



Measuring the Market for Green Residential Development

January 2008

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EXECUTIVE SUMMARY

Green building is slowly becoming mainstream, and homebuyers are beginning to generate demand for green homes. But just as there is no commonly held definition of “green home,” there is no “green buyer.” Homebuying is quite complex, and for some, green is just one of a multitude of factors that may influence their home purchasing decision. RCLCO’s research has uncovered a variety of buyer motivations that may drive demand for green homes, which can be categorized into three main categories:

1. **The Environment**—sentiments of environmental responsibility;
2. **Energy Savings**—a desire to save energy and realize lower utility bills; and
3. **Health Benefits**—the real or perceived health benefits accorded to the occupant due to lower toxicity building materials and/or health-promoting building methods.

According to RCLCO’s consumer research, 36.4% of potential homebuyers currently identify home or community features specific to one of the above categories as their primary decision-making factor in their next home purchase. RCLCO believes that this percentage—approximately one-third of all buyers—represents the segment of all homebuyers that is today most likely to be swayed in the direction of purchasing a green home. This figure is based upon a surveying strategy that asked respondents about the most important factor in their next home purchase via a series of sequential trade-offs between 42 factors, including but not limited to: type of residential product and neighborhood, quality of school systems, lot characteristics, specific features and finishes (such as ceiling fans and granite countertops), proximity to work/employment, and other factors.

Green homes can be built in a variety of environments, and many have argued that compact development, which reduces overall automobile usage, is a critical component of developing green. RCLCO’s consumer research suggests pent-up demand for these higher-density and walkable environments nationwide. Our estimates suggest that future demand for high-density residential products—units in structures with more than five units per structure—could potentially be 140% above the current levels of occupied stock. Demographic shifts and changing consumer preferences are driving the growth in demand for these higher-density environments.

In all, RCLCO currently believes that the green-favorable segment of total housing demand breaks down into the following profiles.

- **Forest Greens—6.1% of Buyers**
Buyers who consider some sense of environmental responsibility/stewardship to be their primary decision-making criterion in their next home purchase.
- **Greenback Greens—21.8% of Buyers**
Buyers who consider energy savings—or, more importantly, the imputed cost savings due to lower energy bills—to be their primary decision-making criterion in their next home purchase.
- **Healthy Greens—8.5% of Buyers**
Buyers who consider potential health benefits of green homes to be their primary decision-making criterion in their next home purchase.

These percentages refer to the percentage of homebuyers in the continental United States, on average, that are most likely to be swayed in the direction of buying a green home based on the appeal of a green motivating factor.

RCLCO believes that positioning projects toward Healthy Greens, on average, is the strongest market opportunity with the greatest potential to capture potential demand and extract potential premiums.

According to our segmentation modeling, Healthy Greens have the highest incomes and the most proclivity to pay premiums in order to reap the perceived benefits of green buildings. Though they are not the deepest segment currently, there has been very little education surrounding the connection between green buildings and health. We believe that appealing to the health sensibilities of the homebuyer may be very effective in expanding the current population of true Healthy Greens and enlarging the pool of “the convincibles.”

Meanwhile, much of the marketing of green residential has focused on the energy-savings benefits. For a variety of reasons, these marketing efforts may have reached their maximum impact potential, and those who are on the fence today may not have the incomes or desire to pay premiums that can drive the industry. Greenback Greens trend older and have lower incomes in general. They require a return on their

investment within four years, whereas the payback period from lower utility bills typically ranges between six and eight years.

Finally, the altruism of the Forest Greens is encouraging, but their depth is questionable, as is their potential to pay premiums.

RCLCO also projects a growing demand for higher-density residential products within higher-density neighborhoods, which are green because of their impact on reducing vehicle miles travelled and, therefore, CO2 emissions. When household growth driven by smaller households is combined with evidence of increased preference for higher-density housing, RCLCO estimates that potential demand for high-density housing is in the range of 4.5 million units over a 10-year period, a 140% increase over levels of occupied stock as calculated by using the 2005 American Housing Survey (AHS) distribution. RCLCO's analysis indicates which metropolitan areas will be better poised than others to capture this demand, and where pockets of pent-up demand may lie.

METHODOLOGY

In the spring of 2007, RCLCO (Robert Charles Lesser & Co.) conducted a national survey of homeowners to gain an understanding of their attitudes toward green residential products. The survey, deployed via the Internet, yielded 1,011 complete responses from the continental United States. The survey was geographically stratified to mirror the geographic distribution of householders across the contiguous United States. The survey targeted existing homeowners with incomes of \$50,000 or over, or (in the case of retirees) with an estimated net worth of at least \$250,000.

The survey instrument itself was designed to serve four functions. First and foremost, its ultimate goal was to establish a baseline of consumer preferences for green homes. Its second function was to serve as an educational tool to bring respondents to a level of understanding regarding green features and amenities before they were asked to opine on their preferences. Third, it needed to provide detailed information regarding target market audience demographics suitable for demand modeling. Finally, it needed to guide the respondent through a series of tradeoffs so that true preferences for various factors, including green, could be discerned within a context of their comparative importance to the respondent.

The sample partner that RCLCO uses when conducting consumer research engagements has a strong capacity to garner quality data utilizing its online panel. This panel is recruited using a closed-enrollment approach as opposed to an open-enrollment approach, allowing control of the panel membership. This particular vendor maintains an extensive pool of approximately 3.6 million online respondents. Unlike standard panels, its panel is screened thoroughly to exclude individuals who show signs of poor respondent integrity through the thorough enrollment process. This vendor's unmatched member screening allows it to support research among low-incidence and hard-to-reach audiences, and its industry-leading quality control metrics lead to its outstanding reputation as a quality leader in the online space.

One common critique of survey response data is that respondents' data may not reflect actual decision-making as accurately as data analysts would desire. This potential dilemma is particularly pronounced with regard to testing preferences for green, as potential respondents would

be asked to indicate preferences toward a range of issues surrounding homeownership—including the appeal of a relatively new concept—that are inextricably linked to a host of other issues related to individual financial positions and competing desires. In this case, preferences for green alone might not be as telling as preferences when other considerations—such as product types preferred, willingness to pay premiums, home/neighborhood features, estimates of monthly payments, and attitudes toward a range of green-related motivating factors—are taken into account and weighed against the option of purchasing a green home.

To address this issue, the survey incorporated a unique technology developed by Sawtooth Software called Maximum Difference Scaling (Max Diff). Similar to a conjoint analysis, Max Diff is an antidote to standard rating scales or importance scales. Respondents find standard importance scales very easy, but they do tend to deliver results that indicate everything as being “quite important,” making the data not especially actionable. Max Diff, on the other hand, forces respondents to make choices between options while still, at the end of the day, delivering rankings showing the relative importance of the items being rated. This technology, when incorporated into a survey, guides respondents through a series of tradeoff scenarios that ultimately force respondents to progressively narrow their preferences based upon preferences relative to other factors.

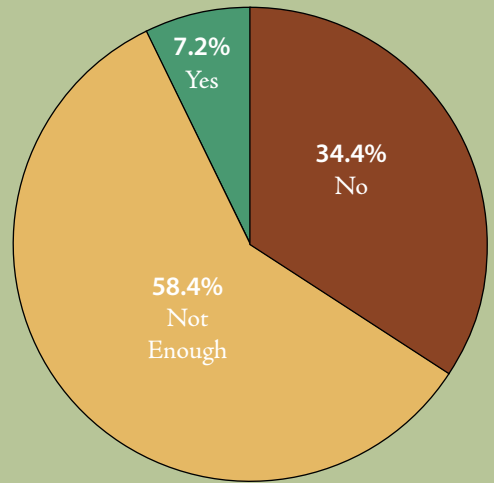
In all, the survey was received by almost 10,000 potential respondents and yielded 1,101 complete responses. The respondents were equally distributed among the three main U.S. markets (the Pacific, Central, and East Coast states), and they were targeted to yield a sample size that provided a 95% confidence level and a confidence interval of 5%. The survey sample consisted of existing homeowners interested in purchasing homes in the next three years with incomes or net worth sufficient to support market-rate housing purchases. Data from this sample can be assumed to be reasonably approximate to the attitudes and preferences of this larger population of buyers within the continental United States.

Attitudes Towards Green Homes

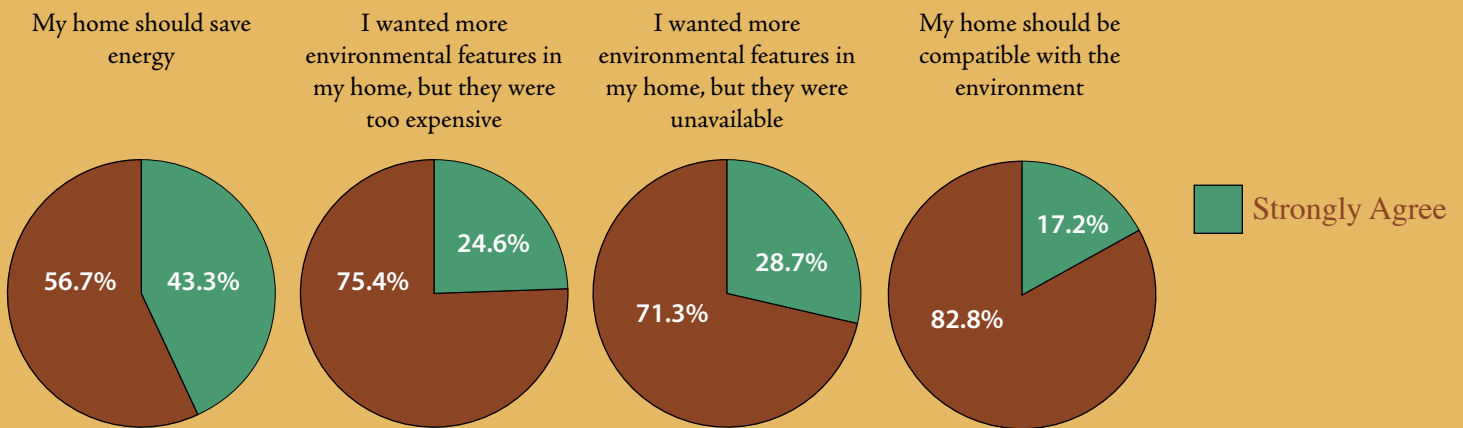
Americans are more aware of “the environment” than ever before. And “green” has gone mainstream, often dominating headlines, magazine covers, and even the Oscars. However, few homeowners see homes as an environmental problem. In fact, more than 70% of potential homebuyers believe that their home has no impact or an “acceptable” level of impact on the environment.

However, our research shows that of those who are aware that their home has a negative impact on the environment – approximately 20% of buyers – almost all want to do something to reduce their environmental impact in their existing home or in a future purchase. And a similar percentage of homebuyers indicated that they were looking for more environmental features in their existing home, but these features were not available when they last purchased.

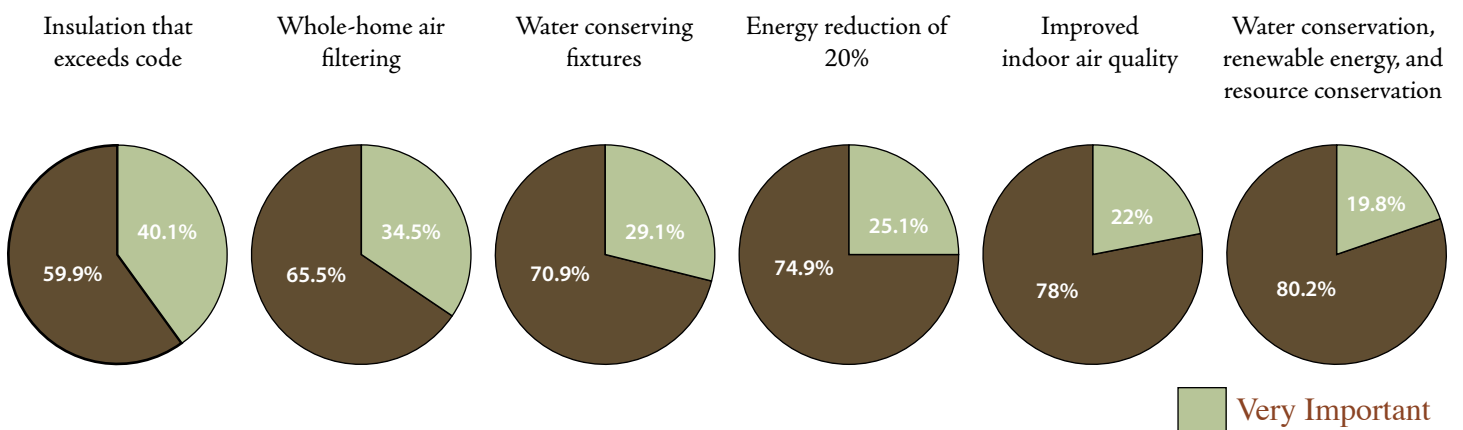
Are developers paying enough attention to the environment?



What are buyers saying about green homes?



How important are the following in your next home purchase:



But will they pay for it?

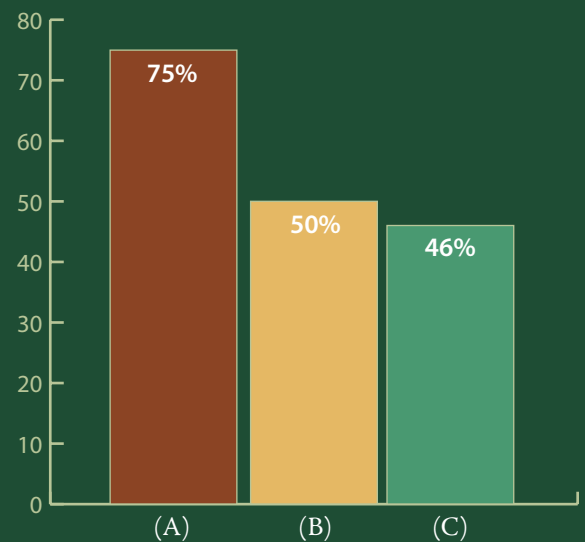
The question on the minds of the building industry is – will buyers pay for green homes? In most cases, what buyers will pay for depends largely on the type of green buyer. Each buyer profile has a different set of desires, expectations, and demographic profiles.

As a group, however, these buyers are willing to spend money on green features – or rather, green benefits - in their next home.



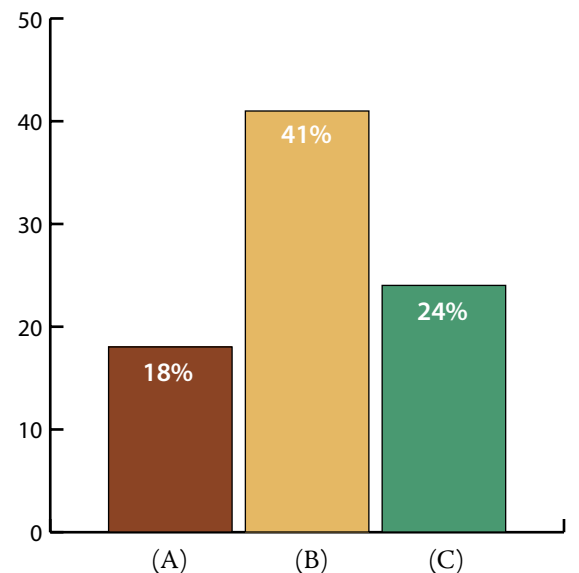
Assuming that their investment pays them back over time, buyers are willing to spend additional money on their home...

- (A) If it saves energy
- (B) If it provides health benefits
- (C) If it is good for the environment



If their investment might not pay them back over time, buyers are willing to spend additional money on their home...

- (A) If it saves energy
- (B) If it provides health benefits
- (C) If it is good for the environment



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