs to leverage builder commitments

1.2.2 A working home energy rating infrastructure is critical; do not start a program without one.

Home energy raters (also known as HERS raters) serve many critical roles for an effective ENERGY STAR for New Homes program. First and foremost, they verify that homes meet EPA guidelines by conducting plan evaluations and performing field inspections and testing. They also can serve as a highly effective sales force because often much of their business revenue is derived from successfully recruiting builders and qualifying their homes. They often can provide valuable training, including technical training for builders and subcontractors, sales training for builder sales agents and real estate agents, and education for homebuyers about the benefits of energy efficient homes.

Because they can play such a critical role, an important first step in Program Design is to analyze the maturity of the current HERS rating infrastructure, as well as local conditions needed to attract raters to the market. For example, in markets dominated by smaller dispersed builders, it may be more difficult to attract HERS raters, resulting in the need to allocate more effort and resources to get related businesses (such as home inspectors and insulation subcontractors) to augment their capabilities with HERS ratings (reference Section 1.4 for related sponsor success story). In markets dominated by large production builders, facilitating a meaningful HERS rating infrastructure can be as simple as broadly promoting the program to the nation's largest HERS providers, many of whom can easily establish new locations working with their central headquarters operations.

When assessing the HERS infrastructure, an important lesson learned is that quality is more important than quantity, and that even a strong HERS infrastructure cannot overcome a faulty program design strategy. Consider this comparison of the relative success of ENERGY STAR for New Homes in two different markets: In one large metropolitan region with no sponsor support, over 30 percent market penetration was achieved with a rating infrastructure composed of one very business-savvy, efficient HERS provider. In another market with over a decade of sponsor support, little market penetration was achieved with a very large number of certified HERS raters.

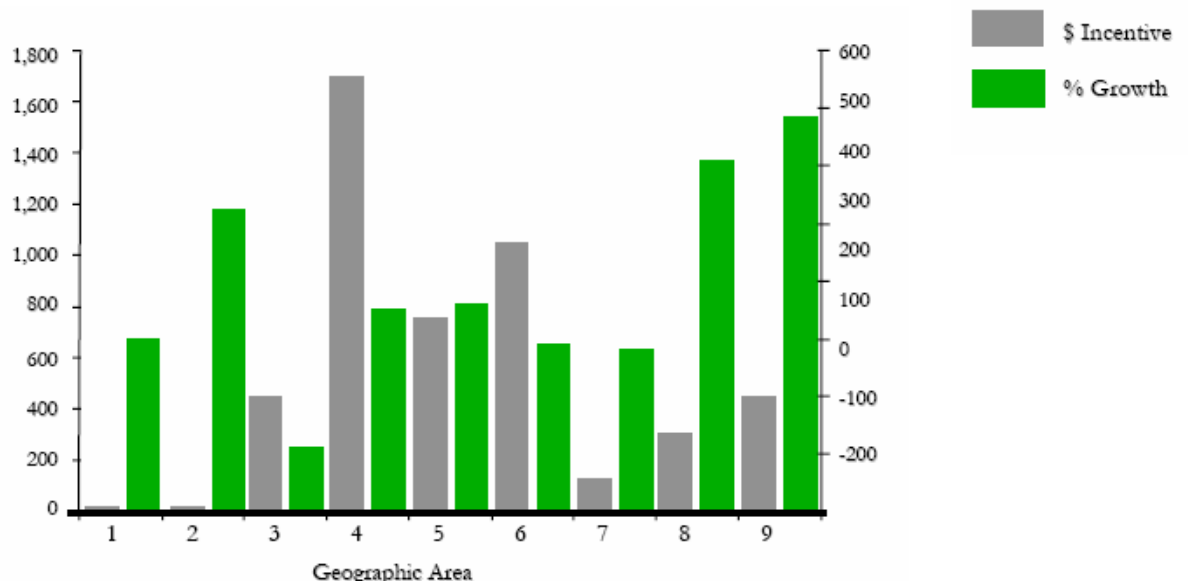
1.2.3 Incentives help address critical barriers, but larger incentives are not always better.

Once market research identifies the most critical builder barriers to adopting energy efficient construction practices, the use of one or more incentives addressing these barriers has proven successful. Incentives can ‘jumpstart’ program participation and, if strategically designed, can lead to a healthy, self-sustaining market even after they are phased out. Incentives can include direct monetary payments, such as rebates, indirect monetary assistance such as free HERS ratings; or non-monetary assistance such as free training. Direct payments are typically provided to builders rather than homebuyers to reduce transaction costs and to maximize builder interest in participation. Incentives currently offered by program sponsors for ENERGY STAR for New Homes include:

- Cash rebates;
- Free or subsidized home energy ratings;
- Advertising (e.g., cooperative, sponsor paid);
- Free or subsidized training (e.g., technical, sales);
- Free marketing materials;
- Discounted utility bills for homeowners (e.g., 5% or 10% discount for full term of ownership);
- Rebates for ENERGY STAR qualified products (e.g., lighting fixtures, appliances, CFL bulbs);
- Rebates for high-efficiency equipment (e.g., furnaces, boilers, heat pumps, and water heaters); and
- Rebates for qualified model homes.

Figure 2 below compares the cash value of incentives offered for ENERGY STAR qualified homes with the percentage growth of qualified homes in nine different, undefined markets. The results suggest little correlation between market growth and the monetary value of incentives. Rather, the results show that incentives can play a role in the success of a program, but that other factors are often more important.

Figure 2. Cash Value of Incentives Compared to Percentage Growth over Past Five Years



1.2.4 Always include a strong marketing component.

As in many business endeavors, effective marketing of energy efficient homes is critical to success. The marketing component of an ENERGY STAR Homes program should be designed both to attract builder partners and to increase consumer awareness. Once the program is established, marketing efforts are also needed to help retain builders' interest.

A key ingredient of an effective marketing strategy is to develop compelling messages. For builders, it is important to emphasize the value of the program as it relates to their business objectives (e.g., market share, competitive advantage, reduced liability). For consumers, the message should be as simple as possible and convey compelling homeownership benefits (e.g., better homes for lower cost of ownership). Once messaging is developed, the marketing strategy should ensure frequency of messaging (e.g., multiple advertising placements vs. single events).

When developing a marketing strategy, sponsors should recognize that high-cost marketing is not always the most effective option. There are many examples where consumer awareness was substantially increased with "lean-and-mean" marketing activities and without expensive options like radio and television advertising and exhaustive public relations campaigns. The key is to effectively target widely recognized "touch points" from which consumers obtain their information about new homes. In markets dominated by large production builders, sponsors have found marketing-incentive programs (e.g., cooperative advertising) are very attractive to builders and get them vested in the program and the ENERGY STAR brand.

Sponsors should be sure to take advantage of all of the available marketing tools and materials from the national ENERGY STAR for Homes program (refer to Introduction Section of this Guide and the ENERGY STAR for Homes Web site – www.energystar.gov/homes).

1.2.5 Establish effective communication with all program stakeholders from the beginning.

Developing and nurturing strong relationships with all program stakeholders (e.g., consumers, builders, home energy raters, real estate agents, appraisers, and related home builder and trade associations) is also a critical factor for success. This relationship-building begins by establishing procedures and expectations during the Design Phase, including establishing processes that involve stakeholders in important decisions and milestones, as well as periodic communication through newsletters and e-mails. It is particularly important to allow long lead times, typically at least six months, to educate partners about any upcoming changes to program requirements or incentives. To effectively manage limited resources, it is important to identify "champion" builders and emphasize communication with them since they can leverage the greatest growth through their own participation and ability to attract competitors to join the program.

1.2.6 Builder training should be ready to launch as early as possible.

One of the worst outcomes for a program is when builders have had experiences because they fail to meet technical requirements. A builder's participation will be impacted negatively if the home energy rater infrastructure is not ready, subcontractors are not prepared to address more rigorous scopes of work, or they were not fully informed of program requirements. Where market research has identified technical barriers, it is important that the Program Design address them with solutions at the start of the program.

1.2.7 Address evaluation needs during Program Design.

Continuous improvement should be part of every ENERGY STAR Homes program, and this is only possible with a strong program evaluation. This begins during the design process by identifying the most important information needed to verify that key business objectives are being achieved (e.g., energy savings, peak-demand reduction) and to improve the chosen design strategy (e.g., incentives, marketing, HERS infrastructure, technical training). A common mistake made during evaluation is tracking information that program staff would like to have rather than information needed to demonstrate and improve program effectiveness. This can waste significant program resources and shift focus to less critical priorities.

1.3. Program Design Best Practices

Based on the lessons learned from program sponsors, best-practice recommendations identified for Program Design are provided in Table 3.

Table 3. Program Design Best Practices

1. High Cost	<ul style="list-style-type: none">• Consider the most effective options for program incentives (e.g., consider successful strategies that worked in similar markets)• Train builders how to sell the value of energy-efficient homes
2. Lack of Consumer Demand	<ul style="list-style-type: none">• Provide funding to educate consumers• Choose the most effective options for educating consumers (e.g., consult consumer research)• Develop consumer testimonials
3. Lack of Sales Skills	<ul style="list-style-type: none">• Develop builder sales training• Develop train-the-trainer sales programs• Develop point-of-sale materials and/or templates for builders (e.g., displays, banners, fact sheets, homeowner manuals)
4. Industry Resistance to Change	<ul style="list-style-type: none">• Create an effective value message for recruiting builders• Consider incentives that effectively address builder business priorities (e.g., suggest linking incentives to individual sales staff)• Incorporate partner recognition into the program (e.g., awards, advertising public relations, builder listing)
5. Lack of Technical Infrastructure	<ul style="list-style-type: none">• Develop local HERS infrastructure• Develop technical support (e.g., reference materials, how-to guides)• Develop train-the-trainer for technical subjects

1.4. Success Stories

New York State Energy Research and Development Authority (NYSERDA)

Market Research:

NYSERDA chose to initially deliver its ENERGY STAR Homes program in upstate New York, where the home building industry is dominated by widely-dispersed, hard-to-reach small and mid-sized regional builders experiencing much slower growth than builders in warmer climates in the state.

Key Barriers Targeted:

Lack of Technical Infrastructure

Early in the Program Design phase, NYSERDA realized that home energy raters were poorly represented in the widely-dispersed small markets in upstate New York. Additionally, standard building practices did not meet key ENERGY STAR requirements (e.g., duct sealing, low air infiltration).

High Cost

The upstate New York market was not experiencing the same housing growth and appreciation as many other markets around the country, making first cost a particularly critical issue for builders looking at the bottom line.

Lack of Consumer Demand

Although consumers in New York were becoming familiar with ENERGY STAR as a label for products, very few consumers understood that the label also applied to new homes.

Design Strategy:

Based on the knowledge gained through market research and targeting key regional barriers to builder participation, NYSERDA's Program Design included:

- Offering extensive HERS training to local businesses and contractors, along with a free "loaner" program for testing equipment that automatically switched ownership to new home energy raters for free if they met critical objectives.
- Focusing on market "pull" rather than "push" by cultivating consumer demand for ENERGY STAR qualified homes, given the high cost to reach widely dispersed builders. This included print advertisements, participation in home shows, and involvement with the *This Old House* series on PBS.
- Implementing an aggressive advertising campaign using a regionally-recognized celebrity from the *This Old House* series on PBS to promote program benefits along with excellent point-of-sale collateral material.
- Conducting extensive technical training for home builders and subcontractors.
- Offering a cash rebate for each home, along with a rebate for model homes in subdivisions.

Results:

- NYSERDA was able to quickly establish a home energy rater infrastructure in key markets that enabled builders to work with the program.
- Industry feedback indicates NYSERDA has educated consumers effectively about the cost, comfort, safety and environmental benefits associated with ENERGY STAR qualified homes, and this has in turn spurred impressive growth in builder participation.
- By the end of 2006, the market penetration of ENERGY STAR qualified single-family homes in New York's geographically dispersed market was over 10 percent, and the ENERGY STAR brand is positioned for strong continued growth.

Oncor Electric Delivery – Dallas, Texas

Market Research:

Dallas is dominated by large production builders experiencing significant growth, and the old building code had been upgraded recently to the much more rigorous 2000 IECC energy code. It was determined that the existing home energy rater infrastructure was not sufficient to meet ambitious growth goals for Oncor's ENERGY STAR Homes program.

Key Barriers Targeted:

Lack of Technical Infrastructure

The HERS infrastructure was inadequate for program goals, and suffered from the classic “which comes first, the chicken or the egg?” dilemma. This is because HERS raters are reluctant to set up business in a market without a lot of builders engaged in ENERGY STAR, and builders are reluctant to join ENERGY STAR without HERS raters to verify their homes.

Lack of Consumer Demand

Although Texas consumers were familiar with ENERGY STAR as a label for products, very few consumers understood that the label also applied to new homes.

Design Strategy:

Based on the knowledge gained through market research and targeting key regional barriers to builder participation, Oncor's Program Design included:

- Delivering free HERS accreditation training programs, providing workshops on how to own and operate a successful HERS provider business, and offering raters an incentive to subsidize upfront expenses.
- Providing a free plan analysis incentive to priority builders in the market and awarding builders a specific number of incentives through a competitive application process. This also helped to ensure that local HERS raters had adequate business volume early in the program.

Results:

- The number of HERS raters in the market grew from one in 2001 to 16 in 2007.
- Starting in 2004, the HERS infrastructure was successfully established, and Oncor no longer needed to offer free plan reviews or trainings.
- As HERS incentives were phased out, this substantially reduced program costs while builder participation and the number of ENERGY STAR qualified homes continued to increase substantially.
- By the end of 2006, more than 46,000 homes earned the ENERGY STAR in the Dallas/Ft. Worth metro area – representing 25 percent of new home starts.

Wisconsin Energy Conservation Corporation (WECC)

Market Research:

The home-building industry in Wisconsin is dominated by widely-dispersed, hard-to-reach small and mid-sized regional builders experiencing much slower growth than builders in warmer climates. Many Wisconsin builders were constructing tight homes, but the HVAC vendors were providing extremely leaky HVAC duct systems and were reluctant to change.

Key Barriers Targeted:

Lack of Technical Infrastructure

Most HERS raters had little experience working with new construction.

Industry Resistance to Change

Builders in Wisconsin had demonstrated the ability to built tight homes, but subcontractors were resistant to tightening ductwork. Moreover, where homes could be built extremely tight and ducts located inside conditioned space, duct leakage was not seen to be as critical to achieving energy-efficient performance in this region.

Design Strategy:

Based on the knowledge gained through market research and targeting key regional barriers to builder participation, WECC's Program Design included:

- Developing building performance standards and protocols based on the specific climate and housing stock in Wisconsin and emphasizing the ability to build extremely tight homes with ducts inside the conditioned space.
- Focusing builder messaging benefits of reducing callbacks and limiting liability.
- Focusing on strengthening the technical infrastructure. This included documenting construction details and sharing information and technical training with the HERS industry.
- Providing direct training for builders and subcontractors to help create market awareness and increase recognition of rater skill sets and their value as a resource for building performance consulting.
- Investing resources in outside experts to train their existing infrastructure and bring greater credibility to the program's standards and training curriculum.
- Relying on leveraging partnerships within the building industry. This included partnerships with local home building associations, product manufacturers, and suppliers who came to view the training opportunities and program consultants as trusted resources working in their collective best interest. This was successfully achieved by collaborating with association committees, co-sponsoring local trade and home shows and providing participant scholarships for regional and national events.

Results:

- During the 2005-2006 program years, WECC sponsored 26 training events, most delivered by program consultants, for over 1,300 building professionals. Through training for builders, technical exchange meetings for builders and raters, and train-the-trainer trainings for the HERS infrastructure, WECC developed a trusted local group of recognized consultants and training programs and created a platform for continuous program improvement.
- Significant improvements in observed building practices have been attributed in part to the educational programs.
- To date, over 8,000 ENERGY STAR qualified homes have been built under Wisconsin's ENERGY STAR Homes program, with total market penetration approaching 10 percent statewide.

Module 2: Marketing and Implementation

2.1. Introduction

Program Implementation includes all activities needed to deliver the program, including day-to-day administration, communication, marketing, and technical and sales training.

Marketing is featured in the title of this module because program goals (e.g., energy savings, peak-demand reduction) are so dependent on effectively motivating builders to join the program and increasing consumer demand for ENERGY STAR qualified homes. Indirect benefits of marketing campaigns can include driving competitors of program participants to join and increasing opportunities to leverage support from a diverse array of stakeholders motivated to be part a successful program.



A variety of marketing strategies have been used by program sponsors across the country. Sponsors often begin with an aggressive marketing plan that employs a variety of outreach activities and promotions tied to specific goals for qualified homes and consumer demand. As these goals are met, sponsors can reduce implementation costs by reducing or phasing out program-recruitment efforts, marketing support, training, and incentives. However, some level of ongoing marketing support for the program is desirable to maintain consumer awareness and continue to motivate builder participation.

2.2. Lessons Learned

Key lessons learned from successful program sponsors concerning Program Implementation and Marketing include:

- Effective marketing conveys benefits in simple terms that consumers can understand.
- Effective marketing is frequent.
- Training is so important that it is worth investing in experts.
- Coordinate and co-market with green programs.
- Leverage stakeholder support.
- Incorporate a tracking system.

2.2.1 *Effective marketing conveys benefits in simple terms that consumers can understand.*

Conveying the benefits of energy-efficient homes to consumers can be a challenge. To engage the average consumer, benefits must be stated clearly in simple terms they care about. They should answer the question, "what's in it for me?" This often entails easy-to-understand analogies to simplify technical concepts. Some examples are below:

Technology: Air Sealing and Insulation that Works

Consumer Benefit: Air leakage and improperly installed insulation can waste 20 percent or more of the energy you pay to heat and cool your home. Typical homes have so many leaks, it's like having a window open all the time, winter and summer. Well-sealed and properly insulated walls, ceiling, and floors help maintain even temperatures throughout the house and save you up to 20 percent on heating and cooling costs. A tighter home also reduces the amount of humidity, dust, pollen, pests, and noise that can come inside.

Technology: Duct Sealing

Consumer Benefit: Your home's ducts move heated and cooled air to the living areas to make you feel comfortable. But in a typical house, 20 percent of the air that moves through the duct system is lost due to leaks, holes, and poor connections. Leaky ducts also let dust, moisture, pollen, pests, and noise into your home.

Technology: Advanced Low-E Windows

Consumer Benefit: Windows are an important part of your home's beauty. But in typical homes, windows made with older techniques are simply too cold in the winter and too warm in the summer — making you feel uncomfortable and wasting energy unnecessarily. ENERGY STAR windows, doors, and skylights keep your home cooler in the summer and warmer in the winter, reduce moisture condensation on window panes and sills, and minimize interior fabric fading.

2.2.2 *Effective marketing is frequent.*

A common sales axiom is that it takes numerous times for a person to hear a message before it is retained. This rule of sales is the driving motivation for the ENERGY STAR for Homes Outreach Partnership Campaign, in which EPA places eight to 13 weeks of advertisement (up to a funding limit) when a group of at least three partners agree to place eight to 13 weeks of advertisements. This campaign, as well as other sponsor-preferred marketing efforts that achieve frequency of messaging, are needed to successfully increase consumer awareness and dramatically enhance other single-event activities such as media coverage, home-show booths, home tours, and special speaker sessions.

2.2.3 *Training is so important that it is worth investing in experts.*

Effective training can help a program sponsor to:

- Establish a viable home energy rating infrastructure.
- Prepare local subcontractors for success.
- Set clear expectations and requirements for builders so they can become satisfied program customers.
- Train sales agents and real estate professionals to effectively communicate the benefits of energy efficient homes.
- Educate homebuyers about the benefits of purchasing energy-efficient homes.

For the past decade, a broad group of building science and marketing experts have developed proven techniques and curricula for this training. Program sponsors have indicated that investments in these experts, both for direct training and train-the-trainer sessions, have paid large dividends that support their growth objectives.

2.2.4 *Coordinate and co-market with green programs.*

Homebuilders and homebuyers today across the country are increasingly interested in green building. But many are confused about what actually makes a home green. There are over 50 regional and national green home labeling programs across the country. While each approaches green a little differently, they all incorporate energy efficiency as a prominent part of program requirements.

It would be easy for energy efficiency program sponsors to get overwhelmed by this frenzy of green activity. But it is important to recognize that energy efficiency accounts for much of the utility-bill savings, comfort, durability, and indoor-air-quality benefits promised by green programs. As a result, program sponsors should seek to proactively establish their ENERGY STAR Homes programs' prominent place among these green programs and identify energy efficiency as the cornerstone of green. Regardless of which of the many green programs is of interest in the market, builders and homebuyers should be educated to look for the ENERGY STAR mark to ensure truly energy-efficient performance in their new homes ("green begins with ENERGY STAR blue"). This often can be accomplished by looking for opportunities to coordinate and co-market with emerging or established green programs.

2.2.5 *Leverage stakeholder support.*

There are many valuable partners with congruent interests in promoting energy-efficient building practices and products (e.g., manufacturers, suppliers, local home builder associations) who can be leveraged to fund/sponsor a wide array of actions (e.g., advertising, training, local events, and program evaluation). This stakeholder support can substantially expand outreach and training efforts and significantly impact the success of program implementation. Thus, the implementation process should devote meaningful resources to recruiting and working with stakeholders.

2.2.6 Incorporate a tracking system.

As discussed in the Program Design module, the design process should address evaluation needs, including identifying data needed to measure growth and effectiveness of the implementation strategy. Tracking systems need to be put in place for this data immediately upon program start-up, especially for data establishing baseline conditions. The following data should be considered for tracking from the start of program implementation:

- Verification data (e.g., number of homes qualified, addresses, builders).
- Number of home energy raters.
- Utility billing data tracking system for ENERGY STAR qualified homes vs. control homes.
- Peak demand measurements for ENERGY STAR qualified homes vs. control homes.
- Consumer awareness (e.g., surveys, subdivision exit polls) at the beginning of the program and at desired time intervals.
- Builder use of marketing tools.
- Attendance and satisfaction with training programs.

2.3. Marketing and Implementation Best Practices

Based on the lessons learned from program sponsors, best-practice recommendations identified for Marketing and Implementation are provided in Table 4. 80 percent of meeting participants identified educating consumers on the value of ENERGY STAR as a top-priority recommendation and 65 percent identified incorporating builder sales training.

Table 4. Marketing and Implementation Best Practices

1. High Cost	<ul style="list-style-type: none"> • Provide incentives, but be sure to allocate a significant portion for marketing • Consider incentives for model homes promoting the ENERGY STAR brand
2. Lack of Consumer Demand	<ul style="list-style-type: none"> • Provide funding for builders to educate consumers (e.g., cooperative advertising) • Educate consumers on the value of ENERGY STAR (e.g., public relations, Web information, articles, ENERGY STAR Outreach Partnership Campaign, advertising, bill inserts) • Link incentives to homes events (e.g., Parade of Homes) • Develop consumer testimonials • When growth is sufficient, integrate ENERGY STAR into regional MLS • Consider training for appraisers and lenders • Cross market with ENERGY STAR qualified products
3. Lack of Sales Skills	<ul style="list-style-type: none"> • Develop builder sales agent/real estate agent training • Provide guidance on how to use available marketing tools • Develop train-the-trainer sales training programs • Promote ENERGY STAR Marketing Toolkit • Provide a homeowner manual or insert for builders • Consider linking incentives to the builder sales person to better motivate him/her to sell ENERGY STAR
4. Industry Resistance to Change	<ul style="list-style-type: none"> • Consistently and effectively convey the value message • Promote incentives if offered • Provide partner recognition (e.g., awards, listing on the program Web site and advertisements) • Publish articles in local HBA newsletter • Provide performance feedback to builders • Sponsor ENERGY STAR events • Promote successful builders to attract their competitors
5. Lack of Technical Infrastructure	<ul style="list-style-type: none"> • Recruit/nurture the HERS infrastructure • Consider facilitating a regional HERS association • Provide tight QA/QC for HERS verification • Provide technical support • Provide train-the-trainer technical training

2.4. Success Stories

CenterPoint Energy – Houston, Texas

Background:

CenterPoint had implemented the 'Good Cents' program in years past, but was switching to ENERGY STAR for New Homes.

Key Barriers Targeted:

Lack of Consumer Demand

Consumer demand for ENERGY STAR qualified homes needed to be increased substantially to meet critical objectives.

Industry Resistance to Change

Builders needed motivation and recognition to meet ENERGY STAR requirements that were more rigorous than the Good Cents program.

Marketing and Implementation Strategy:

Based on the knowledge gained through market research and targeting key regional barriers to builder participation, CenterPoint's Marketing and Implementation Strategy included:

- Undertaking an aggressive broad-based marketing campaign to jumpstart the ENERGY STAR Homes program in the market.
- Utilizing a comprehensive multimedia advertising campaign that included outdoor billboards, television commercials, radio spots, newsprint, a Web site, brochures, and collateral materials. The advertising campaign prominently displayed the ENERGY STAR mark and achieved a combined program reach of 96% with a frequency of 53.2x. This meant that 96% of the target audience saw any of the media components at least 53 times during the campaign. Over 30 builders participated with many of these builders featuring the mark in most of their own advertising.
- Sponsoring a variety of promotions, including the Greater Houston Builders Association New Home Show, the Texas Home and Garden Show, the Houston Home Show, and the CenterPoint ENERGY STAR Golf Tournament.
- Leveraging EPA's Outstanding Achievement Awards as a major event to provide recognition for builder partners. Per a special agreement with EPA, each year the plaques for Houston builders are provided directly to CenterPoint who distributes them at a special ENERGY STAR Awards Luncheon to their builder partners. This event provides builders with added recognition, a great dining experience at a prestigious local restaurant, and effective messaging about ENERGY STAR for New Homes.

Results:

- As consumer awareness of ENERGY STAR for New Homes increased and stimulated consumer preference, Texas homebuilders felt compelled to build ENERGY STAR qualified homes in order to remain competitive. This has resulted in the perception that ENERGY STAR qualification is a "must-have" feature for consumers in the Houston market.
- Not only did CenterPoint increase the number of qualified new homes (and their corresponding energy reductions), but they also were able to decrease their builder incentives because of this market transformation. Within three years, incentives were reduced by two-thirds while the annual delivery of qualified homes increased.
- In 2006, regulatory changes and a faltering housing market led CenterPoint to expect that half of the builders would drop out of the program in 2007. Instead, their five years of effort in marketing and implementation made the ENERGY STAR mark a valuable asset and resulted in such high consumer demand that over 90 percent of builders stayed in the program and qualified over 20,000 new homes as ENERGY STAR. Thus, successful marketing and implementation initiatives helped improve stability during changing market conditions and allowed CenterPoint to meet annual program goals.

Northwest Energy Efficiency Alliance (NEEA) and Energy Trust of Oregon

Background:

The utilities in the Pacific Northwest had promoted ENERGY STAR qualified products very effectively for a number of years, achieving a high level of consumer awareness. During this same time, key states had implemented very rigorous energy codes and large metropolitan areas were using strong residential-development zoning laws to limit suburban sprawl.

Key Barriers Targeted:

Lack of Consumer Demand

Although the ENERGY STAR brand for products was well established in the Pacific Northwest, qualified homes were new to homebuyers. Moreover, there were regional green building programs competing for homebuyer interest.

Industry Resistance to Change

Program designers anticipated it would be very hard to engage the homebuilding industry in a rigorous energy efficiency program while they were already addressing stringent energy codes and land-development issues.

Marketing and Implementation Strategy:

Based on the knowledge gained through market research and targeting key regional barriers to builder participation, NEEA's Marketing and Implementation Strategy included:

- A broad marketing strategy that engaged builders, developers, and home-performance specialists (e.g., home energy raters), and also targeted other building industry allies (e.g., local green building groups, home builder associations, real estate agents, HVAC contractors).
- Initiating a cooperative-advertising program with builders, developers, and home-performance specialists that allowed ENERGY STAR partners to combine their advertising budgets to more effectively increase consumer awareness of ENERGY STAR.
- Designing ENERGY STAR advertisements that featured program partners and developed a local ENERGY STAR Homes Web site.
- Offering marketing incentives and additional promotional assistance to designated "champion builders" who could leverage the greatest market presence.
- Providing sales and business development training to raters to support builder recruitment.
- Partnering with local green building groups to co-brand marketing materials and sponsor training and workshops to help industry professionals network.
- Offering continuing-education classes to real estate agents, and adding ENERGY STAR qualification as a searchable feature for online listings.
- Collaborating with HVAC suppliers, distributors, and contractors to develop ways to increase sales of energy-efficient systems.
- Continually developing new technical and marketing opportunities for all stakeholders to generate increased demand for ENERGY STAR qualified homes.

Results:

- After a predicted slow start to overcome market barriers, effective implementation led to 2,300 homes qualified in 2006, which was a 132-percent increase from the number of homes qualified in 2005.
- About 237 builders were active in the program by the end of 2006.
- More than 30 verifiers and 65 raters were added to the network in 2006 after attending regional trade-ally training.

Appalachian State University (ASU) Energy Center – North Carolina

Background:

ENERGY STAR for New Homes was experiencing steady but very slow growth in North Carolina for several years without a strong sponsor or utility program and limited HERS infrastructure.

Key Barrier Targeted:

Industry Resistance to Change

The North Carolina State Energy Office wanted to maximize very limited resources to increase the state's homebuilding industry interest in ENERGY STAR qualified homes.

Marketing and Implementation Strategy:

Based on the knowledge gained through market research and targeting key regional barriers to builder participation, the North Carolina Marketing and Implementation Strategy included:

- Organizing a well-attended conference with great technical and marketing information for builders to effectively use limited funds to jumpstart interest in ENERGY STAR.
 - The State Energy Office hired the ASU Energy Center to implement an ENERGY STAR Homes Conference, an annual state-wide summit. The goal of the conference was to encourage networking within the building industry, educate stakeholders on topics related to ENERGY STAR for New Homes, and ultimately help motivate the building industry to increase the number of ENERGY STAR qualified homes in North Carolina.
 - Developing breakout sessions during the conference featuring relevant hot topics in the industry along with ample time for networking. Participants enjoyed exploring the conference's exhibits, taking advantage of opportunities to take certification tests, and meeting obligations for continuing education credits.
 - Incorporating well-known speakers and an easy-to-access, premiere location were established as important metrics for continual improvement of the ENERGY STAR conference.
 - Marketing the conference with proven low-cost techniques including blogs, e-mails, and newsletters.
 - Attracting conference sponsor funding by offering passes, exhibition space, and recognition.

Results:

- Since its inauguration in 2005, the annual conference has attracted attendees from every arena of the homebuilding industry, including builders, architects, engineers, HERS raters, product representatives, researchers, appraisers, mechanical contractors, real estate agents, home inspectors, building code officials, and utility representatives.
- The conference's diverse programming and comprehensive appeal have led to increased attendance in the first two years. As a result of this success, the ASU Energy Center plans to expand the conference in the future to feature more ENERGY STAR programs, such as commercial construction.
- Most importantly, the growth rate of ENERGY STAR qualified homes across North Carolina has increased dramatically.

Rocky Mountain Power – Salt Lake City, Utah

Background:

In 2005, Rocky Mountain Power's goal was to transform the building industry in the state of Utah. Market research indicated that the homebuilding industry in Utah was lagging behind other neighboring Northwestern states in applying building-science construction practices, particularly energy-efficient HVAC installation and equipment and thermal-bypass air-barrier details. This was in spite of a climate with very cold winters and hot summers that makes energy-efficient homes highly cost-effective.

Key Barriers Targeted:

Local Industry Resistance to Change

Local homebuilders were highly resistant to adopting energy-efficient building practices.

Lack of Technical Infrastructure

Local builders and subcontractors were not trained to meet the technical requirements of ENERGY STAR for New Homes.

Marketing and Implementation Strategy:

Based on the knowledge gained through market research and targeting key regional barriers to builder participation, Rocky Mountain Power's Marketing and Implementation Strategy included:

- Communicating the benefits of the program (e.g., rebates) and the link between improved building practices and bottom-line profits to builders. The resulting program strategy emphasized a high level of communication, hands-on interaction (e.g., marketing and technical support) and relationship-building with builders.
- Implementing early, ongoing, and intensive training for builders and subcontractors, including training HVAC contractors on tight-duct construction and training builders on the ENERGY STAR Thermal Bypass Checklist.
- Offering free registration for training, food, continuing education credits, and national expert speakers whenever possible.

Results:

- Rocky Mountain Power's recruiting efforts based on effective training and communication were so successful that program participation outgrew the local HERS infrastructure and required additional efforts to attract new HERS raters to the Utah market. This growth led to a tenfold increase in ENERGY STAR qualified new homes in Utah within two years.
- As builder participation increased, Rocky Mountain Power turned to educating the public and offering cooperative-marketing opportunities.

Module 3: Program Evaluation

3.1. Introduction

By incorporating evaluation practices into the Program Design phase and putting tracking systems in place as soon as implementation starts, sponsors and utilities will have critical data needed to assess whether goals (e.g., actual energy savings, peak-demand reduction) are met and to facilitate continuous improvement in program elements like incentives, the home verification process, training, and marketing strategies. This will allow sponsors to demonstrate critical performance metrics to regulators, and to rebalance program investments to optimize future returns.



3.2. Program Evaluation Lessons Learned

Key lessons learned from successful program sponsors concerning Program Evaluation include:

- Effective use of limited resources for evaluation requires discipline.
- QA/QC of the home energy rating process is necessary to reinforce industry oversight.
- Incorporate corrective action processes for nonconformance.

3.2.1 *Effective use of limited resources for evaluation requires discipline.*

In developing Program Evaluation plans, it often is tempting to want to collect data on a wide variety of areas related to program implementation, market research, quality assurance, technology diffusion, and customer satisfaction. With limited resources, collecting data on all of these elements may not be possible. As a result, one of the first planning tasks should be to distinguish between what the program staff *needs* to know versus what it would *like* to know. This can help to ensure that adequate funds and staff resources are available to evaluate the most critical components needed to meet regulatory requirements and secure feedback for continuous improvement. Similarly, it is important to determine the appropriate sample size needed to ensure reliable results, rather than arbitrarily seeking as large a sample as possible, thereby wasting resources. Sponsors can also save significant resources by accepting lower accuracy for less important program metrics.

3.2.2 *QA/QC of the home energy rating process is necessary to reinforce industry oversight.*

Because program success is so dependent on homes consistently meeting technical specifications, quality assurance oversight for building and rating practices is a very important evaluation component. In particular, this serves as an important additional layer of oversight beyond the quality assurance activities provided by the rating industry. Sponsors and utilities may want to consider purchasing an infrared camera for this purpose so that low-cost diagnostics can be performed on homes in the field.

3.2.3 *Incorporate corrective action processes for nonconformance.*

Evaluation efforts are likely to uncover some nonconformance, even with the best programs. Sponsors should engage in advanced planning to develop formal policies for resolving nonconformance issues uncovered during evaluation. This includes setting up procedures to diagnose whether problems are isolated or systemic, as well as to implement corrective action where systemic problems are identified. These procedures should not be punitive, but developed as constructive guidance for builders to ensure future compliance, protect the integrity of the program and desired goals, and continue providing valued services to builder partners.

3.3. Program Evaluation Best Practices

Based on the lessons learned from program sponsors, best-practice recommendations identified for Program Evaluation are provided in Table 5. ‘Establishing baseline energy costs’ was cited most frequently by meeting participants as a high-priority Program Evaluation component.

Table 5. Program Evaluation Best Practices

1. High Cost	<ul style="list-style-type: none"> • Establish baseline energy costs with utility billing analysis • Evaluate energy savings with utility billing analysis • Evaluate actual peak-demand reduction
2. Lack of Consumer Demand	<ul style="list-style-type: none"> • Conduct customer surveys • Measure impact of all marketing efforts • Monitor frequency of and types of complaints
3. Lack of Sales Skills	<ul style="list-style-type: none"> • Monitor effectiveness of all sales training • Monitor effectiveness of sales/marketing tools
4. Industry Resistance to Change	<ul style="list-style-type: none"> • Track program data (e.g., core metrics) • Conduct builder surveys to measure satisfaction and identify most useful tools
5. Lack of Technical Infrastructure	<ul style="list-style-type: none"> • Evaluate integrity of the HERS process • Evaluate delivery of key technical measures (e.g., tight ducts, Thermal Bypass Checklist)

3.4. Success Stories

Nevada ENERGY STAR Partners – Las Vegas, Nevada

Background:

In 2001, a diverse group of utility companies, HERS raters, builders, local builder publications and other stakeholders joined forces to form the “Nevada ENERGY STAR Partners.” These partners realized they could be much more effective as a coordinated group than as individual companies and benefited from a local housing-marketing consultant willing to lead the group.

Key Barrier Addressed:

Lack of Consumer Demand

Las Vegas was one of the first markets to experience dramatic growth in ENERGY STAR qualified homes, but they lacked a single program sponsor to coordinate joint marketing. Without a utility driving the program, evaluation of initial marketing efforts was vital to maintaining partner interest and guiding best use of limited funds for continued improvement.

Evaluation Strategy:

- The initial mission of the group was to develop a marketing campaign for ENERGY STAR that generated maximum consumer interest through a coordinated set of activities among builders and other partners. This led to a fully orchestrated and comprehensive marketing campaign combining advertising, public relations, signage, Web sites, events and seminars.
- A related effort focused on recruiting new builder partners to join the Nevada ENERGY STAR Partners, to help augment their marketing budget.
- The steering committee evaluated baseline metrics and program progress since the inception of their campaign. This included the number of participating builders and business partners, the market for ENERGY STAR qualified homes, and measured change in brand awareness among consumers.

- Consumer awareness was evaluated by marketing research and interviews at ENERGY STAR model homes, which illustrated how well ENERGY STAR builder partners and other stakeholders promoted ENERGY STAR to new prospects.

Results:

- Today, this group has a very effective organizational structure headed by a steering committee and full array of sub-committees (e.g., advertising, public relations, Web-site administration, and technical and educational support) that have their own responsibilities and track their own goals.
- By diligently integrating evaluation with marketing activities, the Nevada ENERGY STAR Partners have been able to effectively measure their success.
- Specific results since the program's inception in 2001 include: an increase in the number of participating builders from five to 28; an increase in market penetration of ENERGY STAR homes from 20 percent in 2002 to 67 percent in 2006; and an increase in consumer awareness for ENERGY STAR qualified homes from approximately 40 percent to over 95 percent.
- Evaluation results have proven invaluable to sustaining interest and motivation for this group of professionals who voluntarily contribute significant efforts to promoting ENERGY STAR.

California Independently-Owned Utilities

Background:

California's investor-owned utilities, including Pacific Gas & Electric (PG&E), Southern California Edison (SCE), San Diego Gas & Electric (SDG&E), and Southern California Gas (SoCalGas), joined forces to provide an integrated ENERGY STAR Homes program throughout California, where code Title-24 was widely recognized as one of the most rigorous energy codes in the country. State-wide evaluation data was required to meet the oversight needs of the regulatory commission and ensure participating utilities were making good financial decisions for their programs.

Key Barriers Addressed:

High Cost

Empirical utility billing data was needed to verify energy savings with ENERGY STAR for New Homes.

Lack of Technical Infrastructure

California utilities needed assurances that the HERS process and energy-efficient technologies were reliable.

Evaluation Strategy:

- The California utilities set out to fulfill the following goals: 1) estimate specific program results; 2) fully understand how the program results occurred so as to make recommendations for increased effectiveness; and 3) fulfill state requirements.
- To evaluate the performance of an ENERGY STAR qualified home, they measured energy usage with various types of homes, construction, climates, and fuels. Due to the longevity of build-out time, the evaluation period occurred over a two-year span. However, this schedule did not support timely decision-making since the national ENERGY STAR specifications adjusted during the evaluation period.
- The group utilized an integrated model rather than a sequential model. Integrated evaluation occurs throughout program implementation while sequential evaluation takes place at the end of a distinct implementation phase.
- A complete and accurate tracking system was necessary to evaluate the program effectively. To fully understand savings, the team analyzed various measures, including energy bills, site-metered energy consumption, and software modeling, each of which entailed its own advantages and challenges.

Results:

- Overall, results showed that homes' energy consumption varies greatly as a result of orientation, occupant behavior, type of structure, and fuel type. Thus, programs need to define "savings" to include occupant behavior.
- The study's results confirmed the value of the new, more rigorous ENERGY STAR for New Homes requirements.

Oncor Electric Delivery – Dallas, Texas

Background:

As a result of Oncor's successful program design and implementation, the local HERS infrastructure grew from a single company to 16, with over 60,000 homes qualified as ENERGY STAR within Oncor's service territory. With this growth, Oncor needed to evaluate the quality of the HERS rating process to ensure it was meeting program goals.

Key Barriers Addressed:

Lack of Technical Infrastructure

Oncor's focus was to evaluate how effectively the HERS infrastructure developed and to ensure homes met program specifications.

Evaluation Strategy:

- The goals of the evaluation were to 1) validate the predicted kW and kWh savings reported to the Public Utility Commission of Texas (PUCT) based on HERS raters' reports, 2) strengthen the ENERGY STAR for New Homes brand, and 3) establish the integrity of the HERS rating industry in their region.
- Specific points of evaluation included how closely the raters were following Residential Energy Services Network (RESNET) standards and confirmation that the homes were meeting the ENERGY STAR performance specifications.
- The methodology for the evaluation involved a large sample of data collected from modeling software along with third-party, on-site verification of construction practices, testing techniques and building materials.
- After gathering the results of the study, Oncor implemented a corrective action plan that involved identifying HERS raters found to have the most inconsistencies and working with them to improve their performance. They also coordinated with the regional HERS association – the Texas Home Energy Rating Organization (HERO), RESNET, and EPA to educate raters, disseminate best practices, and resolve discrepancies in the national standards.

Results:

- Over the course of three years, results have shown that discrepancies are decreasing and the quality of HERS ratings is improving. In 2004, it was found that eight percent of homes reported as ENERGY STAR qualified were not meeting ENERGY STAR specifications. By 2006, this number dropped to less than two percent.
- Oncor has confidence that its program performance results reported to the PUCT are valid. As a result, it has maintained strong regulatory support for the program.

Advanced Energy Corporation (AEC) – Phoenix Field Research Study

Background:

A large number of evaluation efforts had demonstrated the HERS verification process delivered consistent compliance with ENERGY STAR. However, there was a lack of statistically-relevant empirical data documenting that actual energy savings provided the carbon-reduction benefits promised by ENERGY STAR.

Key Barriers Addressed:

High Cost

Cash-flow benefits could mitigate high-cost concerns, but were limited primarily to computer-modeling results and quality-assurance studies of the HERS rating process. An evaluation study based on utility billing analysis of actual energy savings provided the opportunity to substantiate reduced ownership cost and carbon savings with ENERGY STAR for New Homes.

Lack of Consumer Demand

More information was needed to verify that energy-efficient homes also deliver the non-energy benefits promised to consumers in a wide range of marketing materials.

Evaluation Strategy:

- Phoenix was chosen to study the performance of ENERGY STAR for New Homes because the metropolitan area included a large base of qualified homes built to the original ENERGY STAR specifications.
- AEC saw an additional opportunity for evaluation when it was discovered that a substantial population of homes in this market were certified under a more rigorous building science program beyond ENERGY STAR called Environments for Living (EFL). This was an important evaluation opportunity because EFL homes effectively mimicked requirements in the new ENERGY STAR specifications. In Advanced Energy's study, the EFL homes were referred to as "guaranteed performance" homes because the heating and cooling consumption, as well as comfort, were guaranteed.
- AEC partnered with EPA to evaluate the difference in actual utility bills between homes qualified under ENERGY STAR and EFL programs versus a comparable set of baseline homes that were 20-percent more efficient than the 1993 National Model Energy Code (MEC 93).
- AEC took advantage of a related opportunity to partner with the US Department of Energy (DOE), and local utilities (i.e., Arizona Public Service, Southwest Gas) to compare program homeowner satisfaction to that of the baseline homes using a combination of qualitative and quantitative research.

Results:

- The billing analysis study showed that during the cooling season in Phoenix, ENERGY STAR homes were 16-percent more energy efficient than baseline homes. Since the baseline homes were already about 20-percent above MEC 93, the ENERGY STAR qualified homes exceeded program requirements calling for 30-percent greater energy efficiency than MEC 93.
- Results also showed that the guaranteed performance homes saved up to 33-percent more energy than baseline homes. Thus, homes meeting specifications approximating the new ENERGY STAR requirements had more than twice the empirical energy savings compared to homes meeting old ENERGY STAR specifications.
- Customer survey results showed that, compared to baseline homes, homes meeting old ENERGY STAR specifications increased homeowner satisfaction about 30 percent while guaranteed performance homes approximating new ENERGY STAR specifications nearly doubled homeowner satisfaction. This supported anecdotal findings that consumer satisfaction with a home rests on not only energy efficiency but also comfort, perceived health, reliability, and economy.
- Results from the study have helped EPA promote the value of the new ENERGY STAR for New Homes program requirements to all stakeholders.

References and Sources

The content of this Guide largely references information exchanged at the 2007 First Annual ENERGY STAR Residential Program Sponsor and Utility Partner Meeting, as well as more than a decade of EPA's experience working with and observing state and utility partner programs. Materials from the meeting, including presentations, agenda, and compilation of stakeholder feedback are included in the appendices. In addition to these materials, the following sources were referenced in the development of this Guide.

- "Progress Energy Florida Awards Largest Incentive Yet for Energy Efficiency in New Housing Construction." CNN Newswire. July 23, 2007.
- "ENERGY STAR New Homes: The Inside Story". DVD. Dist. PG&E, 2007.
- 2006 Annual Report. NEEA. July 18, 2007.
- EPA Office of Air and Radiation, Climate Protection Partnerships Division. National Awareness of ENERGY STAR for 2006: *Analysis of 2006 CEE Household Survey*. US EPA, 2007.



Appendices

- 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
- B. First Annual ENERGY STAR Residential Program Sponsor and Utility Partner Meeting
 - a. Agenda
 - b. Presentations: Program Design
 - 1. Developing a HERS Infrastructure
 - 2. Reaching a Dispersed Builder Audience
 - 3. Incentive Options
 - 4. Augmenting Builder Skills with Technical Training/Education
 - c. Presentations: Marketing and Implementation
 - 1. Advertising, Promotions, and Awards
 - 2. Engaging the Market
 - 3. ENERGY STAR Homes Summit
 - 4. Builder Seminars/Recruiting
 - d. Presentations: Program Evaluation
 - 1. Quality Control Monitoring/Evaluations
 - 2. AEC Research Field Study
 - 3. Outreach Campaign Evaluation
 - 4. California Utilities Evaluation
 - e. Priority Ranking Feedback: Best Practices and Lessons Learned
- C. WECC Homeowner Manual
- D. 2006 North Carolina ENERGY STAR Conference Agenda