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Nexus Market Research

Evaluation of the New Hampshire ENERGY STAR® Homes Program

Volume 1
Findings and Analysis

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Evaluation Findings

This document is a market progress and evaluation report (MPER) on the New Hampshire ENERGY STAR® Homes Program run by the electric utilities[1] of New Hampshire.

This report is divided into two volumes. Volume 1 (the current volume) contains the findings and analysis, and Volume 2 contains the research instruments. This chapter provides an overview of findings, with the following sections:

- A description of the program and the evaluation
- Characterization of the market
- Market effects of the program
- Conclusions and recommendations

More detailed findings appear in the appendices of this volume.

1 Description of the Program and Evaluation Components

Program Description

Currently, the market for ENERGY STAR HOMES in New Hampshire is almost non-existent.[2] There is minimal awareness of ENERGY STAR Home efficiency standards in both the builder and consumer sectors. The New Hampshire ENERGY STAR Homes program is a fuel-neutral program to address all aspects of the residential new construction and major remodeling markets in New Hampshire. The program's overall goal is to increase the number of ENERGY STAR homes built in New Hampshire each year, with a specific goal of having 375 Energy Star homes under contract by December 31, 2003.

The primary marketing targets are the builders and buyers of the 5,800 new homes built in New Hampshire each year, though marketing will also address subcontractors, real estate agents and lenders. The marketing message will be that ENERGY STAR Homes are energy-efficient, high-performance homes that are nationally recognized by the Environmental Protection Agency (EPA) for greater value, lower operating costs, superior durability, comfort, and safety. Marketing campaigns will be coordinated with those of other ENERGY STAR initiatives in the region.

The program's main outreach approach will be direct builder/consumer contact. Continuing strategies to reach potential consumers and builders include participating in trade shows, outreach to real estate professionals, builder and home buyer seminars, sponsorship of building code training sessions, a website, a toll-free number, newspaper advertising, and encouraging

[1] Unitil, New Hampshire Electric Co-op, Public Service of New Hampshire, Connecticut Valley Electric, and Granite State Electric.

[2] EPA reports on completed ENERGY STAR-labeled homes shows only 237 homes have been labeled during the 1997–2001 period in all of Maine, New Hampshire and Rhode Island.

program marketing by trade allies. The implementation plan calls for offering builders technical training on ENERGY STAR home building practices and techniques as well as providing the ratings required for ENERGY STAR homes and rebates for energy-efficient appliances and lighting. Plans also call for providing an efficient lighting catalog and design assistance. The utilities are pursuing these strategies based on their successful implementation in other New England states. However, the New Hampshire ENERGY STAR Homes Program Team will be ready to modify strategies and tactics as needed as they gain experience with the program in New Hampshire.

The utilities will use a statewide approach for marketing the program, with both utility staff and the implementation contractor playing marketing roles. All marketing will be overseen and coordinated by the ENERGY STAR Homes Program Team. The utilities will also inform employees about the benefits of the ENERGY STAR Homes program through existing internal communication channels. Employees will be encouraged to talk with customers about the program, and will refer interested customers to the implementation contractor's toll free number for more information and follow-up. Utilities will also promote the ENERGY STAR Homes program in at least one bill insert.

ENERGY STAR Homes booths at home and trade shows will be used to distribute literature on the program and to encourage customers, builders and subcontractors to sign up for an ENERGY STAR Workshop. Workshops and seminars may be provided by the implementation contractor and/or utility staff: services will be identical regardless of who delivers them. Onsite instruction and training for builders and their subcontractors will also be available.

Utilities plan on meeting with local banks to discuss the program and investigate opportunities for low-energy loan programs and participating in their "First Time Home Buyer Seminars" and meeting with the real estate Multiple Listing Service to discuss adding "ENERGY STAR home" and/or HERS rating information to listings.

The utilities will also work to establish a Builder Advisory Group with the NH Homebuilders & Remodelers Association (NHHB&RA) and have ENERGY STAR case studies highlighted in their newsletter/magazine.

Evaluation Components

The current study, the Market Progress and Evaluation Report (MPER) of the 2002 New Hampshire ENERGY STAR Homes Program, integrates data and findings from a variety of evaluation activities. These include:

- A survey of new home buyers in New Hampshire, including buyers of both ENERGY STAR and non-ENERGY STAR homes. (Home buyer survey)
- Depth interviews with builders in New Hampshire (Builder interviews)[3]

[3] Given the time necessary to participate in depth interviews, it is reasonable to suppose that the samples of builders and subcontractors may be biased toward those who are particularly favorable toward the program. Accordingly, the reader should be cautious in generalizing from the results reported here to the entire population of New Hampshire builders and subcontractors.

- Depth interviews with HVAC contractors in New Hampshire (HVAC contractor interviews)
- Depth interviews with heating and plumbing contractors in New Hampshire (H&P contractor interviews)
- Depth interviews with insulation contractors in New Hampshire (Insulation contractor interviews)
- Depth interviews with multifamily decision makers in New Hampshire (Multifamily interviews)
- Estimates of the incremental costs for building an ENERGY STAR home compared to the baseline non-ENERGY STAR home (Incremental costs)

2 Market Characterization

Approximately 5,800 homes are built in New Hampshire each year, of which only a very small handful are ENERGY STAR-labeled.

Recognition and Understanding of ENERGY STAR Homes

All eight buyers of ENERGY STAR homes who were interviewed in New Hampshire and 62% of buyers of other homes indicate unaided recognition of the ENERGY STAR label—that is, say they have seen or heard of the label without any description. (Home buyer survey) Four out of five multifamily decision makers we interviewed indicate unaided recognition of the ENERGY STAR label—that is, they say they have seen or heard of it without seeing it or hearing a description. (Multifamily interviews)

All eight buyers of ENERGY STAR homes, but only 12% of non-ENERGY STAR home buyers, say they have seen or heard of the label on newly constructed homes. (Home buyer survey) Three out of five multifamily decision makers have seen or heard of the ENERGY STAR label on newly constructed homes. (Multifamily interviews)

All eight buyers of ENERGY STAR homes in New Hampshire are aware that their home has the label, which is very different from Massachusetts, where only 45% of buyers of ENERGY STAR homes are aware that their homes have the ENERGY STAR label. (Home buyer survey)

Four percent of other home buyers think they have bought ENERGY STAR homes, which may be possible for a few of them, but not as many as 4%. Some of them, then, probably mistakenly think they have ENERGY STAR homes, apparently because they have seen the ENERGY STAR label on their furnace or their windows. There may be some problem, then, differentiating ENERGY STAR-labeled homes from other ENERGY STAR-labeled products. (Home buyer survey)

Asked how ENERGY STAR-labeled homes are different from other homes, people who are aware of the label on new homes most often say simply that they are more efficient or that they save money on energy bills. Three out of eight ENERGY STAR home buyers also refer to the certification or inspection process. Only four percent of buyers of non-ENERGY STAR homes say they have seen or heard of the Home Energy Rating System (HERS) for newly constructed homes, compared to all eight buyers of ENERGY STAR homes. Most ENERGY STAR home buyers

have a good idea of what HERS ratings mean, mentioning ratings of the house or equipment, or testing for leaks. (Home buyer survey) Three out of five multifamily decision makers say ENERGY STAR homes are different in that they are more efficient. (Multifamily interviews)

Factors in Home Purchase Decisions

The most important factor in new home buyers' decisions to buy or build their home rather than any other home is quality of construction; this is the case among buyers of ENERGY STAR homes as well as buyers of other new homes. After quality of construction, the most important factors in the decision to buy or build a particular new house rather than any other are room layout and design, followed by keeping down the overall purchase price, size of the home, and—tied—being involved in decisions about features of the home, and getting a more efficient home with lower energy bills. Getting a more efficient home with lower energy bills comes ahead of things like landscaping or yard, community amenities, schools[4], and commuting distance. (Home buyer survey) When asked to name the most important features in the design and construction of multifamily housing, none of the five decision makers mentions energy efficiency or ENERGY STAR. Instead they mention affordability or cost, and city or federal guidelines for low-income units. (Multifamily interviews)

Asked about the importance of specific features of their homes, people rate efficiency-related features quite highly. In fact, efficient windows, a more efficient furnace or boiler, a higher level of efficiency for the house as a whole, and more or better insulation are all rated more highly than kitchen amenities and appliances, flooring, bathroom amenities, etc. It must be said that people tend to think a new home is by definition efficient, and often reach this conclusion through comparisons with the homes they came from rather than other new homes. It also must be said that giving a high rating to energy efficiency may be perceived as a socially desirable response in the context of this survey, and saying it is important is not the same as being willing to pay more. Even so, this shows that some of the key features of ENERGY STAR homes are quite important. (Home buyer survey)

Perceptions of ENERGY STAR Homes

Many of those people who buy non-ENERGY STAR homes (43%) cannot guess how the prices of ENERGY STAR homes compare with those of non-ENERGY STAR homes (vs. one out of eight buyers of ENERGY STAR homes). Of those who do guess, most people are approximately right, usually saying either that the prices of ENERGY STAR homes are "about the same" or that they are "a little higher." (Home buyer survey)

About six-tenths of buyers of non-ENERGY STAR homes who are familiar with ENERGY STAR homes, and all eight buyers of ENERGY STAR homes, say monthly costs—including mortgage payments and utility bills—are a little or a lot lower for ENERGY STAR homes than for other newly constructed homes. (Home buyer survey)

[4] However, people with more occupants in their households—presumably usually including children—give higher importance ratings to schools than do those with fewer household occupants.

About six-tenths of buyers of non-ENERGY STAR homes who are familiar with ENERGY STAR homes, and all eight buyers of ENERGY STAR homes, think they provide a little or a lot more value for the money than homes without the label. (Home buyer survey)

All eight people who have bought ENERGY STAR homes say they have noticed their utility bills being lower, although this should be interpreted with caution, as comparison of homes of different sizes and configurations would be difficult. Seven out of eight buyers of ENERGY STAR homes can name other benefits besides lower energy bills—things like more even heating and cooling, better humidity levels, quieter, and greater comfort. (Home buyer survey)

Multifamily decision makers generally think the prices of ENERGY STAR homes are about the same or a little higher than those of other homes, but that monthly costs are lower, and that they provide more value for the money. Besides operating costs and value, the only benefit mentioned by multifamily decision makers is protecting the environment. (Multifamily interviews)

The Role of ENERGY STAR in the Marketing of New Homes

Not a single buyer of spec-built non-ENERGY STAR-labeled homes either asked builders or were told by builders about ENERGY STAR-labeled homes.

The most common places for buyers of non-ENERGY STAR homes to find out about ENERGY STAR homes are the media, such as newspaper ads, television ads, and magazine ads, followed by builders' sales offices. Among buyers of ENERGY STAR homes, the most common sources of information are utility mailings and college coursework; since this was in response to a survey question, we have no further information about this coursework. (Home buyer survey)

One-half of ENERGY STAR home buyers either say they don't know where the label is, or that there is no label. Only one out of eight ENERGY STAR home buyers says the label is where the Program recommends it be placed—by the circuit breaker box. (Home buyer survey)

Thirteen of the 20 builders interviewed were aware of the ENERGY STAR Homes program. One of the New Hampshire builders built two ENERGY STAR homes in 2001, three others have built ENERGY STAR homes in previous years, and one currently builds ENERGY STAR homes in Massachusetts. Three other New Hampshire builders had either attended an ENERGY STAR workshop, contacted CSG for information about the program, or received literature about the program. One of the builders who reviewed Program information said the information appeared to apply mostly to Massachusetts and thought the program had not yet reached the northern part of the state where he is located. (Builder interviews)

Home Buyer Purchase Intentions

One non-ENERGY STAR spec home buyer learned about ENERGY STAR homes before starting to shop and three learned after they started shopping. (The other 96 non-ENERGY STAR spec home buyers are not aware of ENERGY STAR homes at all.) Among buyers of ENERGY STAR homes, however, seven out of eight learned before they started shopping, and only one learned after.

Five out of eight people in the ENERGY STAR homes sample decided to buy or build a qualifying home before they started planning. (Home buyer survey)

Factors in Equipment Specification

In general, the primary factor in decisions about which equipment and materials to install in spec homes is purchase and installation cost, while such decisions for custom homes are driven by more diverse factors, including energy efficiency, homeowner comfort, and product quality. Purchase/installation cost is also a factor for custom homes, but not the sole driving factor as it is for spec homes. (HVAC, H&P, and Insulation contractor depth interviews)

Table 1
Factors in Decisions about Equipment Installation
(in order of importance)

Component	Spec Homes	Custom Homes
HVAC equipment[1]	Purchase/installation cost	Reliability Energy efficiency Contractor reputation Purchase/installation cost
Hot water/steam heating[2]	Purchase/installation cost Reliability Energy efficiency	Energy efficiency Reliability Comfort Purchase/installation cost
Insulation[3]	Purchase/installation cost Energy efficiency	Energy efficiency Soundproofing Air sealing

[1] HVAC contractor interviews
[2] H&P contractor interviews
[3] Insulation contractor interviews

Roles in Equipment Decision Making

Table 2 shows who is typically responsible for decisions about various housing components. The notable pattern, as would be expected, is the greater involvement of the builder in decision making about spec homes, and the homeowner in decision making about custom homes. Also, in spec homes, HVAC contractors and H&P contractors tend to have more say in decisions about equipment and materials they install than do insulation contractors. (HVAC, H&P, and Insulation contractor interviews)

Table 2
Who Is Most Often Responsible for Decisions about Equipment Installation

Component	Spec Homes	Custom Homes
HVAC equipment sizing[1]	HVAC contractor	HVAC contractor
Duct system layout[1]	HVAC contractor	HVAC contractor
HVAC system efficiency[1]	Builder HVAC contractor	Homeowner HVAC contractor Builder
Hot water & steam heating system type[2]	Builder H&P contractor	Homeowner H&P contractor Builder
Hot water & steam heating fuel[2]	Natural gas if available Builder	Natural gas if available Homeowner
Hot water & steam heating system efficiency[2]	H&P contractor Builder	Homeowner H&P contractor
Hot water & steam heating system sizing[2]	H&P contractor	H&P contractor
Hot water & steam heating system pipe layout[2]	H&P contractor	H&P contractor
Insulation R-value[3]	Builder Architect	Builder Insulation contractor Architect Homeowner
Insulation type[3]	Builder Architect Insulation contractor	Builder Insulation contractor Architect Homeowner
Extent of air sealing[3]	Builder Architect	Builder Insulation contractor Architect
Insulation installation techniques[3]	Insulation contractor Builder Architect	Insulation contractor Builder Architect Homeowner

[1] HVAC contractor interviews
[2] H&P contractor interviews
[3] Insulation contractor interviews

Certification and Training

Most HVAC, H&P, and insulation contractors perceive there to be shortages of qualified workers, and say these shortages limit the amount of work they can do. (HVAC, H&P, and Insulation contractor interviews) Most builders have long-standing relationships with their subcontractors. When they do need to hire new subcontractors, they look for hands-on experience rather than any particular training or certification. However, they would encourage their subcontractors to attend training courses on relevant topics. (Builder interviews)

Appliances and Lighting

Most appliances installed in new houses are new: 90% of dishwashers, 70% of refrigerators, and 44% of clothes washers. The costs of refrigerators and clothes washers are not usually included in the price of a new house, meaning that buyers rather than builders make the decisions; the reverse is true of dishwashers, meaning that builders rather than buyers usually make the decision. (Home buyer survey; Builder interviews)

The way that light fixtures are selected varies greatly, but by far the most common practice is to have standard fixtures, with no options, included in the purchase price. This practice is more common in spec homes than in custom-built homes, as might be expected. Overall, it appears that builders more than buyers make the decisions. (Home buyer survey)

Differences between the Massachusetts and New Hampshire Markets

The data collection efforts for this evaluation paralleled efforts taking place in Massachusetts at the same time. Table 3 shows some of the key differences between the new home markets in Massachusetts and New Hampshire. Notably, a higher proportion of homes in Massachusetts than in New Hampshire are custom built. New Hampshire home buyers tend to be younger than those in Massachusetts, and to have lower incomes—likely because of the higher cost of housing in Massachusetts. Energy-efficiency is rated as more important in New Hampshire than in Massachusetts, and a much higher proportion of homes are built with 2x6 framing, both of which are probably attributable to the colder weather in New Hampshire, and the latter of which to the fact that R19 insulation is virtually part of the code, making 2x6 framing almost a necessity. However, ENERGY STAR homes are more recognized in Massachusetts than New Hampshire, which makes sense given that the New Hampshire program is in its infancy. Incremental building costs for building to ENERGY STAR standards are higher for single family homes in Massachusetts than in New Hampshire, but lower for multifamily homes.

Table 3
Differences between New Home Markets in Massachusetts and New Hampshire

Aspect	Massachusetts	New Hampshire
Proportion of all new homes that are custom-built[1, 2]	47%	27%
Proportion of all new home buyers who are under the age of 45[1, 2]	41%	58%
Proportion of all new home buyers with household incomes of $100,000 or more[1, 2]	49%	28%
Non-ENERGY STAR home buyers who have seen or heard of ENERGY STAR label on newly constructed homes[1]	23%	12%
Non-ENERGY STAR home buyers who are aware of HERS ratings[1]	12%	4%
Importance of getting a more efficient home with lower energy bills among all home buyers (on 0-10 scale, where 10 is "one of the most important factors/ranking out of 12 factors)[1, 2]	7.2/ 7th of 12	7.8/ 5th of 12
Cost for upgrading single family home to ENERGY STAR level: per square foot/per average home[3]	$1.31/ $3,752	$0.94/ $2,922
Cost for upgrading multifamily home to ENERGY STAR level: per square foot/per average home[3]	$0.95/ $1,860	$1.13/ $2,255
Median highest home price among non-ENERGY STAR builders[4]	$850,000	$400,000
Proportion of housing units built with 2x6 framing[4]	33%	99%

[1] Home buyer survey
[2] ENERGY STAR and non-ENERGY STAR homes weighted to represent total market
[3] Incremental costs
[4] Builder interviews

3 Market Effects of the Program

This section discusses changes in the residential new construction market. An important part of implementing a successful market transformation program is to have clear goals, a well thought-out plan for how to get there, and a method for tracking how well the program is doing in terms of transforming the market. Since the New Hampshire ENERGY STAR homes program is in its infancy it is unrealistic to think it has, as yet, had a major impact on the residential new construction market.

The evaluation work conducted in 2002 and covered in this report provides a picture of the current residential new construction market in New Hampshire. To give an idea of how the market has changed over recent years, wherever possible, the results of the current evaluation are compared with the results of two earlier ENERGY STAR Homes program evaluation efforts: a 1998 market characterization and baseline study conducted for Boston Gas Company[5] and a 1999 Massachusetts and Rhode Island baseline study.[6] In most cases, the results of the earlier studies are not directly comparable to the current study's findings because the markets covered are different, because of differences in the size and composition of the samples of market actors interviewed or surveyed, and because of differences in how questions were asked. Despite these differences, the comparison gives some indication of how the current New Hampshire market compares to the Massachusetts market when the ENERGY STAR Homes program was introduced. For example, the current evaluation found that awareness and understanding of the ENERGY STAR label and ENERGY STAR homes is higher now in New Hampshire than it was in 1998 and 1999 in Massachusetts when the program was introduced. This could be because of an increase in national promotion of ENERGY STAR products, and an increase of such promotions in Massachusetts, whose media are available to many New Hampshire residents.

Where previous indicators of market effect are not available, which is the case with subcontractor practices, the differences between ENERGY STAR and non-ENERGY STAR participant groups are described. If ENERGY STAR participants show a higher likelihood of installing more efficient equipment or having better installation practices, this may be the result of their participation in the program, including on-site training they may have received while working on an ENERGY STAR home.

At the end of this section are tables listing 13 home buyer and nine builder market effect indicators. These tables, which show the baseline values of indicators as determined in the current evaluation, along with the values of similar indicators from the 1998 and 1999 studies, when available, are referenced throughout the remainder of this section. Tracking these indicators going forward will provide valuable information on whether or not the program is having an impact on the residential new construction market and, if so, how much of an impact.

[5] Delta Technologies Group, LLC, "Residential New Construction Market Characterization And Baseline Study," July 1998. Boston Gas is now KeySpan Energy Delivery.
[6] Delta Technologies Group, LLC, "ENERGY STAR® Homes Program - Market Assessment and Baseline Study for Massachusetts and Rhode Island," September 1999.

Recognition and Understanding of ENERGY STAR Homes

Recognition of the ENERGY STAR label and ENERGY STAR homes is higher now in New Hampshire than in the early years of the ENERGY STAR Home program in Massachusetts. Sixty-two percent of the non-ENERGY STAR home buyers and all of the ENERGY STAR home buyers recently surveyed in New Hampshire said they have seen or heard of the ENERGY STAR label.[7] (Table 4, Indicator 1) This is a much higher recognition rate than found in the 1998 and 1999 studies, when 13% and 39%, respectively, of home buyers said they had seen or heard of ENERGY STAR products or the ENERGY STAR label. Awareness of the ENERGY STAR label by non-ENERGY STAR home buyers in New Hampshire, at 62%, is only slightly below the 67% awareness among Massachusetts non-ENERGY STAR home buyers in 2002. (Home buyer survey) Recognition by home buyers in both states is significantly more than the 31% unaided recognition among all Massachusetts households as measured by a recent Web TV survey (see the Massachusetts Appliance Market Progress and Evaluation Report), which suggests home buyers are much more likely than the general population to recognize the ENERGY STAR label.

Awareness of ENERGY STAR homes among non-ENERGY STAR home buyers was 12%, which is 50% higher than in Massachusetts in 1999 when only eight percent of home buyers surveyed said they were aware that ENERGY STAR homes were available. (Table 4, Indicator 2) (Awareness of ENERGY STAR homes among non-ENERGY STAR home buyers in Massachusetts, where the program has been in place for several years, was 23%, almost double the New Hampshire rate.) Almost one-half (43%) of the New Hampshire non-ENERGY STAR home buyers who were aware of ENERGY STAR homes were also able to list at least one way in which ENERGY STAR homes were different from other homes: the most frequent responses were that ENERGY STAR homes are more efficient or that they save money on energy bills. (Table 4, Indicator 9)

Six of the eight of the ENERGY STAR home buyers and one of the four "other home" buyers who said they bought an ENERGY STAR home said they noticed non-energy benefits of living in an ENERGY STAR home—primarily more even heating and cooling, greater comfort, and better humidity levels. (Table 4, Indicator 11; Home buyer survey) Fifty percent and seven percent, respectively, of the ENERGY STAR home buyers and non-ENERGY STAR home buyers who said they were aware of ENERGY STAR homes also said they thought ENERGY STAR homes provide a lot of value for the money. (Table 4, Indicator 12)

Four percent of non-ENERGY STAR spec-built home buyers were aware of ENERGY STAR homes before they started house hunting and an additional eight percent became aware of ENERGY STAR homes after they entered the market. (Table 4, Indicator 3) The additional eight percent of non-ENERGY STAR home buyers who became aware of ENERGY STAR homes after entering the market is an encouraging sign that at least some home buyers are running across information on ENERGY STAR homes while house hunting. (Table 4, Indicator 4) (Home buyer survey)

Recognition and understanding of the ENERGY STAR label and ENERGY STAR homes was moderate among the five multifamily decision makers interviewed in 2002, which is not

[7] These were unaided responses, meaning the respondents were simply asked, "Have you ever seen or heard of the ENERGY STAR label?"

surprising since none of them had built ENERGY STAR housing units. Four of the five multifamily decision makers interviewed were aware of the ENERGY STAR label, with three demonstrating a high understanding of the label by being able to explain what it meant. Three had seen or heard of the ENERGY STAR label on newly constructed homes, but only two were aware of the ENERGY STAR Homes program. (Multifamily interviews)

Program awareness among New Hampshire builders in 2002 was about the same as it was in 1998 and 1999 in Massachusetts. Thirteen of the 20 builders interviewed in New Hampshire are aware of the ENERGY STAR Homes program. (Table 5, Indicator 1) Five of the New Hampshire builders said they either had built or were currently building ENERGY STAR homes, five more demonstrated a good understanding of the program, and three more had heard about the program but that was about all. In Massachusetts, all but one non-ENERGY STAR builder were aware of both the ENERGY STAR label and the availability of ENERGY STAR homes. This suggests that awareness among builders will likely increase fairly rapidly as the program gets more exposure in New Hampshire. (Builder interviews)

Subcontractor awareness of, and involvement with, the ENERGY STAR Homes program varied by type of subcontractor. Of the 13 HVAC, 15 plumbing and heating, and 12 insulation subcontractors who were interviewed in late 2002, two HVAC subcontractors and one insulation subcontractor indicated they had worked on ENERGY STAR homes. None of the heating and plumbing contractors interviewed had done work on an ENERGY STAR home. (HVAC, H&P, and Insulation contractor interviews) In Massachusetts, awareness among insulation contractors (13 of 20) was much higher than among HVAC and heating and plumbing contractors. This higher level of awareness among insulation contractors is consistent with the program's emphasis on insulation levels and quality installations for all participating homes. Therefore, it is likely ENERGY STAR awareness among insulation contractors will increase in New Hampshire as more ENERGY STAR homes are built.

The Role of ENERGY STAR in the Marketing of New Homes

One of the key findings from the 2002 survey of Massachusetts survey of 100 ENERGY STAR home buyers is that fewer than one-half (45%) of them were aware they had purchased an ENERGY STAR home. In New Hampshire, only eight ENERGY STAR homeowners were surveyed, but all of them knew they had purchased or built an ENERGY STAR home. (Table 4, Indicator 8) The most common sources of information on ENERGY STAR homes for these eight home buyers were utility mailings and college coursework, which, it seems safe to assume, provided clear and accurate information. As the New Hampshire program expands and recruits high-production spec home builders into the program it is likely that not everyone who buys an ENERGY STAR home will know they bought an ENERGY STAR home. However, New Hampshire's approach of marketing to consumers, real estate professionals, and lenders, as well as builders, from the outset may increase the probability of ENERGY STAR home buyers, especially spec-built home buyers, knowing they bought an ENERGY STAR home.

Overall, home buyers may have trouble differentiating between ENERGY STAR-labeled homes and ENERGY STAR-labeled products. The most common sources of ENERGY STAR home information among non-ENERGY STAR home buyers were TV, magazine and newspaper

advertisements. Even accurate media advertising may not provide readers with a clear distinction between having an ENERGY STAR-labeled furnace or windows and having an ENERGY STAR-labeled home. Four of the home buyers in the non-ENERGY STAR sample said they thought they bought an ENERGY STAR home. This may be true for some of them, but probably not all four. Some of them may mistakenly think they have an ENERGY STAR homes because they have seen the ENERGY STAR label on their furnace or windows. None of these home buyers said the ENERGY STAR label for their home was on the circuit breaker box, which is where it is placed on all certified ENERGY STAR homes. (Home buyer survey)

Why wouldn't home buyers know they were buying an ENERGY STAR home? While participating builders will be encouraged to market their homes as ENERGY STAR and be given marketing support materials, it is likely that not all builders will use the ENERGY STAR label in marketing their homes. All builders were asked if they currently market energy efficiency to home buyers. Less than one-half of all builders interviewed (just over one-third of the custom home builders (6 of 16) and almost one-half of the spec home builders (3 of 7)), said they explicitly marketed energy efficiency to home buyers. (Table 4, Indicator 3) ENERGY STAR builders were not more likely to market energy efficiency than non-ENERGY STAR builders: only one of the three ENERGY STAR spec home builders and one of the two ENERGY STAR custom home builders said they explicitly marketed energy efficiency to home buyers. The reasons builders gave for not marketing energy efficiency included: (Builder interviews)

- Home buyers don't care
- Just don't do it
- Gloss sells more homes
- Home buyers are not educated about it and not interested in it
- Doesn't see any real need to push it since there is no energy crisis
- Doesn't think it makes any sense to do so—customers are not willing to pay the extra cost and many don't want to get out of the realm of standard
- It is understood that they will get something in the mid-range or higher end for efficiency
- Home buyers don't ask

Home Buyer Purchase Intentions

An important indicator of market transformation is the share of home buyers who enter the market wanting an ENERGY STAR home. This share should rise as consumer marketing efforts increase. Not one of the non-ENERGY STAR home buyers in New Hampshire said they were looking for an ENERGY STAR home when they started house hunting, had visited an ENERGY STAR home while house hunting, or discussed ENERGY STAR homes while house hunting. (Table 4, Indicators 5, 6, 7) In Massachusetts, after four years of program marketing, only three to four percent of non-ENERGY STAR home buyers said they were looking for an ENERGY STAR home when they entered the market or had visited or discussed ENERGY STAR homes during their house hunting. The Massachusetts results are consistent with the program's focus on builder participation over consumer education. Once again, given New Hampshire's plan to include consumer, real estate agent, and lender marketing from the beginning, they may have better success in raising the likelihood of consumers knowing about ENERGY STAR homes before they start looking for a home. (Home buyer survey)

Given the small number of ENERGY STAR homes in New Hampshire it is reasonable to find that most of them are custom-built homes and that the owners knew about ENERGY STAR homes before entering the market. Five of the eight ENERGY STAR home buyers surveyed in New Hampshire said they were looking for an ENERGY STAR home when they entered the market. Most (six of the eight) had custom-built homes and none were first time home buyers. They also tended to be older and have higher annual incomes than the average non-ENERGY STAR home buyer. (Home buyer survey)

The importance of energy efficiency in New Hampshire home buyers' decisions to purchase a home is relatively high. There are no indicators from the 1998 and 1999 studies that are directly comparable to 2002 survey findings, but there are some that are similar. Thirty-four percent of the home buyers interviewed in 1998 and 39% of home buyers interviewed in 1999 said they strongly agreed that buying an energy efficient home was important. The 1998 and 1999 surveys also asked home buyers to rank the importance of 11 factors in their decision to purchase their home, with 1 being the least important factor and 11 the most important factor. One of the factors was monthly energy cost.[8] In 1998 the weighted average ranking for monthly energy cost was 3.4, and that was the least important of the 11 factors. In 1999 the weighted average ranking was 3.9, with only one factor rated less important: availability of gas in the house. In the 2002 survey, home buyers were asked to rate the importance of 12 factors[9] in their decision to buy a specific home using a scale of 0 (one of the least important factors) to 10 (one of the most important factors).[10] The eight ENERGY STAR home buyers gave energy efficiency an average rating of 8.6 and the "other home" home buyers gave it an average 7.8 rating. Of the 12 factors home buyers were asked to rate, energy efficiency ranked fifth in importance for both ENERGY STAR and non-ENERGY STAR home buyers.[11] (Table 4, Indicator 10) The builder interviews verified increasing home buyer interest in energy efficiency. Eight of nine custom home builders who built more than one custom home in 2001 and three of five spec home builders who built more than one spec home in 2001 said that at least some of the home buyers they deal with ask about energy efficiency. This is an increase from the four out of 11 builders interviewed in 1998 and seven out of 16 builders interviewed in 1999 who said home buyers asked about energy efficiency. (Table 5, Indicator 2; Home buyer survey; Builder interviews)

[8] The 11 factors home buyers were asked to rank in 1998 and 1999, listed in the order in which they were ranked in 1999, were location, layout/interior design of the home, total price, style of house, number of bedrooms/baths, square footage of living space, lot size, builder reputation/quality of construction, mortgage payment, monthly energy costs and availability of gas in the house.

[9] The 12 factors home buyers were asked to rate in 2002, listed in the order in which they were ranked by ENERGY STAR home buyers, were quality of construction, being involved in decisions about features of the home, builder reputation, room layout or design, getting a more efficient home with lower energy bills, size of the home, lack of availability of other suitable homes, keeping down overall purchase price, landscaping or yard, schools, commuting distance or time to work, and community amenities (e.g., bike trails, community pool, recreation center). In contrast to the ENERGY STAR home buyers, the non-ENERGY STAR home buyers rated keeping down overall purchase price and size of home higher than getting a more efficient home with lower energy bills and rated builder reputation lower. The ratings for individual factors ranged from 9.1 to 5.0 for ENERGY STAR home buyers and from 9.0 to 4.6 for non-ENERGY STAR home buyers.

[10] Note that rating each of 12 factors on a scale of 0 to 10 is different than ranking them from 1 to 12, which was the approach used in the 1998 and 1999 studies.

[11] Two factors tied for the fifth place ranking with non-ENERGY STAR home buyers: getting a more efficient home with lower energy bills and being involved in decisions about features of the home.

Construction Practices

When builders were asked which systems, materials, or equipment they emphasize when trying to make a home more efficient, the three most common responses were insulation, furnaces/ boilers, and windows. The standard in New Hampshire is to use 2x6 framing. All but two of the builders interviewed in 2002 said they always used 2x6 framing. One builder used Structural Insulated Panels (SIPs), considered even more energy efficient than 2x6 framing, on the one custom home he built in 2001. Only one builder, who built one spec home and one custom home in 2001, used 2x4 framing. In the earlier studies, two out of 11 builders interviewed in 1998 and 12 out of 16 builders interviewed in 1999, or 14 of the total 27 builders interviewed in the two years, said they used 2x6 framing. (Table 5, Indicator 9) (Builder interviews)

Though five builders, including two custom home builders and three spec home builders, said either they have built ENERGY STAR homes in the past or are building them now, only two custom builders said they built ENERGY STAR homes in 2001. One said he built two and one said he built one. (Table 4, Indicator 7) None of the builders who said they built ENERGY STAR homes in 2001 or in the past indicated that they built ENERGY STAR-quality homes in 2001 that they did not have labeled. (Builder interviews) As more builders participate in the program, an indicator of market transformation will be how many ENERGY STAR-level homes builders say they build outside the program. (Table 4, Indicator 8) Two other important indicators of market transformation going forward will be the proportion of homes built by ENERGY STAR builders that are ENERGY STAR-labeled and the proportion of ENERGY STAR builders who have all their homes ENERGY STAR-labeled.

In general, builders do not look for any particular type of training when hiring subcontractors. Most have long-term relationships with the subcontractors they use, and if they do have to hire someone new they look for experience rather than any specific training or certification. Only two builders mentioned looking for any type of training or certification: one ENERGY STAR builder said he would want his HVAC and heating and plumbing subcontractors to have knowledge of air exchangers and ENERGY STAR experience or training, and another ENERGY STAR builder said he wants his heating and plumbing subcontractors to have licenses and insurance. (Builder interviews)

Opinions on the cost of hiring subcontractors qualified to install more efficient equipment or materials were mixed. Two of the five builders who said they were ENERGY STAR builders said it cost extra for subcontractors who are prepared and qualified to install more efficient equipment or materials, and they are willing to pay more to get qualified subcontractors. Three of the five ENERGY STAR builders said it does not cost more for qualified subcontractors and they are not willing to pay more for more qualified subcontractors.[12] (Builder interviews)

The five ENERGY STAR builders were asked if it cost them more to build an ENERGY STAR home and if they charged extra for building an ENERGY STAR home. The responses varied. All five builders said it cost them more to build an ENERGY STAR home; estimates of the increased cost

[12] All builders were asked if they looked for any particular type of training or certification when hiring subcontractors. However, only ENERGY STAR builders were asked if it cost more for subcontractors who are prepared and qualified to install more efficient equipment or materials.

ranged from one to ten percent. However, only two builders said they charged more for an ENERGY STAR home; one said his incremental cost was one percent and he charged one percent more while the other said the incremental cost and price for an ENERGY STAR home was ten percent. One of the builders who does not charge more for an ENERGY STAR home said the five percent extra it cost him to build an ENERGY STAR home reflects increased interest on bank loans since it takes about two months longer to build an ENERGY STAR home. (Builder interviews)

To date the utilities have not used consistent methodologies for estimating the incremental cost of building to ENERGY STAR standards and, consequently, the incremental cost assumptions used in calculating benefit/cost ratios have varied significantly from utility to utility. The incremental cost study done as part of this evaluation estimated the overall average cost per square foot of upgrading the established base single family home in New Hampshire to a home that would qualify for an ENERGY STAR label, and the cost to upgrade the established base multifamily structure to a structure qualifying for an ENERGY STAR label. The results, based on input from ten New Hampshire builders are: $0.94 per square foot ($2,922 per home) for a single family home and $1.13 per square foot ($2,255 per dwelling unit) for a multifamily structure.[13] Overall the study estimates the incremental cost for improving the base New Hampshire home to ENERGY STAR standards would raise the base home price by 1.24%. (Incremental costs)

Two of the 13 HVAC contractors interviewed, none of the 15 plumbing and heating contractors interviewed, and one of the 12 insulation contractors had worked on ENERGY STAR homes. In general, ENERGY STAR HVAC contractors were more likely than others to use proper methods for equipment sizing, determining the appropriate refrigerant charge, checking the airflow across the indoor coil, and checking the operating performance of furnaces. (HVAC, H&P and Insulation contractor interviews)

The two New Hampshire ENERGY STAR HVAC contractors in the sample reported higher proportions of ENERGY STAR-level HVAC equipment installed in new homes than their counterparts in Massachusetts. Eighteen percent of central AC/heat pump systems installed by New Hampshire ENERGY STAR HVAC contractors in 2000, and 33% in 2001, were 13 SEER or higher, compared to only 2% (2000) and 3% (2001) in Massachusetts. A high percentage of the furnaces installed by New Hampshire ENERGY STAR HVAC contractors are also high efficiency: 83% of furnaces installed by New Hampshire ENERGY STAR HVAC contractors in 2000, and 86% in 2001, were 90% AFUE or higher, compared to 67% (2000) and 91% (2001) in Massachusetts. (HVAC contractor interviews)

Non-ENERGY STAR HVAC contractors in New Hampshire installed no 13+ SEER central AC/heat pump systems in 2000 and only 1% in 2001. The proportion of ENERGY STAR-level furnaces installed by New Hampshire non-ENERGY STAR HVAC contractors decreased from 78% in 2000 to 65% in 2001, all because of the responses of one large contractor who attributed the decline to the fact that they did an apartment complex in 2001. (HVAC contractor interviews)

[13] See Appendix G: Incremental Cost Estimates for details on square footage assumptions etc. for the various home types for which builders were asked to provide upgrade options and costs.

The HVAC contractors who report installing increasingly efficient cooling and heating equipment in new homes say it is because of: (HVAC contractor interviews)

- Increased consumer demand based on environmentalism and greater consumer education
- Decreasing differences in cost between more efficient and less efficient systems
- Contractor sales efforts
- Manufacturers' efforts
- Rebates for furnaces.

Since none of the New Hampshire heating and plumbing contractors interviewed worked on ENERGY STAR homes, the efficiencies of the equipment they installed is compared to what was installed in Massachusetts. In 2000, the New Hampshire contractors installed a significantly higher proportion of ENERGY STAR boilers. Eighty-three percent of the boilers installed by New Hampshire contractors in 2000 were 85+ AFUE, while the comparable percentages in Massachusetts were 43% for ENERGY STAR contractors and 30% for non-ENERGY STAR contractors. However, this picture changed in 2001 when the proportion of ENERGY STAR boilers installed by New Hampshire contractors remained relatively stable at 79%, but the proportion of ENERGY STAR systems installed by Massachusetts contractors increased sharply to 93% for ENERGY STAR contractors and 52% for non-ENERGY STAR contractors. In both years, almost one-fourth of all boilers installed by the New Hampshire contractors were 89+ AFUE. Massachusetts contractors installed almost no 89+ AFUE boilers in 2000, but 50% of the boilers installed by ENERGY STAR contractors and 19% of the boilers installed by non-ENERGY STAR contractors in 2001 were 89+ AFUE. (H&P contractor interviews)

Only one insulation contractor interviewed in New Hampshire worked on an ENERGY STAR home. Not a single insulation contractor mentioned energy efficiency as a decision making factor for the type and efficiency of insulation to install in spec homes. A minority of the insulation contractors in both Massachusetts and New Hampshire said they routinely do air sealing in new construction. Two insulation contractors in New Hampshire said they always did air sealing, one said he never did it, and the remaining nine contractors said they offer it as an option. (Insulation contractor interviews)

Insulation contractors mentioned a variety of techniques for assuring that the installed insulation would perform properly. Three New Hampshire contractors said they use thermal cameras and two more said they occasionally hire an outside provider to perform this service. The use of blower doors is more common: six of the 12 insulation contractors said they use blower doors. (Insulation contractor interviews)

New Hampshire insulation contractors appear to install higher R-value insulation in attics/sloped ceilings and in outside walls than do their counterparts in Massachusetts, perhaps because of the colder weather and the code in New Hampshire. Overall, fiberglass batts are clearly the type of insulation used most often. However, New Hampshire contractors install other types of insulation more often than non-ENERGY STAR insulation contractors in Massachusetts. The other types of insulation mentioned by New Hampshire contractors were blown fiberglass, blown cellulous, sprayed cellulous, spray foam and rigid board. (Insulation contractor interviews)

Appliances and Lighting

The proportion of home buyers purchasing ENERGY STAR lighting products has increased. Fewer than one percent of home buyers interviewed in 1998 and three percent of those interviewed in 1999 said they had purchased an ENERGY STAR lighting product. In 2002, thirteen percent of the non-ENERGY STAR home buyers and seven of the eight ENERGY STAR home buyers interviewed said they had at least one ENERGY STAR light fixture in their new home. (Table 4, Indicator 13) (Home buyer survey)

Most appliances installed in new houses are new, representing a major one-time opportunity for installing the most efficient models possible. Dishwashers are most frequently included in the purchase price of a house, while new refrigerators and clothes washers are less likely to be included. Of the home buyers interviewed in 2002, seventy percent said they had new refrigerators, 90% said they had new dishwashers and 44% said they had new clothes washers. Based on what respondents say, 59% of new refrigerators, 46% of the new dishwashers and 52% of the new clothes washers installed in new homes are ENERGY STAR-labeled. (Home buyer survey) These numbers may overstate the incidence of ENERGY STAR appliances. A survey of appliance purchasers conducted for the Massachusetts ENERGY STAR Appliances Market Progress and Evaluation Report showed that many people are mistaken about whether their new appliances have the ENERGY STAR label.

Market Indicators

The following tables provide potential home buyer and builder market effect indicators to consider tracking going forward to assess the program's progress in transforming the residential new construction market. Tables 4 and 5, respectively, present home buyer and builder indicators of market effects. The values of the 2002 indicators were determined from the results of the interviews and surveys conducted in 2002 and discussed in this report. The 1998 and 1999 indicator values come from previous studies. As mentioned earlier, the previous and current values of these indicators are not always directly comparable because of differences in sampling and how questions were asked. Despite these underlying differences in the 1998, 1999 and 2002 studies, we believe the tables provide useful information for comparing the current market in New Hampshire to the Massachusetts market during the first year and a half of ENERGY STAR Homes Program implementation.

In most cases, separate indicators are presented for ENERGY STAR and non-ENERGY STAR home buyers and builders. Ideally the indicators would track changes in the overall residential new construction market. To do this with any degree of accuracy requires knowing the incidence of homes being built to ENERGY STAR standards outside the program, not only ENERGY STAR labeled homes. Given the low number of ENERGY STAR-labeled homes in New Hampshire, we believe the non-ENERGY STAR indicators provide a reasonable estimate of total market indicators. One note of caution: it is possible the builder sample may be somewhat biased toward builders with better than average construction practices and, therefore, not be representative of the New Hampshire builder population. It was difficult to find builders willing to commit to an hour long interview and it is likely that builders who build below or just to code levels were less willing to talk about their building practices.

Table 4
Home Buyer Market Effect Indicators

	Indicators of Home Buyer Market Effects	1998 Boston Gas Study (n= 266)	1999 MA/RI Study (n=446)	2002 New Hampshire Evaluation	
				Non-ENERGY STAR Home Buyers (n=112)	ENERGY STAR HOME BUYERS (n=8)
1	Percent of new home buyers aware of ENERGY STAR products/label	13%	39%	62%	100%
2	Percent of new home buyers aware that ENERGY STAR homes are available	NA	8%	12%	100%
3	Percent of new home buyers aware of ENERGY STAR homes before entering the market[1]	NA	8%	4%	100%
4	Percent of new home buyers who learned about ENERGY STAR homes after entering the market[1]			8%	0%
5	Percent of new home buyers who visited ENERGY STAR Homes while house hunting [2]	<1%	3%	0%	0%
6	Percent of new home buyers who discussed ENERGY STAR homes while house hunting [2]	2%	2%	0%	100%
7	Percent of new home buyers requesting an ENERGY STAR home or looking for an ENERGY STAR labeled home when they entered the market	NA	NA	0%	62%
8	Percent of new home buyers who say they purchased an ENERGY STAR home[3]	<1%	3%	4%	100%
9	Percent of new home buyers able to describe what differentiates an ENERGY STAR home from other homes on the market [4]	NA	NA	43%	88%
10	Energy efficiency ranking on new home buyers' priority list[5]	34% Strongly Agreed Important 11th out of 11 Factors	39% Strongly Agreed Important 10th out of 11 Factors	7.8 on 0-10 Scale 5th out of 12 Factors	8.6 on 0-10 Scale 5th out of 12 Factors
11	Percent of new home buyers including non-energy benefits on their list of important ENERGY STAR home attributes[6]	NA	NA	25%	76%
12	Percent of new home buyers saying ENERGY STAR homes provide a lot more value for the money[4]	NA	NA	7%	50%
13	Percent of new home buyers who have ENERGY STAR lighting products[7]	<1%	3%	13%	86%

[1] 1999 study did not ask home buyers if they were aware of ENERGY STAR homes before they entered the market or learned about them after entering the market.
[2] The 2002 percentages are the percent of spec home buyers: n = 86 for non-ENERGY STAR home buyers and n = 2 for ENERGY STAR home buyers.
[3] This is the percent of home buyers who said they purchased an ENERGY STAR home.
[4] The 2002 percentages are the percent of home buyers who said they were aware of the availability of ENERGY STAR homes: n = 14 for non-ENERGY STAR home buyers and N = 8 for ENERGY STAR home buyers.
[5] 1998 and 1999 percentage "strongly agree" indicators based on response to the following question: "I am willing to invest in home features that will reduce my monthly costs." The 1998 and 1999 rankings based on the rank of "monthly energy cost" when home buyers were asked to rank the importance of 11 factors in their decision to purchase their home. The 2002 evaluation results are based on asking home buyers to rate the importance of 12 factors in deciding to purchase their home.
[6] The 2002 percentages are the percent of home buyers who said they purchased an ENERGY STAR home: n = 4 for non-ENERGY STAR home buyers and n = 8 for ENERGY STAR home buyers.
[7] The 1998 and 1999 studies simply asked if the home buyer had purchased an ENERGY STAR lighting product, it did not ask if they had purchased it for their new home. The 2002 survey asked if home buyers had ENERGY STAR lighting fixtures installed in their new home.

Table 5
Builder Market Effect Indicators

	Indicators of Home Builder Market Effects	1998 Boston Gas Study (N = 11)	1999 MA/RI Study (N = 16)	2002 New Hampshire Evaluation (N = 20)[1]
1	Builders aware of energy-efficient new construction programs or ENERGY STAR program	8 of 10	7 of 16	13 of 20
2	Builders say new home buyers ask about energy efficiency[2]	4 of 11	7 of 16	Custom 8 of 9 Spec 3 of 5
3	Builders explicitly market energy efficiency to new home buyers	NA = Not Available	NA	Custom 6 of 16 Spec 3 of 7
4	Builders encourage custom home buyers to build to ENERGY STAR standards[2]	NA	NA	1 of 9
5	Builders explicitly market their homes as ENERGY STAR[2]	NA	NA	Custom 1 of 9 Spec 1 of 5
6	Percent of units built in 2001 that were certified as Energy Star	NA	NA	Custom 3 of 46 Spec 0 of 194
7	Builders who built only Energy Star homes in 2001	NA	NA	None
8	Builders who built qualifying homes outside the program	NA	2 of 27	NA[3]
9	Builders who use 2x6 Framing	2 of 11	12 of 16	Custom[4] 14 of 16 Spec 6 of 7

[1] The builder sample included builders who built both spec and custom homes in 2001. Therefore, when separate numbers are presented for custom and spec builders, the sum of custom home builders and spec home builders may be greater than 20.

[2] Note that the sample sizes for custom and spec builders used in this indicator do not include all builders. This is because only builders who completed more than one spec home or more than one custom home in 2001 were asked this question. Of the 16 builders who completed custom homes in 2001, seven built only one home each. Of the seven builders who built spec homes in 2001, two built only one spec home each.

[3] This question was intended for ENERGY STAR builders, and there were no ENERGY STAR builders interviewed in New Hampshire.

[4] One builder (not included in the 14) uses Structural Insulated Panels (SIPs), which are considered even more efficient than 2x6 framing.

4 Conclusions and Recommendations

Based on the above findings, which are explained in more detail in the appendices to this report, we offer the following conclusions and associated recommendations:

Marketing of ENERGY STAR Homes

Most homes in New Hampshire (73%) are spec built—a much higher proportion than in Massachusetts (53%). To capitalize on this volume, in the beginning of the program, we therefore recommend the following:

- *Target high-volume spec builders in program marketing efforts.*
- *Inform real estate agents working with ENERGY STAR builders about the benefits of ENERGY STAR homes, and provide them with marketing tools that will make them program allies.*
- *Strongly encourage all ENERGY STAR builders to market their homes as ENERGY STAR homes.*
- *Build on the relatively high awareness of the ENERGY STAR label and ENERGY STAR homes and interest in energy efficiency among New Hampshire home buyers by stressing consumer education and marketing as well as builder recruiting.*

Emphasis on Quality

The most important factor in new home buyers' decisions to buy or build their home rather than any other home is quality of construction. We have heard that the ENERGY STAR Homes Program cannot claim outright that a home with the label is better constructed than one without it—after all, a labeled home could fall apart in two years, and a home without the label could also meet program requirements. However, there are requirements for ENERGY STAR homes that contribute to or are aspects of quality construction, such as avoiding moisture buildup and much more.

- *The language in program marketing materials should come as close as possible to claiming that ENERGY STAR means quality construction without overreaching; the word "quality" itself is important.*
- *Aside from marketing, the program should specifically focus on ensuring the quality of those aspects of construction on which it can have an impact.*

ENERGY STAR Labeling

A more visible presence for the ENERGY STAR label would call greater attention to it and help spread the word about the program and its value. However, very few people say the label is where it is supposed to be—by the circuit breaker box. People probably don't often look at their circuit breaker boxes, and if they do it is usually because they are having a problem. Also, some new home buyers mistakenly think they have ENERGY STAR homes, apparently because they have seen the ENERGY STAR label on their furnaces or their windows. There may be some problem, then, differentiating ENERGY STAR-labeled homes from other ENERGY STAR-labeled products.

- *Introduce more standard and obvious labeling of ENERGY STAR homes to ensure home shoppers know they are looking at an ENERGY STAR home and homeowners know they live in an ENERGY STAR home. Reconsider whether placing a label by the circuit breaker box alone is enough. Include a very brief explanation of what it means to be an ENERGY STAR-labeled home as part of the label.*

- *Include an explanation of the difference between ENERGY STAR equipment and ENERGY STAR homes in marketing materials to avoid having home buyers think any home with an ENERGY STAR label on the heating system or windows is necessarily an ENERGY STAR home.*

Education and Training for Builders and Subcontractors

Builders and subcontractors are interested in getting more education and training. However, most of them find it hard to find the time to go to all day workshops or training. To attract builders and subcontractors, education and training opportunities need to address interesting topics and be convenient.

- *Consider conducting half-day workshops at several locations throughout New Hampshire to provide all builders and subcontractors the opportunity to attend without giving up a full day's work.*

- *Consider evening seminars to attract builders and subcontractors who need to be on-site during the day.*

- *Schedule training during the slowest work periods in the year.*

Marketing of Appliances

Most appliances installed in new houses are new, representing a major one-time opportunity for installing the most efficient models possible. The costs of refrigerators and clothes washers are not usually included in the price of a new house, meaning that buyers rather than builders make the selection decisions; the reverse is true of dishwashers, meaning that builders rather than buyers usually make the selection decisions.

- *Rely mostly on the ENERGY STAR Appliances program to promote ENERGY STAR-labeled refrigerators and clothes washers, since consumers usually make the decisions. Supplement this by placing ENERGY STAR appliances marketing material into model homes or real estate offices.*

- *Promote ENERGY STAR-labeled dishwashers among builders, since they tend to make the relevant selection decisions; refrigerators and clothes washers may be addressed at the same time among the builders who install those appliance types. However, because the energy savings from ENERGY STAR-labeled dishwashers are currently in dispute and the standards may be updated soon, wait until the standards are revised before pushing on this appliance.*

Marketing of Lighting

The way that light fixtures are selected varies greatly, but the most common practice is to have standard fixtures, with no options, included in the purchase price. This practice is more common in spec homes than in custom-built homes, as might be expected. Overall, it appears that builders more often than buyers make decisions about lighting. *Continue to target builders for marketing of ENERGY STAR-labeled light fixtures in new homes.*