

#### Introductory slide

- The National Association of Home Builders, teamed with Dodge Data and Analytics, have been surveying single-family home builders since 2006 regarding their level of green building activity; multifamily builders were added in 2014 and remodelers were added in 2017.
- Cover photo: Home by Red Tree Builders, Inc. located in the agrihood community of Olivette in North Asheville, NC.
  - Features: geothermal energy, mechanical ventilation, whole-house humidifier and a hybrid hot water heater,
  - The home earned a HERS 46 and a green certification from a state program

# Green Single-Family and Multifamily Homes 2020

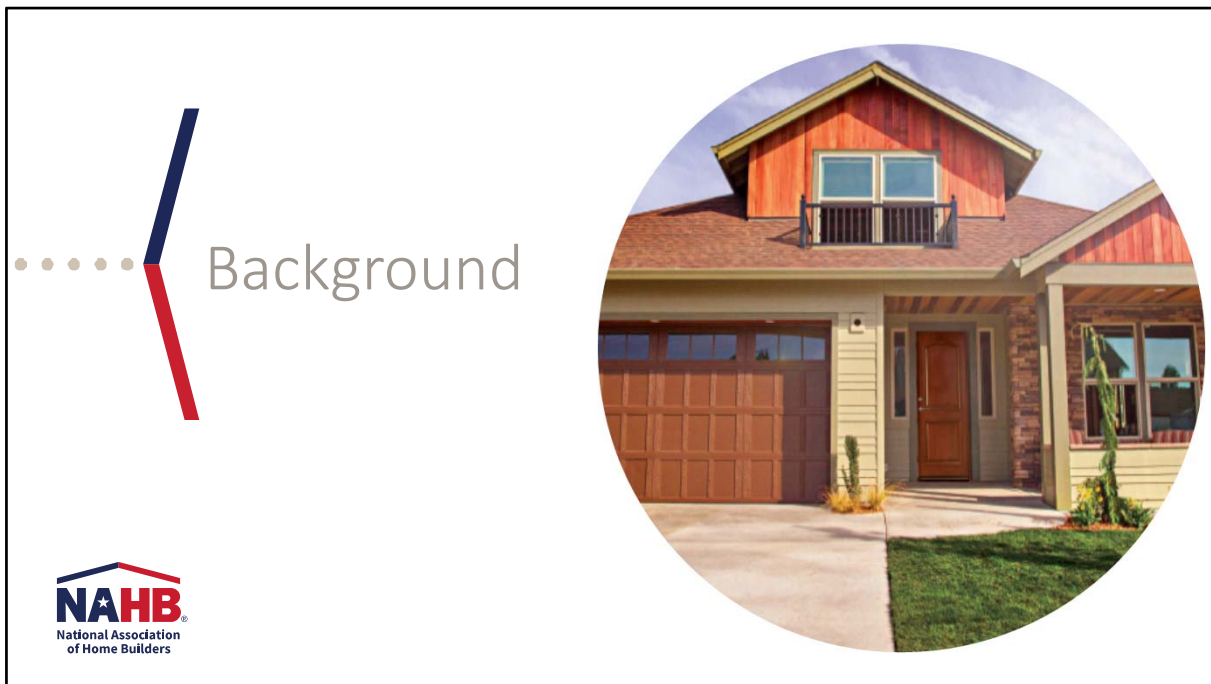
## SmartMarket Brief

Comprehensive Summary

Download the brief at [www.nahb.org/smr](http://www.nahb.org/smr)



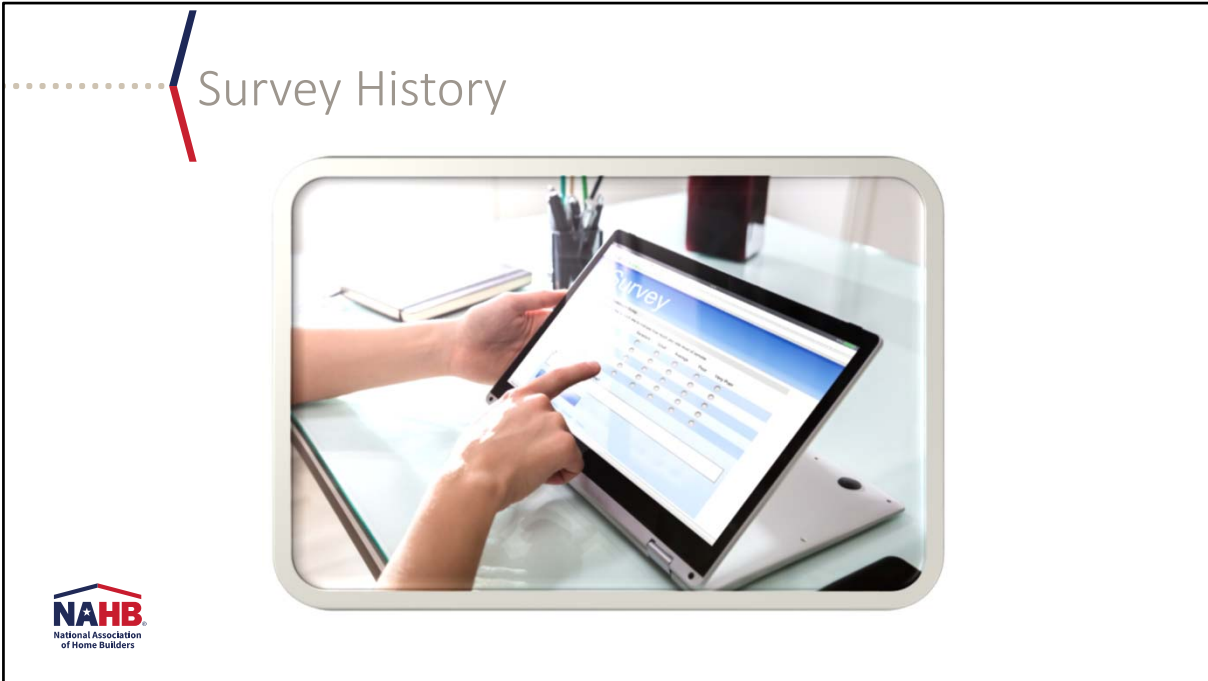
- The results from the latest survey, conducted in 2019, are packaged in the 2020 Green Single-Family and Multifamily Homes SmartMarket Brief.
- Brief was released at the 2020 International Builders Show
- Available for free download from the NAHB website at [www.nahb.org/smr](http://www.nahb.org/smr).



A brief review of how the 2020 study came to be helps put the results in context.

Photo information:

- Built by Urban NW Homes as part of the Wild Glen community in Portland, Oregon.
- This home is NGBS Certified Emerald; it is also a net zero home - designed to only use as much energy as it can produce from the PV panels on its roof.
- The current tenants do not pay a utility bill and also receive a check for over two thousand dollars per year through net metering.
- Net metering is a billing mechanism that credits owners with solar energy systems (PV) for the electricity they add to the grid.



- Surveys have been conducted every 2-3 years since 2006.
- Participants are asked about their perceptions on the several aspects of the green building industry
- As new trends emerged and new technologies came into practice, the size of the survey grew.
- So the format for this cycle was revised.



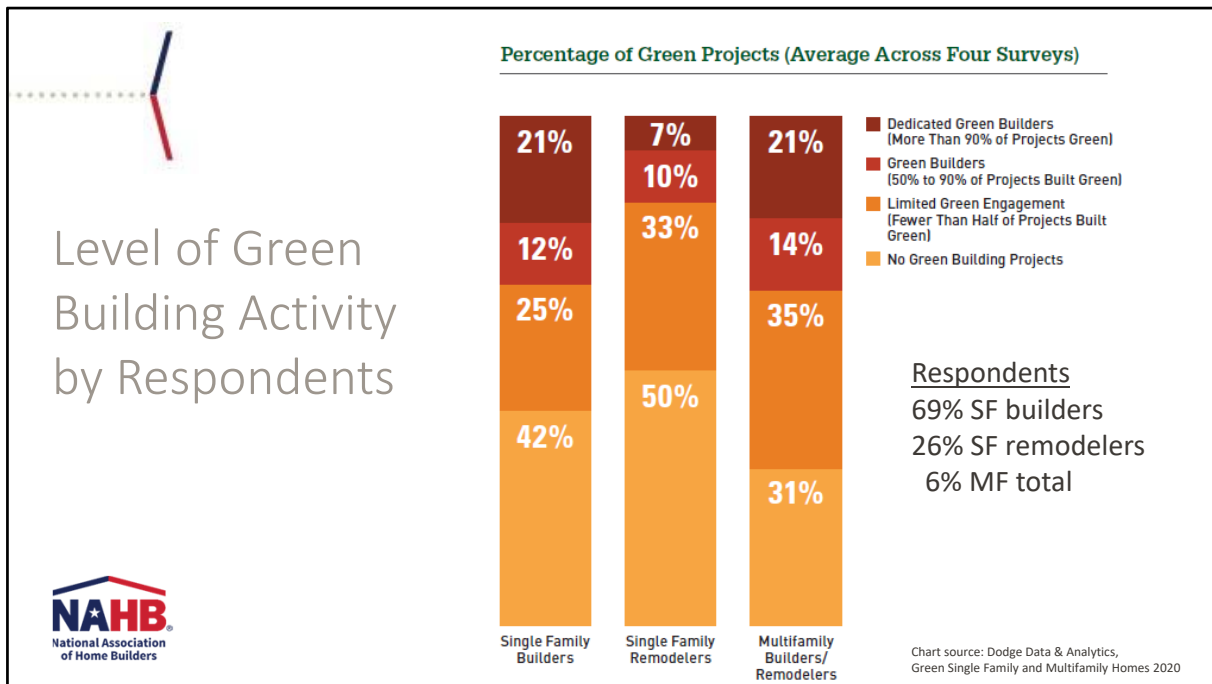
- Four **shorter surveys (5-8 minutes)** were developed to increase participation and gain insight across a broader group of builders and remodelers.
- **Topics: market activity | marketing | drivers and obstacles | products and practices**
- Survey was open to general contractors, homebuilders, remodelers and developers from both single and multifamily markets within the United States.
- Basic demographic information was captured and participants were asked to self-identify their level of green building; the analyses looked for regional differences in responses and between different levels of green building.
- Participation was higher, with a total of 2,000 responses across the four surveys
- **Housing is a critical industry for economic recovery.** While market outlooks, construction practices and consumer preferences will most definitely change due to the coronavirus outbreak, these results can be useful for builders as markets begin to open back up. **Consumers have developed a heightened awareness of what works well and what doesn't** after living in their homes for an extended period. They are **likely to place a greater importance on factors like efficiency, comfort and health** when looking to remodel or buy their next home. **These survey results help to identify practices that building professionals can consider using** in concert with new and/or heightened priorities for consumers in adjusting their business models.

## Survey Definition of Green Building

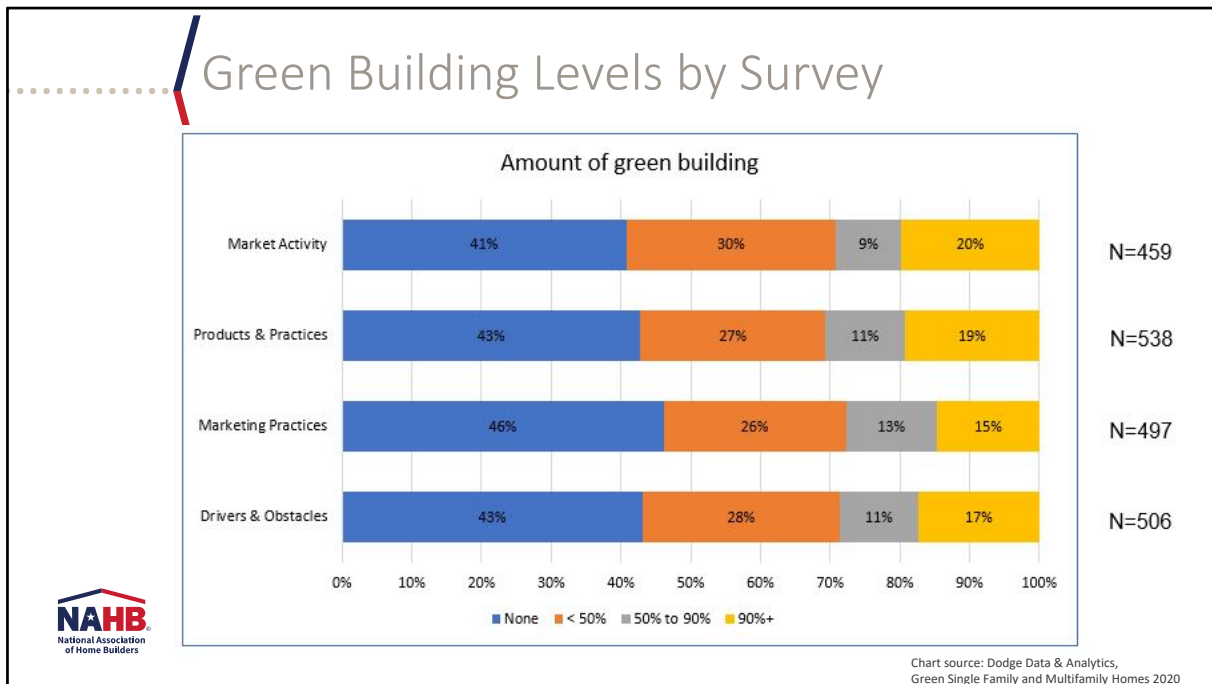
“A green home incorporates strategies in design and construction that increase energy, water and resource efficiency, indoor environmental quality, and minimize environmental impacts on the site; and/or is certified by a third-party to the National Green Building Standard, LEED for Homes, or any other green rating system.”



Green building was defined in the survey as:  
A green home incorporates strategies in design and construction that increase energy, water and resource efficiency, indoor environmental quality, and minimize environmental impacts on the site; and/or is certified by a third-party to the National Green Building Standard, LEED for Homes, or any other green rating system.



- Builders and remodelers surveyed were asked to classify their level of green building activity based on the definition from the previous slide
- Are they:
  - dedicated green builders, doing 90% or more green projects
  - green builders, doing 50-90% green projects
  - builders with limited green engagement (< 50%)
  - builders with no green building projects
- This bar graph shows the green building activity breakdown by builder type. For instance, 21% of all single family builders surveyed were dedicated green builders, defined as those who build more than 90% of their projects green.
- Some level of green building activity was reported by
  - 70% of multifamily respondents
  - 60% of single-family builders
  - and 50% of single-family remodelers
- Those reporting a majority of green projects make up about one third of single-family builders and multifamily respondents, with 21% of those identifying as dedicated green builders.

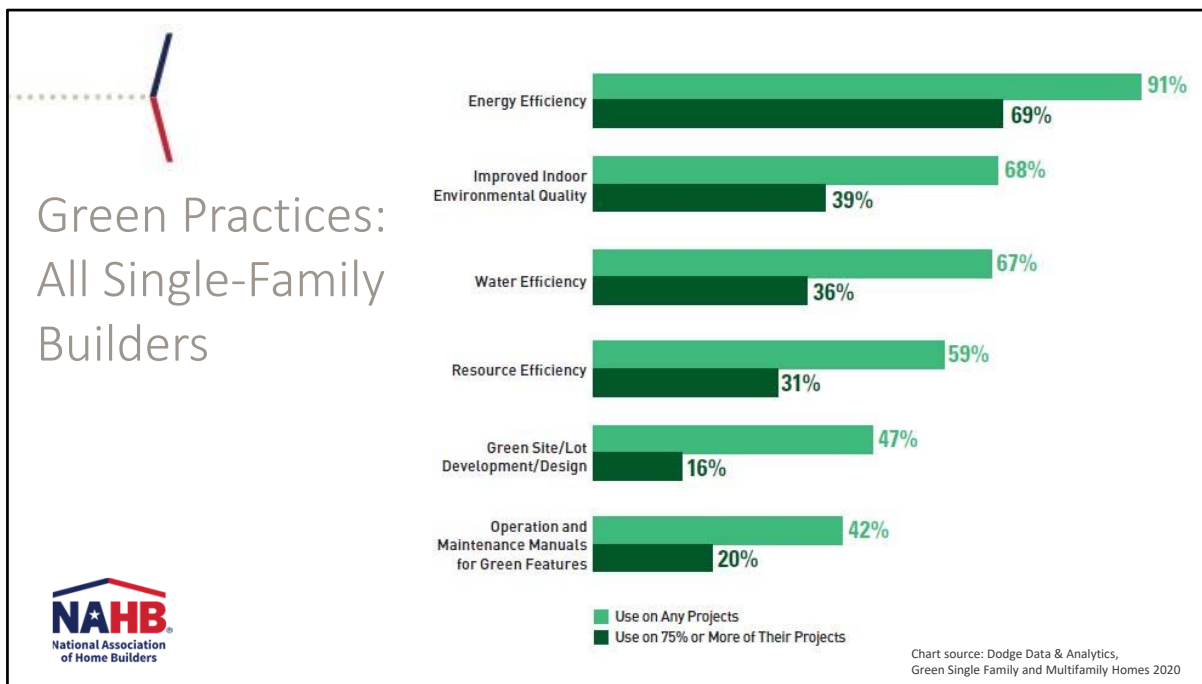


- The level of green building self-reported by respondents is similar across all four surveys
- Dedicated green builders - those doing 90% or more green projects - ranges from 15-20%, depending on the survey
- 41-46% of respondents reported that none of their projects met the definition of green building used for this set of surveys

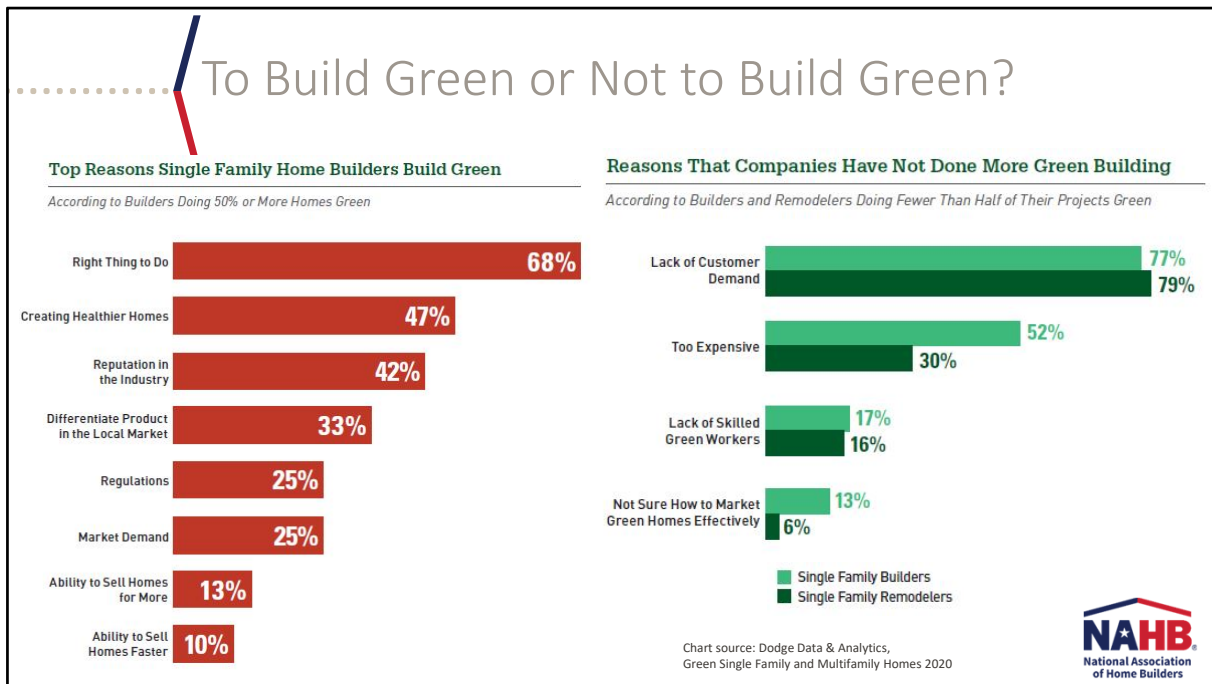
Topic #1:  
Green Building  
Market Activity



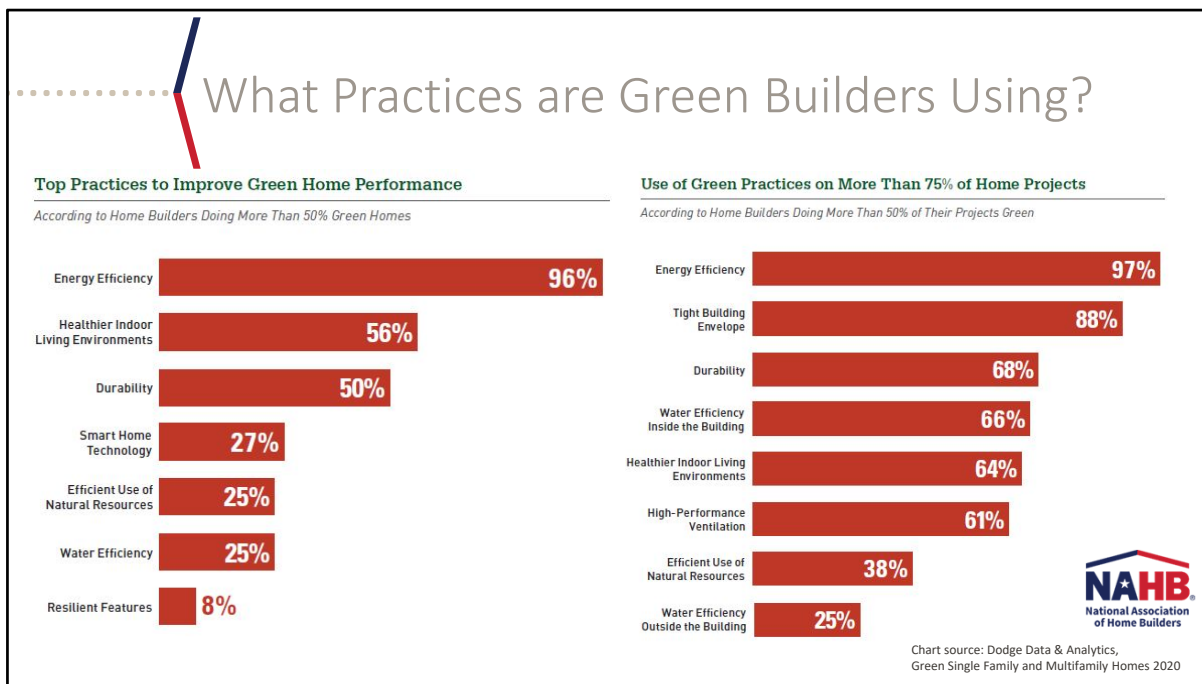
Let's take a look at the results now, starting with green building market activity



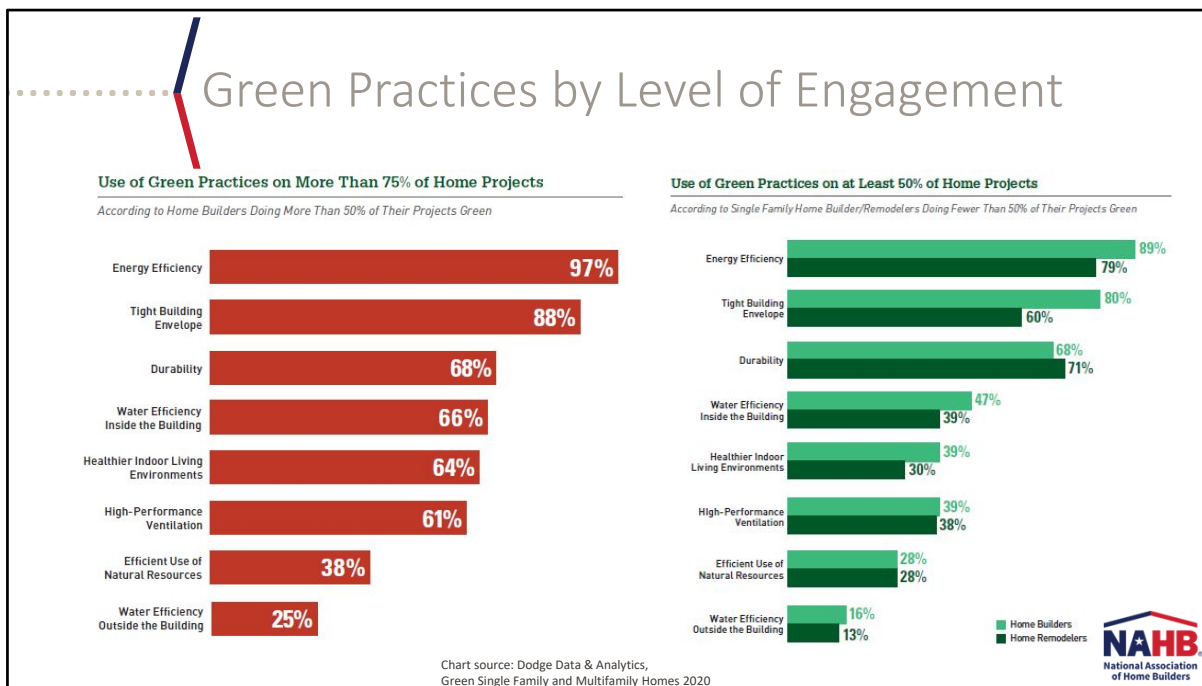
- One of the big takeaways of this survey is that **all single-family builders use many green practices at least sometimes, and some use them most of the time.**
- This chart shows how often builders employ a type of green strategy, as well as how many reported doing so at least 75% of the time.
- **Over 90% of all single family builders use energy efficiency practices on at least some of the homes they build, and over two thirds use them on most projects.** Energy efficiency is a common practice that is not only applied to green projects.
- **About two thirds of builders are also using practices to improve indoor environmental quality, water efficiency and resource efficiency in at least some of their homes, with about one third using these strategies on most of their projects.**
- So even though two-thirds of single-family builders did not identify themselves as green, with 42% reporting they did no green building projects, these results show that high-performance, green building practices are regularly used in the single-family market.



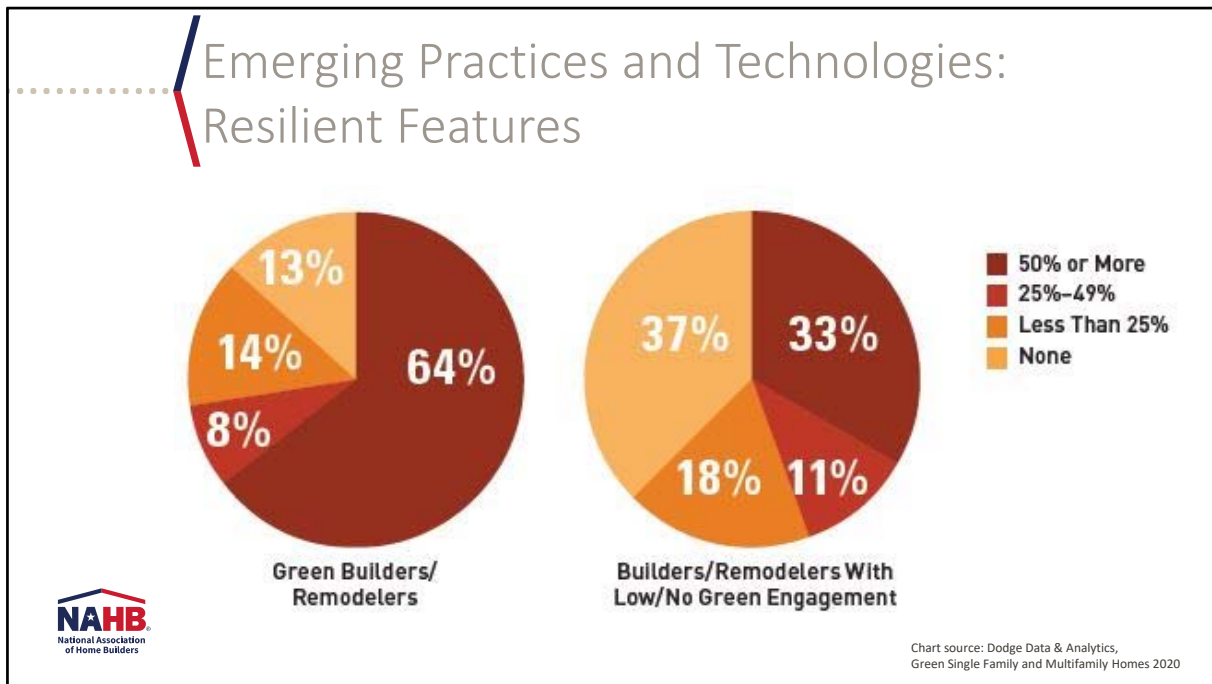
- The survey defined green builders as using a whole-home green approach and/or certifying their homes to a green standard. Those single-family builders were asked **why they build green**.
- Among **those building a majority of their projects green**:
  - top reason by far is because it is the right thing to do (68%)
  - 47% build green to create healthier homes
  - 42% want their reputation in the industry to reflect this type of construction
  - One-third use green building to differentiate their product in their local market
- Only 25% of green builders said they built green due to market demand, but the **lack of demand was the top reason not to do it** among those not identifying as green builders. Builders' perception that it is too expensive is also a significant concern and obstacle to building green.
- This **presents an opportunity to increase market growth by increasing customer interest and knowledge**, and subsequently, demand for green.



- The survey drilled deeper to ask green builders what they see as the best strategies to improve home performance.
- As seen on the left graph, **energy efficiency dominates with green builders also.**
- Designing to create **healthier indoor environments and building for durability were also chosen by at least half** of the green builders.
- Including resilient features was also seen as a top practice by almost 10% of the green builders.
- **These strategies are more popular now than before, and their importance is anticipated to increase even more among consumers due to public health crises like COVID-19.**
- Drilling down into the specific practices used at least 75% of the time by green builders, energy efficiency continues to top the list, but **most are also incorporating tight building envelopes.**
- Two-thirds are also regularly incorporating durability, indoor water efficiency, healthier indoor living environments and high-performance ventilation.



- These graphs compare the practices being used by green builders and those not identifying as green.
- On the left is the same graph as on the previous slide, showing what green builders employ on at least 75% of their homes.
- The graph on the right shows what the other builders are using on at least 50% of their homes.
- While the question was asked a bit differently, the trends can be seen clearly.
- **All builders are using the same high-performance practices at the same levels, green builders just have higher overall engagement rates.**
- This information can be useful for highlighting to consumers home components that add value, and for targeting aspects that could be included in MLS listings and appraisals to benefit the most builders.



- Trends in some emerging practices were also captured in this study as benchmarks.
- The survey asked all respondents “On what percentage of your total home projects do you use resilient features to help homes withstand natural disasters (such as flooding and wind events)?”
- **Green builders and remodelers are including one or more types of resilient features in at least some of their projects almost 90% of the time, with 64% using them at least half of the time.**
- This is a much higher rate of use than participants with fewer green projects – over one third reported not using resilient features at all.

## Emerging Practices and Technologies: Smart Home Tech for Managing Energy

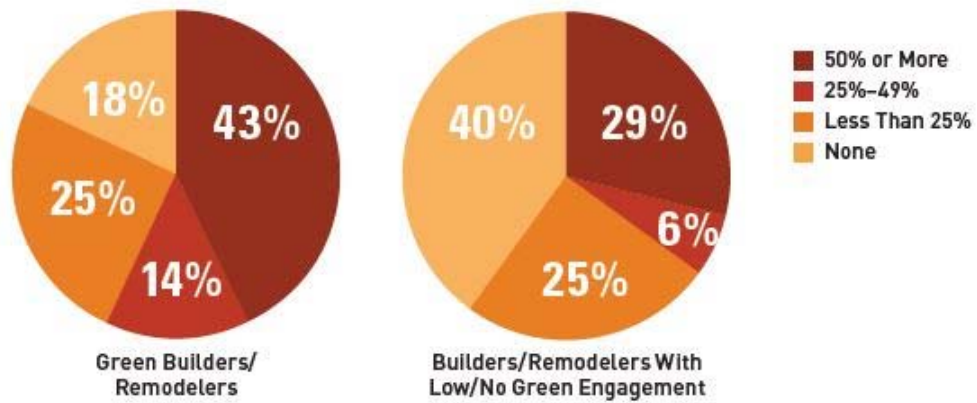


Chart source: Dodge Data & Analytics,  
Green Single Family and Multifamily Homes 2020

- The survey also asked all respondents “On what percentage of your total home projects do you incorporate smart home technology for better energy management?”
- **43% of green builders are using smart home tech on the majority of their projects, 29% of the rest of the builders are also using smart home tech to manage energy on at least 50% of their projects**
- Only 18% of green builders and remodelers aren’t using smart home tech at all, while 40% of the other builders are not



## Topic #2: Marketing Green Homes

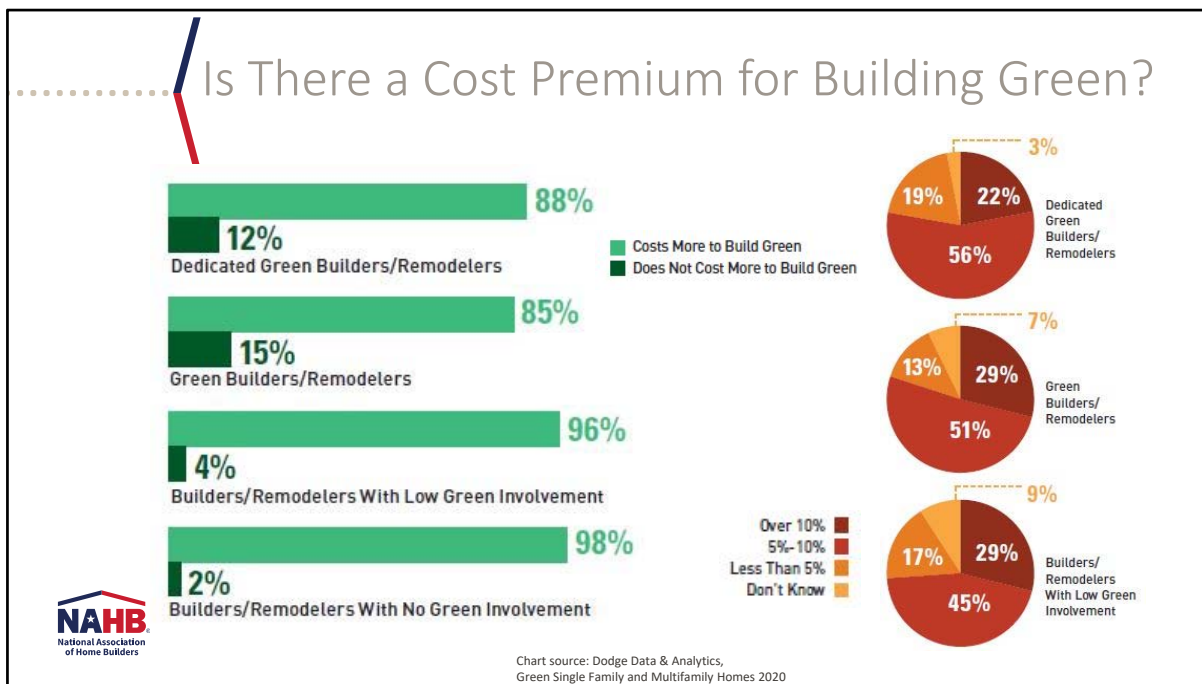


- The next section focuses on marketing green homes.

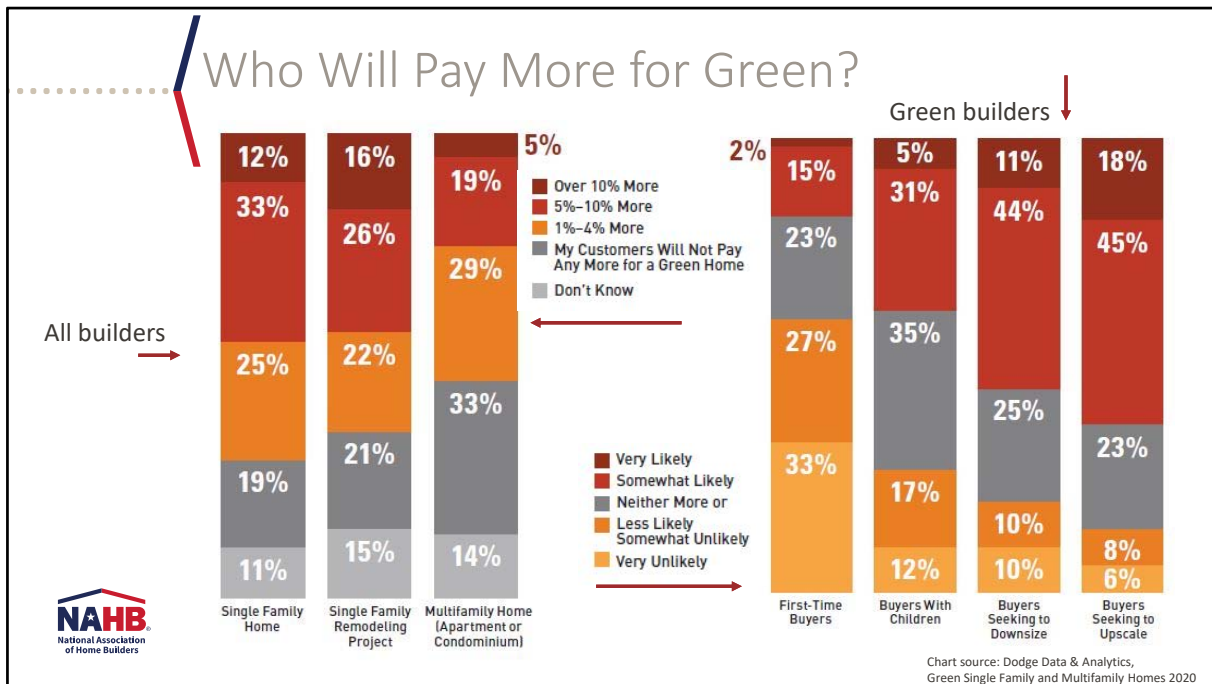
Cost of  
Building  
Green



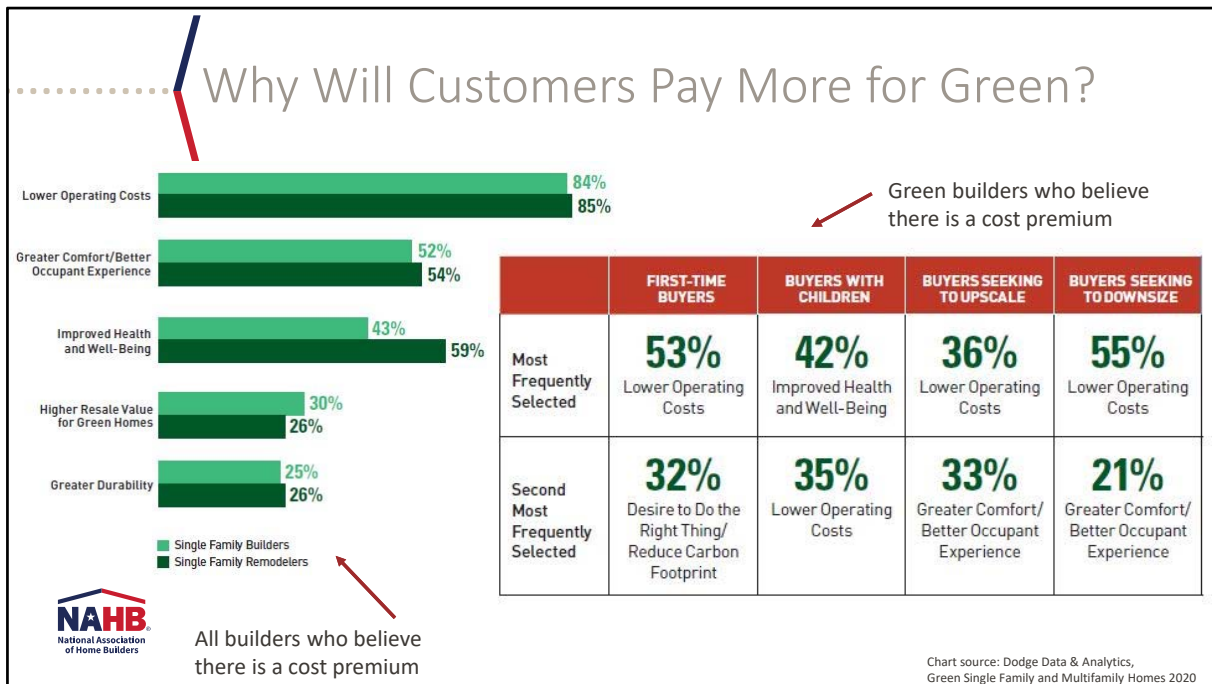
First, the opinions on the cost of building green.



- As seen in the bar graph on the left, **most builders believe building green costs more than building a traditional home** – this finding is consistent with the results of previous surveys.
- Breakdown by builder type reporting they perceive green to cost more: 86% of single-family builders, 72% of single-family remodelers and 74% multifamily
- However, **15% of those identifying as green builders do not think there is a cost premium**
- The difference of opinion between green builders and other builders highlights the concept that once builders conquer the learning curve, have subcontractor teams that are comfortable with and experienced in green building practices, and realize economies of scale where possible, green building is being done cost effectively.
- The pie charts on the right show the breakdown of how much more builders believe it costs to build a green home. **About half believe there is a 5-10% premium to build green and about a quarter believe it costs more than 10%.**



- The general consensus is that builders think green costs more to build. Therefore there must be a market willing to pay for that premium in order for builders to be financially successful.
- The study looked at this a couple of different ways, both of which are shown on this slide.
- All builders were asked how much of a premium they thought customers would pay in the chart on the left.
- About 20% of single-family and 1/3 of multifamily respondents said their customers will not pay any price premium. **Roughly a quarter of all respondents believe a 1-4% premium is obtainable.**
- A third of single-family builders felt they could get 5-10% - fewer remodelers and multifamily respondents agreed. But a higher percentage of single-family remodelers thought they could get more than a 10% premium.
- The chart on the right shows green builder responses (all who said they do at least 50% green projects) when asked how likely different types of buyers would be willing to pay a premium.
- They reported **first-time buyers are the least likely to pay more, while buyers seeking to downsize or upscale are the most likely to pay a green premium.**

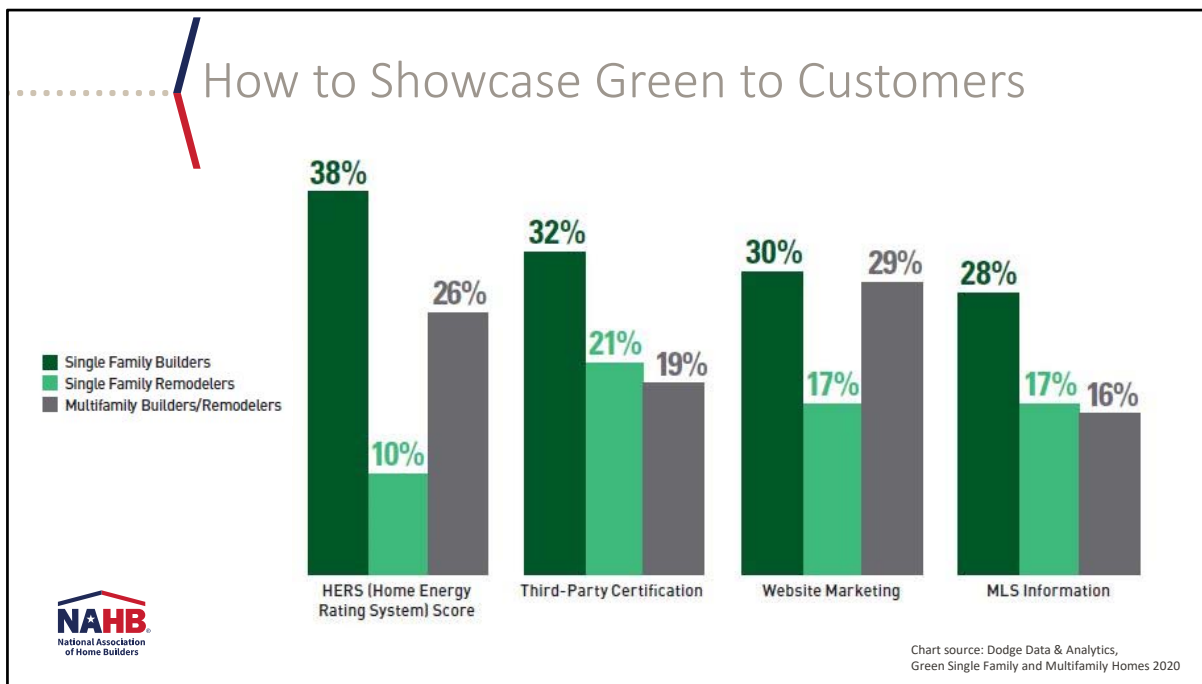


- Builders who responded that building green costs more were asked **what types of strategies provide value above the extra cost, driving customer willingness to pay that premium.**
- Those results are on the left: Lower operating costs, comfort, and improved health and well-being topped the list.
- As seen in the chart on the right, green builders also perceive these benefits as being one of the top two reasons different types of buyers are willing to pay a green premium.
- **Green builders see lower operating costs as a top driver for many types of buyers** – marketing reduced utility bills resulting from efficient systems and packaging it as a reduced total cost of ownership may resonate with buyers hesitant to spend more at purchase. **Framing indoor air quality features as ‘improved health and well-being’ and as providing ‘greater comfort’ are also perceived as top drivers to entice some types of buyers** to spend more upfront.

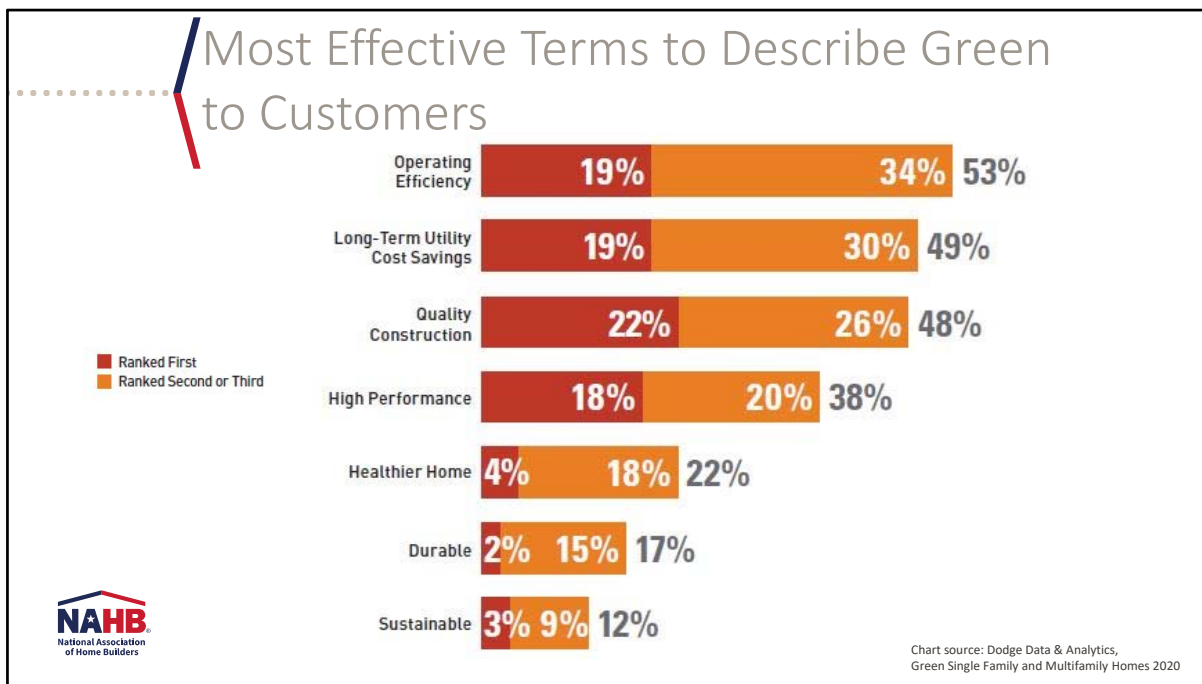
Selling Green



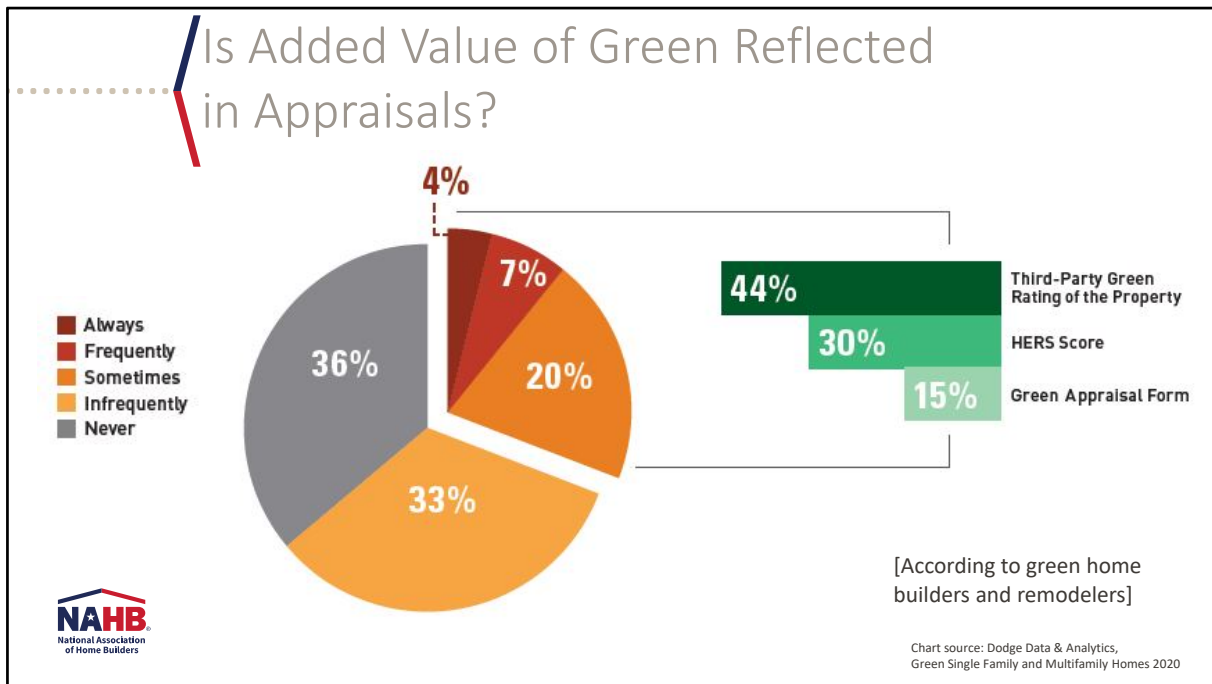
- Which takes us into the next part of the marketing survey – selling green



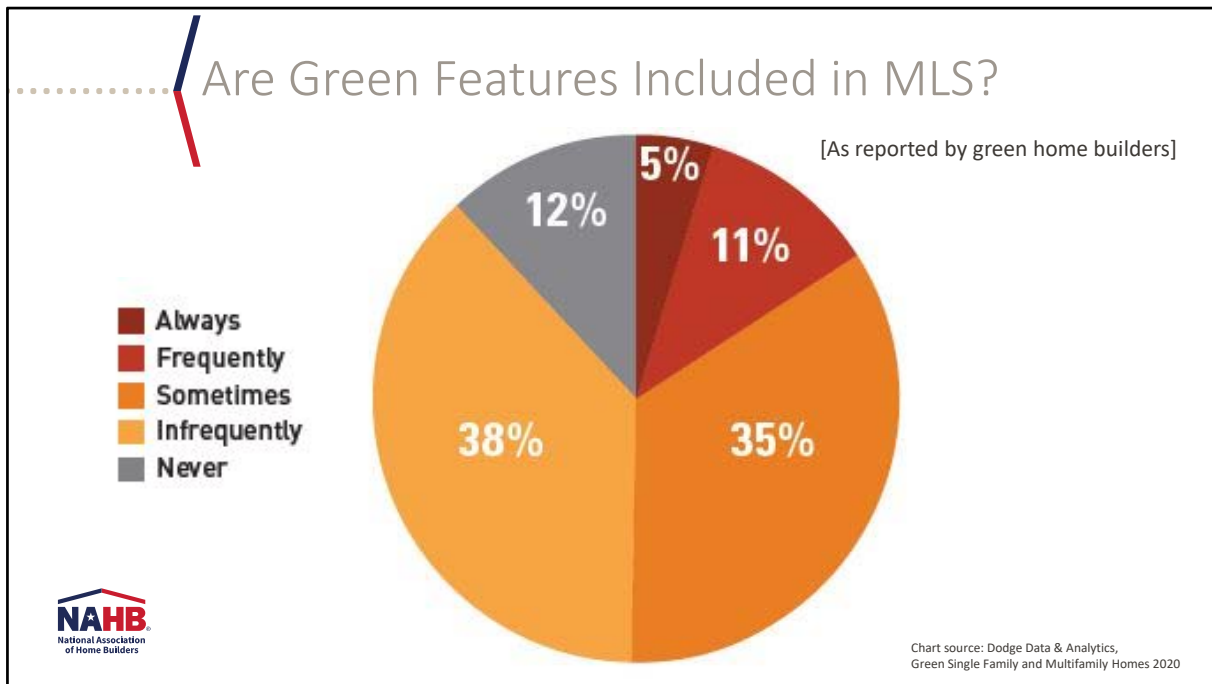
- Participants were asked to select the ways they demonstrate to customers that a home or apartment or condominium is green from a list of 6 options.
- The top four responses are shown here – the other two choices were ‘green appraisal form’ and ‘silent salesperson signage’.
- **No single method dominated the results.**
- Single-family home builders are the most frequent users of all of the top methods, but even among them, only about one third use any one particular method, with HERS score at the top. Multifamily builders and remodelers most frequently use HERS score and website marketing to showcase that their homes are green.
- The only significant regional difference in the results was in the use of MLS information, which is more prevalent in the South (30%) than in the other regions.



- Respondents were also asked which terms they perceive as being the most effective for describing green features to customers.
- **The top two terms—operating efficiency and long-term utility savings—both reflect the importance of having reduced operating costs—which was a top reason builders believe all types of homebuyers would pay more for green**
- The terms high-performance and sustainable ranked lower, and the term green did not even make the top results. These terms are used regularly by building science professionals but are not seen as highly influencing customers.
- Even though builders cite constructing healthier and durable homes as top reasons to build green as we saw earlier, those terms are not seen as being effective in influencing customers. This may be connected both to the challenge of defining these terms and proving the results to consumers.



- The process of selling a home includes the builder and the buyer, but it also includes the appraiser, the real estate agent and the financing institution.
- Reflecting the added value of a green home in an appraisal is important to **help builders sell green at a price that reflects the difference between a green home and a home built to code.**
- However, **it is still relatively rare for builders and remodelers doing green projects to see the additional value of green reflected in the appraisal.**
- Only 11% report that this occurs frequently or always, and 69% say it is either infrequent or never happens.
- Of those who are seeing the value reflected in appraisals, which is pulled out in the bar graph on the right, a third-party certification is seen as the most valuable piece of information. The green appraisal form was only considered the most useful by 15% - education on how to complete the form and the benefits of doing so could increase its value to builders.



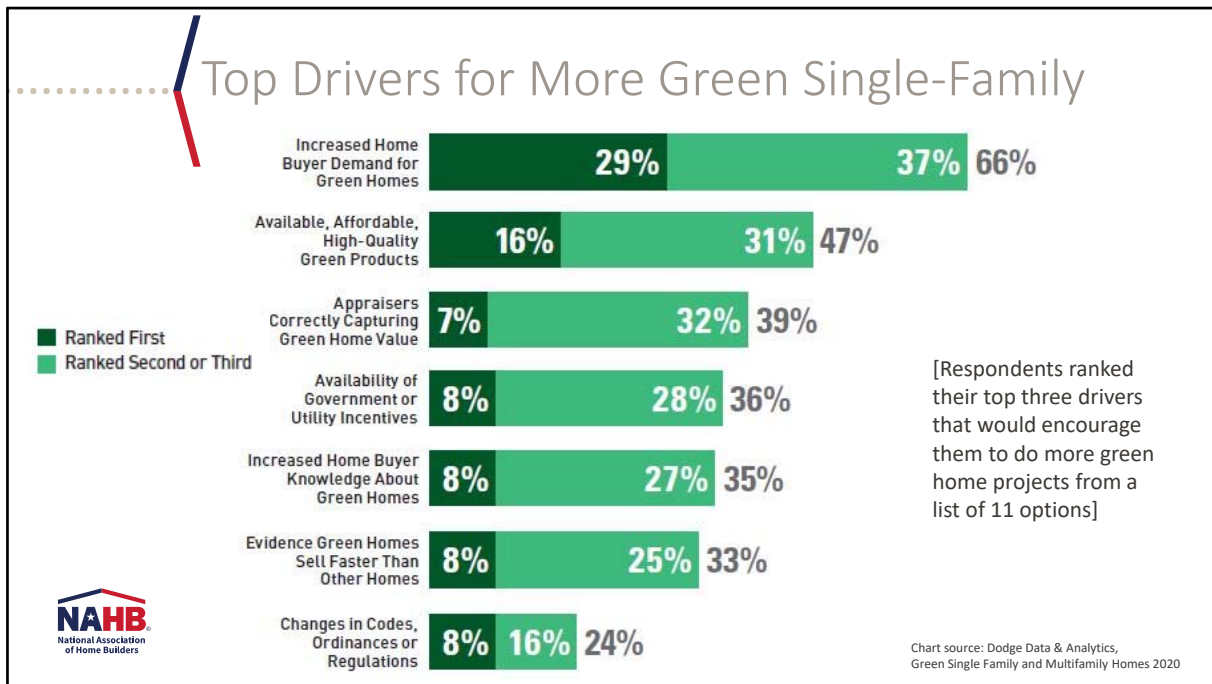
- Home features are showcased by real estate agents in the Multiple Listing Services listings, commonly known as the MLS.
- **Most of the green home builders report that they see green features reflected in the MLS listings, but only 16% say it is a frequent occurrence** while the majority say it happens only sometimes or infrequently.
- **Greater use of these fields could help home buyers interested in green be more aware of available market options.**
- Use of these options can also showcase efficiency and comfort to all buyers, capitalizing on the anticipated awareness of home performance brought on by the shelter in place orders during the first half of 2020.



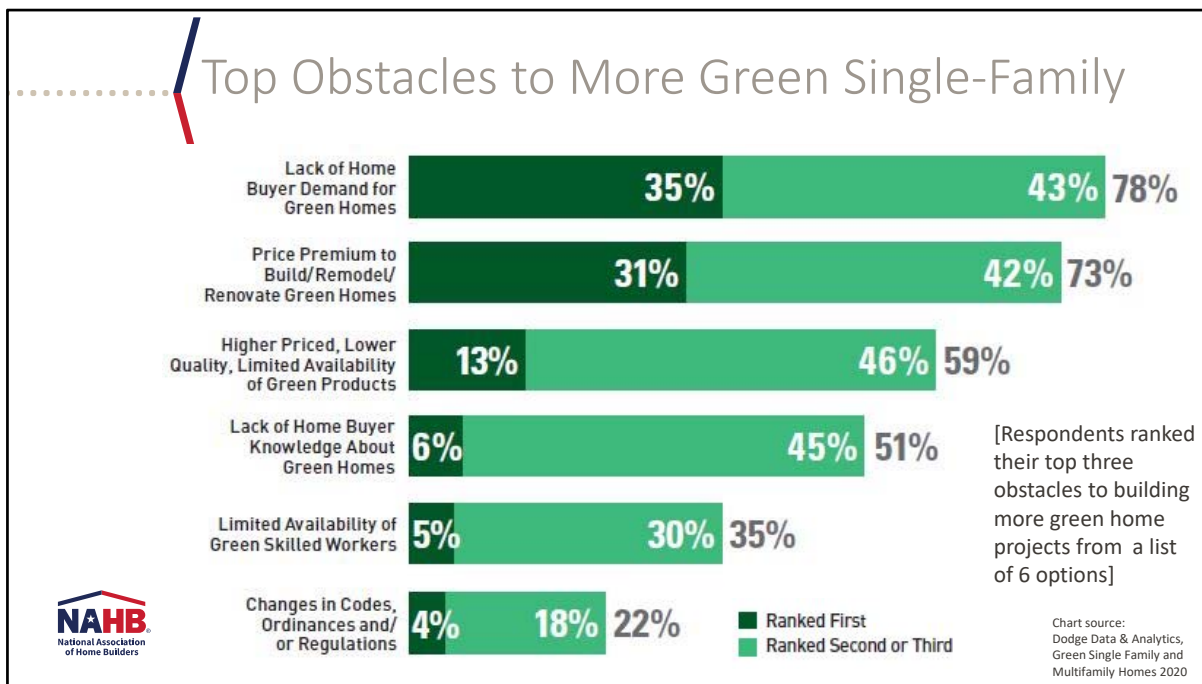
Topic #3:  
Drivers and  
Obstacles



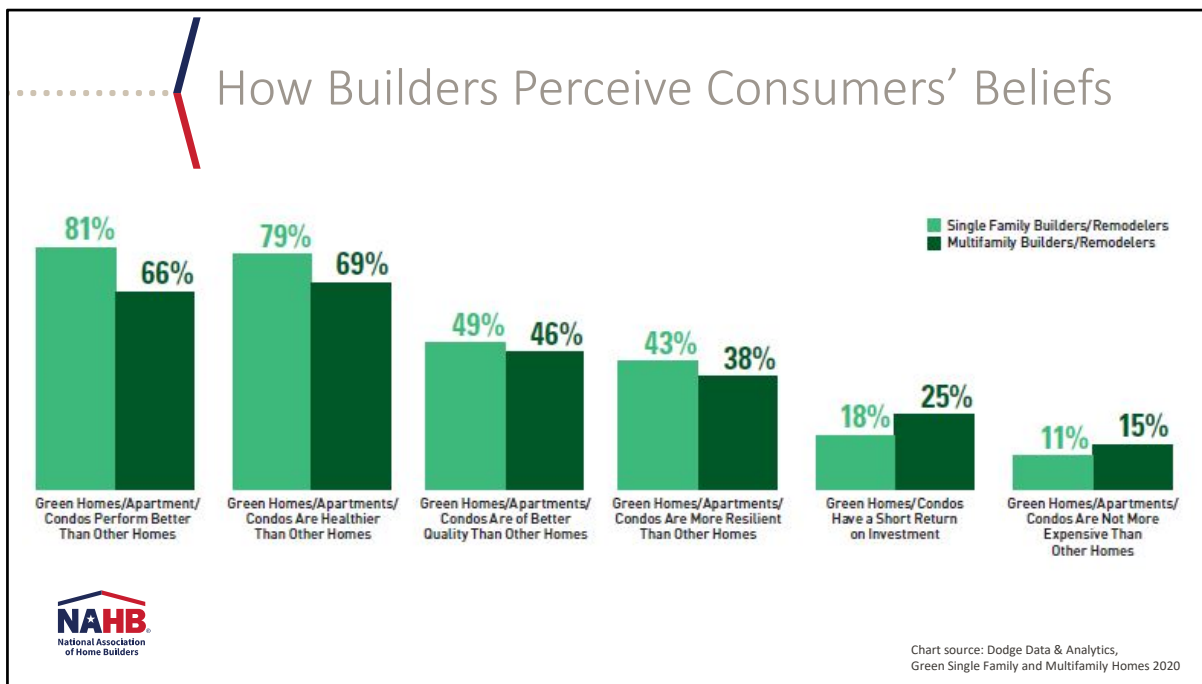
Drivers of, and obstacles to builders and remodelers doing more green building are evaluated each survey cycle.



- In this survey, respondents were asked to rank the top three drivers that would encourage them to do more green single-family home projects from a list of 11 options. The top 7 responses for single-family builders and remodelers are shown in the chart.
- The results show what single-family builders and remodelers ranked first, and ranked #2 or #3, with the total of those shown as the gray percentage at the end of each bar,
- **Buyer demand for green homes is the top driver, with 66% of respondents ranking it in their top three, followed by the availability of affordable, high-quality green products.**
- **Almost 40% cite accurate appraisals as a top driver** – we saw earlier that only about 30% of green builders reported that appraisals are reflecting the added value of green. These results show a significant opportunity to broaden the green building marketplace by being able to obtain accurate appraisals – increasing the pool of green certified appraisers who understand high performance and reflect its value in their appraisals can help drive the market.



- Similarly, respondents were asked to rank their top 3 obstacles from a list of six choices.
- Where we just saw buyer demand as a top driver to doing more green building in the single-family market, the **lack of buyer demand was reported as the biggest obstacle to doing more green projects by over three-quarters of these builders and remodelers.**
- Consumer education and targeted marketing that speaks to consumers in language that resonates with them and hits the emotional ‘hot buttons’ for different groups of buyers (operating cost, comfort, etc.) can help to overcome this perceived lack of demand.
- **A close second is the price premium required, with the price, quality and availability of green products also being seen as an obstacle to engaging in more green building.**
- Reducing the price premium and increasing the ability of a builder to market and sell the value of a green home will provide more incentives for green building.
- Several green products, such as high-efficiency toilets and faucets, are available at general market price points but may be marked up by contractors treating them as ‘specialty products’.



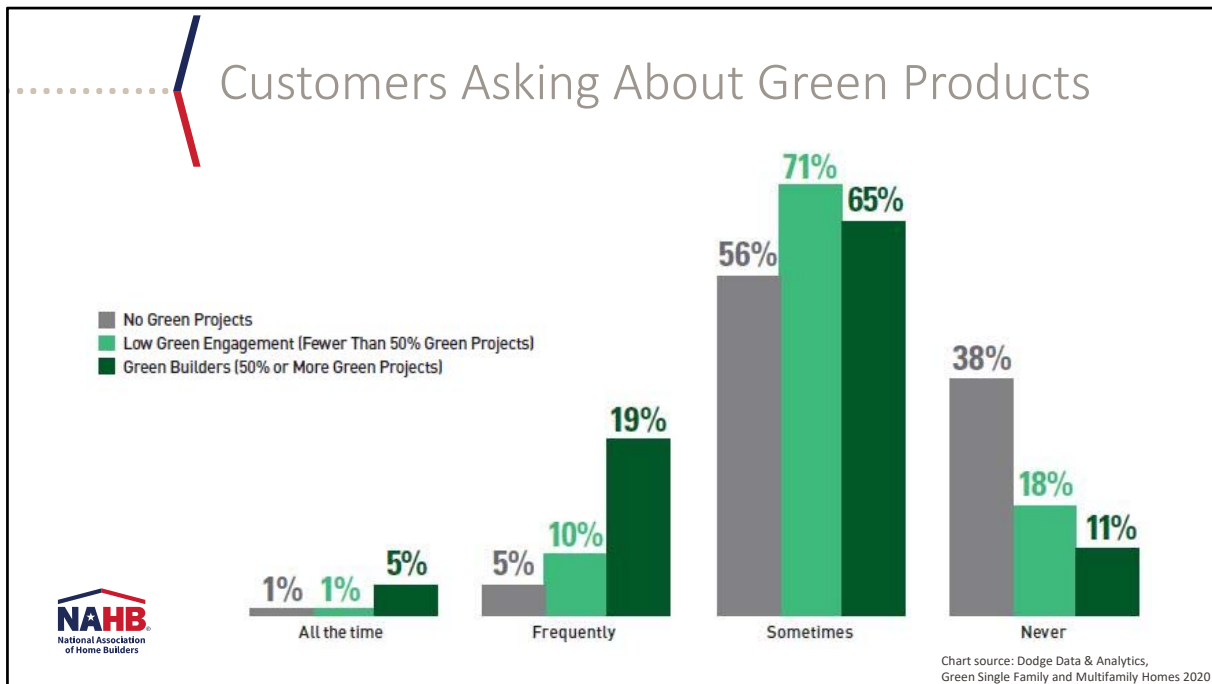
- This survey also asked builders what they believe consumers think about green homes. **Over three quarters of single-family builders and remodelers agree that consumers believe that green homes perform better than traditional homes and are healthier.** Fewer than half of all respondents think that consumers perceive green homes to be of higher quality or more resilient.
- But **dedicated green builders, who are doing more than 90% green projects, believe consumers see the value of green.** Not shown on the slide, but 90% responded that consumers believe green homes perform better, 65% that consumers think green homes are of higher quality and over half that consumers believe green homes are more resilient.
- **These perceptions offer insights on how to shape discussions between builders, real estate agents and consumers** to strengthen consumer awareness of the value and benefits of green homes in easily understandable ways to increase market demand.



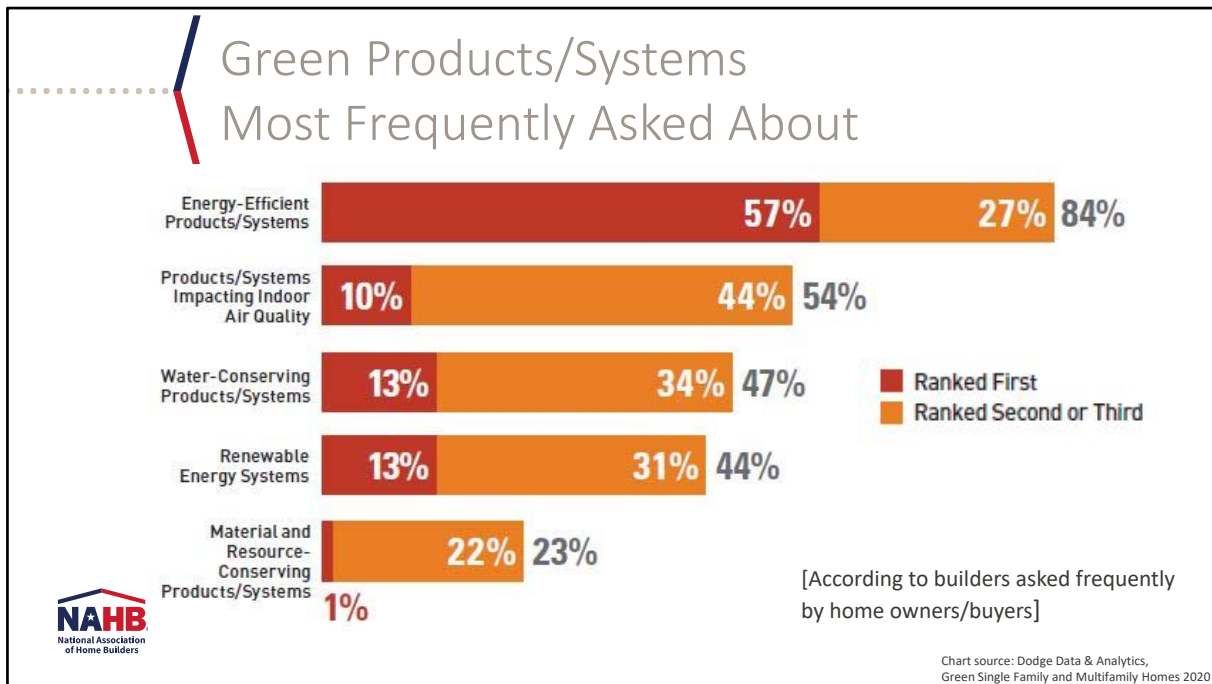
## Topic #4: Use of Green Products and Practices



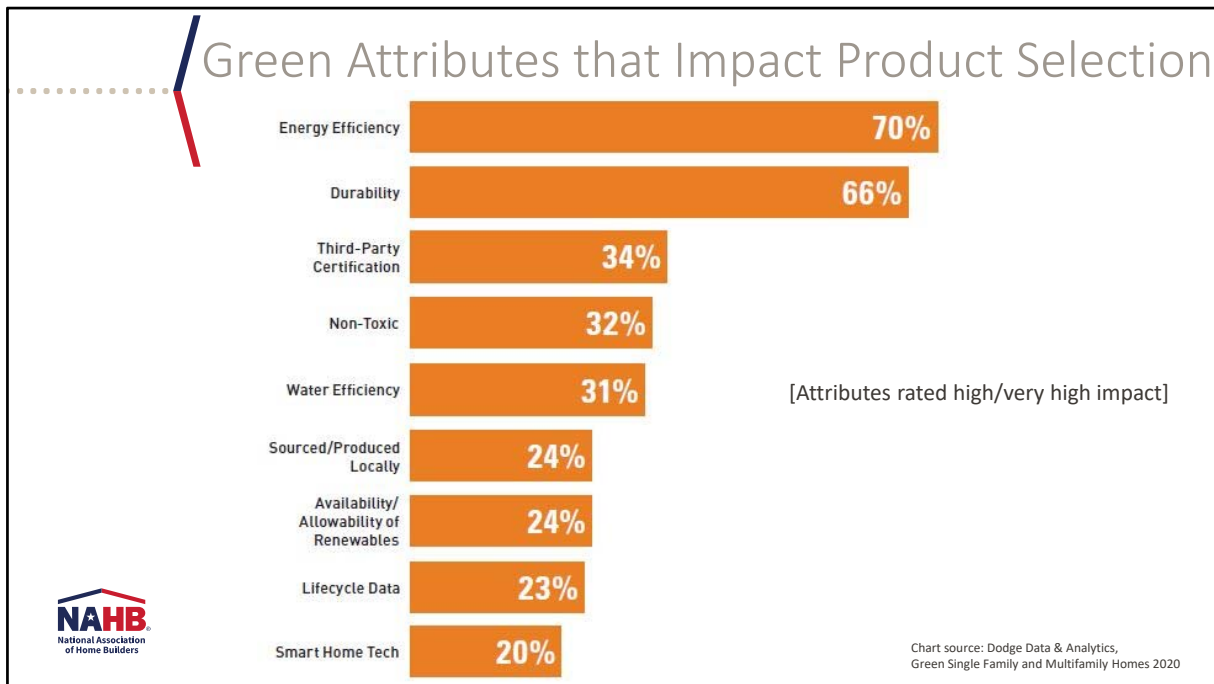
The final survey of this SmartMarket Brief asked builders and remodelers about their use of green products and practices.



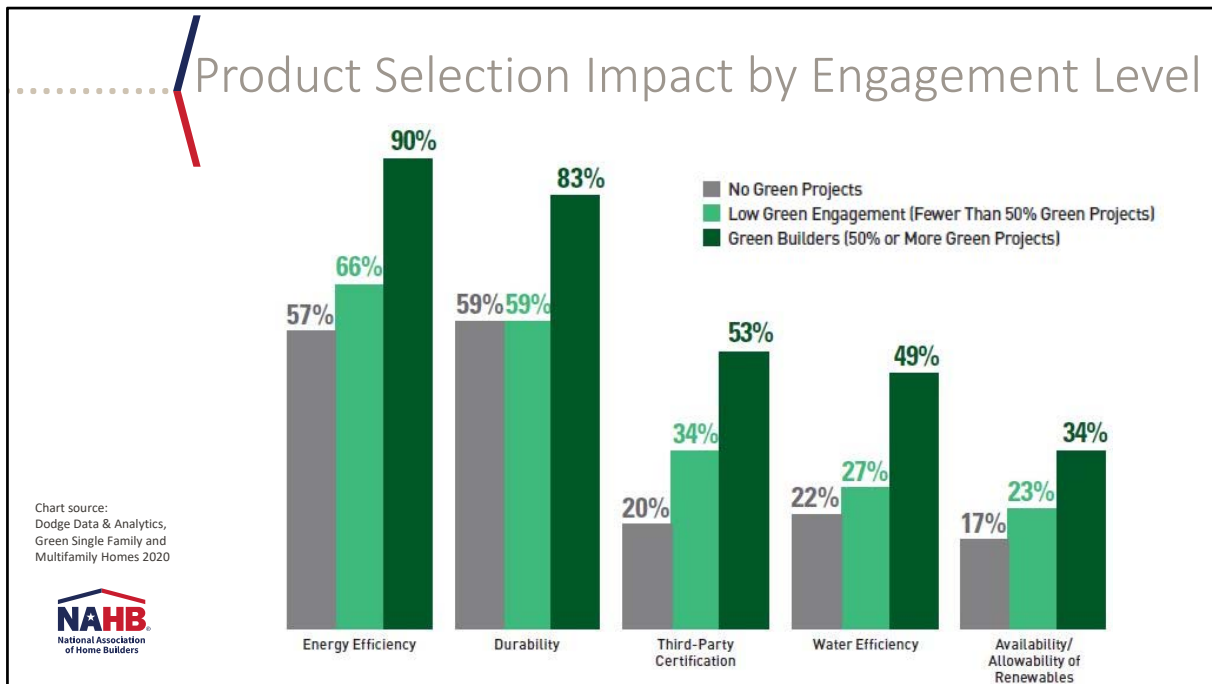
- Respondents were asked if their customers ask them about green products.
- **89% of green builders and almost two-thirds who do not build green said they do get inquiries at least sometimes.**
- 5% of green builders responded that customers ask them about green products all the time.



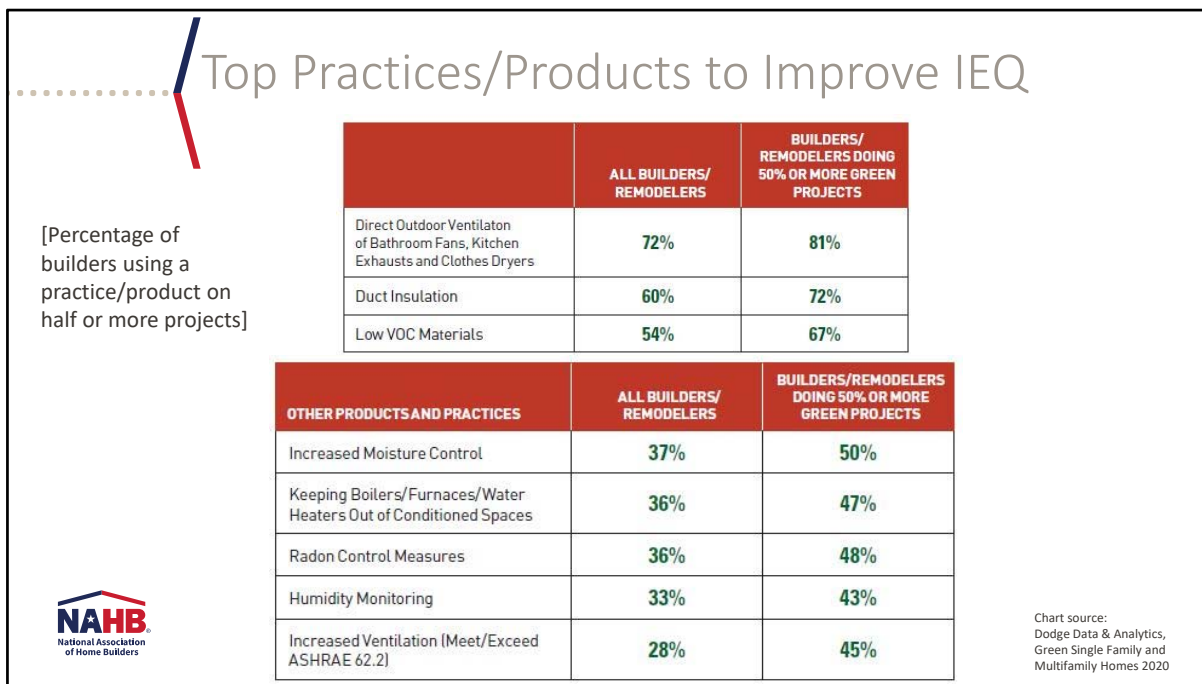
- Of those builders and remodelers who are asked frequently about green products, **consumers most often inquire about:**
  - **energy-efficient products and systems by far, with 83% ranking it in their top three,** followed by
  - those impacting indoor air quality,
  - water-conserving products and systems, and
  - renewable energy systems.



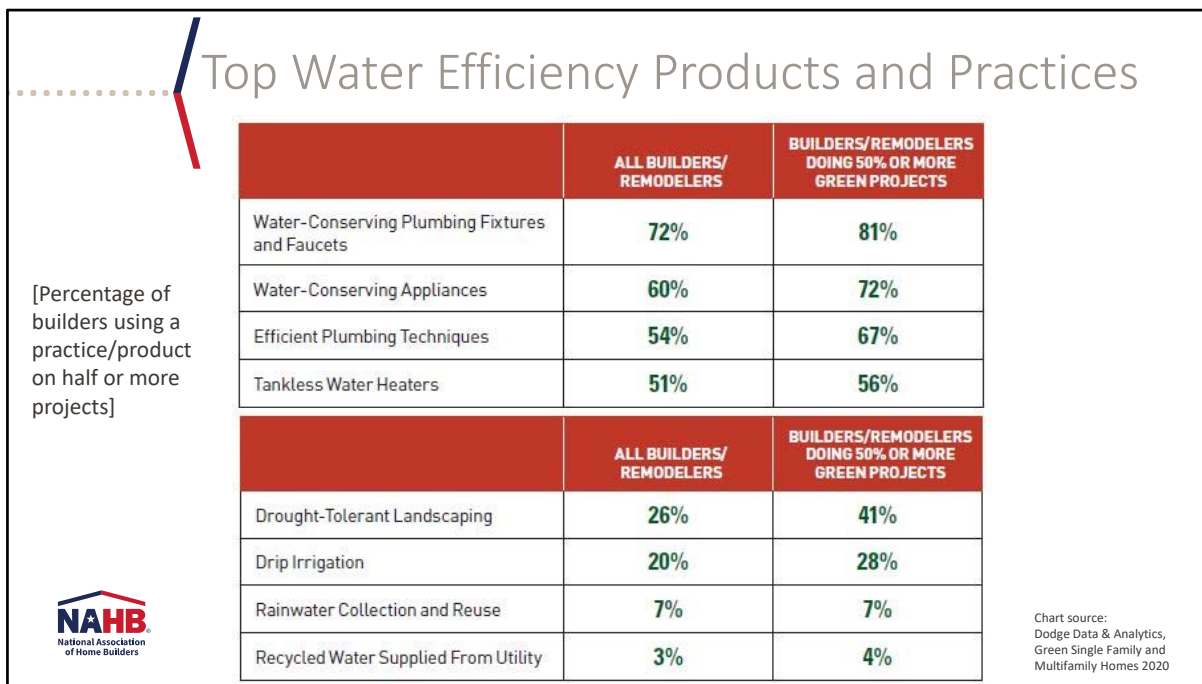
- Respondents were also asked which types of green attributes impact their choice of products for their projects.
- **Energy efficiency and durability are the most influential green attributes, with at least two thirds considering them highly influential.** This is consistent with the findings in previous green SmartMarket studies.
- About one third of the respondents are highly influenced by obtaining third-party certifications, avoiding toxins, and incorporating water efficiency products.
- Smart home tech and lifecycle data attributes were added as new options for this survey. 23% of builders rate lifecycle data and 20% rate smart home tech as having a high or very high impact. We saw earlier that 43% of green builders and 29% of other builders are using smart home tech on the majority of their projects, so the impact of smart home tech on product selection is relatively consistent with that.



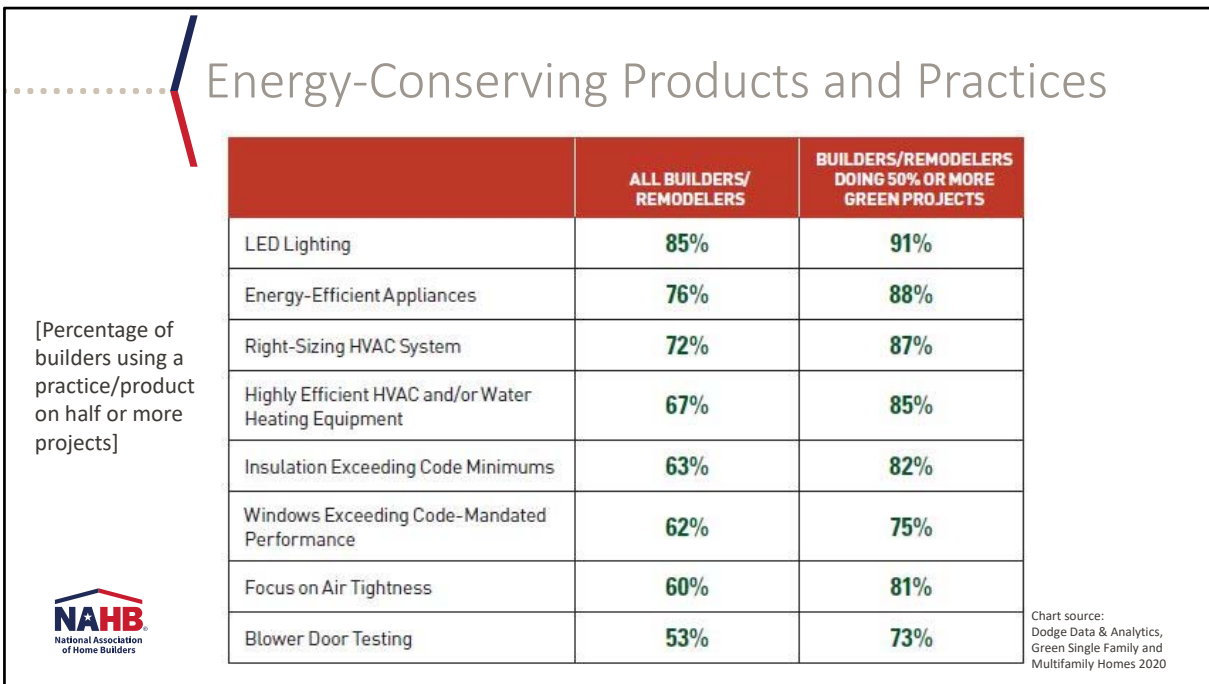
- This chart breaks down the influence of the top attributes from the previous slide on product selection by level of green building.
- Green builders' product selection is influenced by green attributes at higher rates than other builders. The percentage is nearly double for most categories.
- **Energy efficiency and durability are top influencers on product selection for all builders, regardless of their reported level of engagement in green building.**



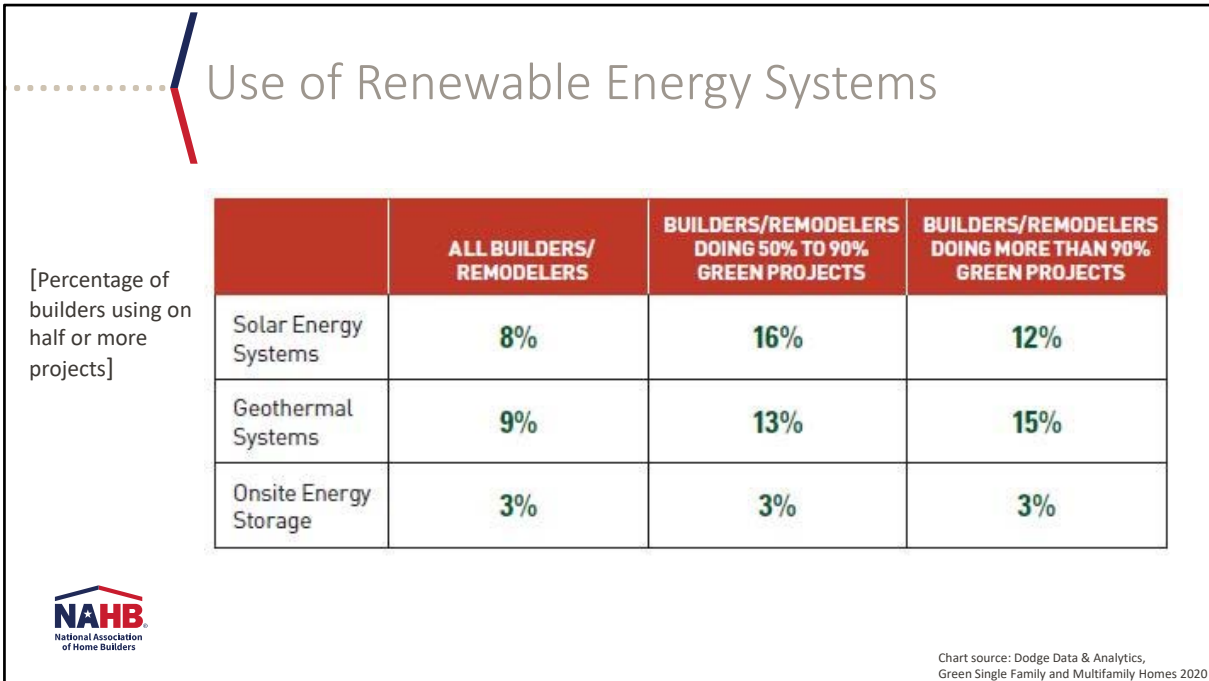
- In this final section, the study looks more closely at specific products and practices used for different types of green strategies.
- Starting with indoor environmental quality, builders and remodelers were asked to select the types of products they use on more than 50% of their projects.
- The table shows results for all builders and remodelers, as well as the subset doing 50% or more green projects.
- **The top three – direct outdoor ventilation, duct insulation and low VOC materials, are used by half or more of all builders and roughly three quarters of green builders.**
- The second tier shows products and practices that are **used by about one third of all builders and nearly half of green builders** on the majority of their projects. There was a great deal of regional variability in use of increased moisture control (higher in Midwest than West); keeping boilers out of conditioned spaces (21% in Midwest, 40% in other regions); and radon control measures (use paralleled EPA radon maps).



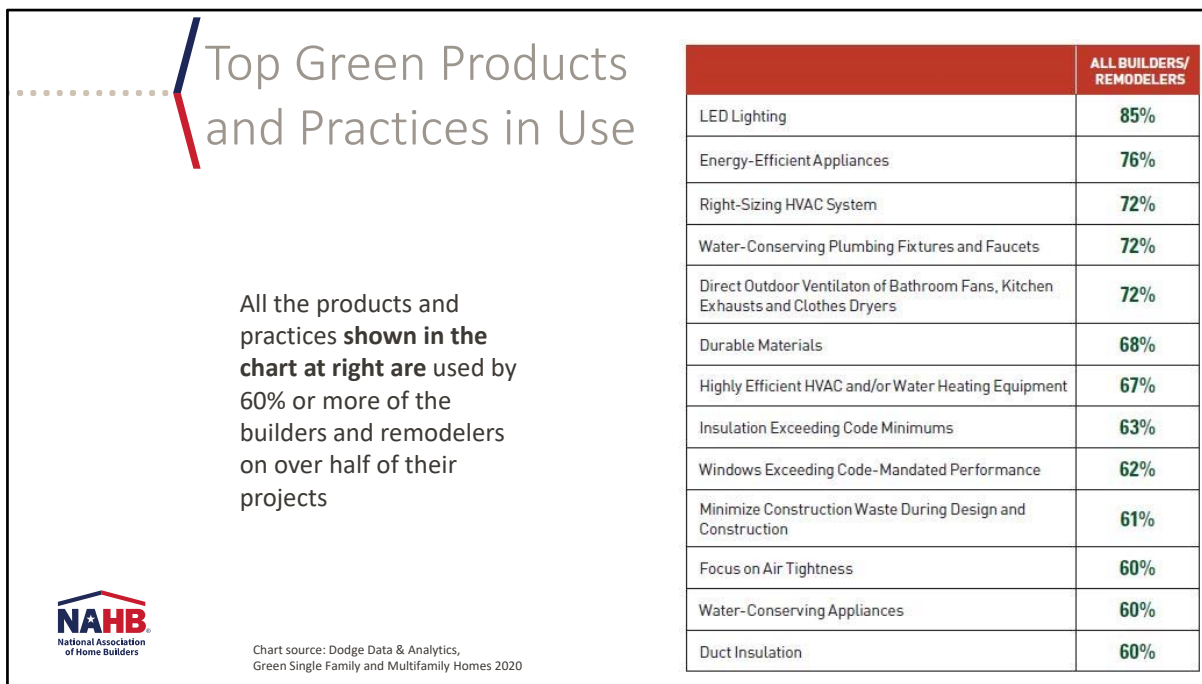
- A deeper dive into water efficiency is next.
- The top table lists those products and practices impacting indoor use. **At least half of all builders are using all of these on at least half of their projects, with higher use rates among the green builders.**
- **Outdoor water efficiency products and practices are used to a lesser extent by all, but also have a great deal of regional variation in their application.**
- Use of drought-tolerant landscaping is significantly higher in the West and South, at about one-third, than in the Northeast and Midwest, at 12%. Use of drip irrigation is significantly higher in the West at 44% than in the other three regions, where it ranges from 7% in the Northeast to 11% in the Midwest to 21% in the South.
- **The use of rainwater collection and of recycled water from a utility is still rare, less than 10% of all builders are using these technologies on the majority of their projects. However, these technologies are gaining interest in some regions, as water rates increase and water scarcity becomes a larger issue.**



- The energy-conserving practices and products most widely used by all builders and remodelers are shown in this table.
- **LEDs, energy-efficient appliances and right-sizing the HVAC system are the most popular.** These findings are consistent with previous Green SmartMarket studies.
- Green builders use all of these products and practices at higher percentages, but **they are all are being used by at least half of the respondents on at least half of their projects.**



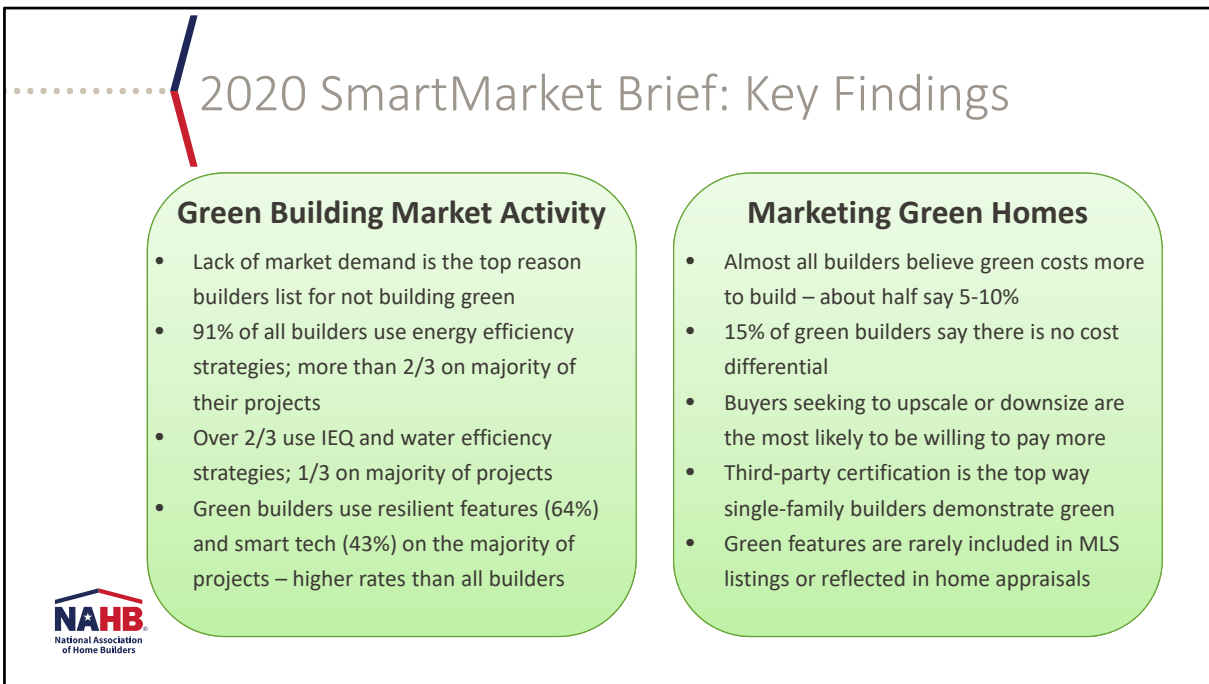
- The drivers and obstacles survey also asked builders and remodelers to select the **renewable energy systems they use on at least 50% of their projects.**
- **Less than a tenth of builders reported regularly using these systems** - green builders are utilizing solar and geothermal at slightly higher rates – but the use of onsite energy storage is rare for all respondents.



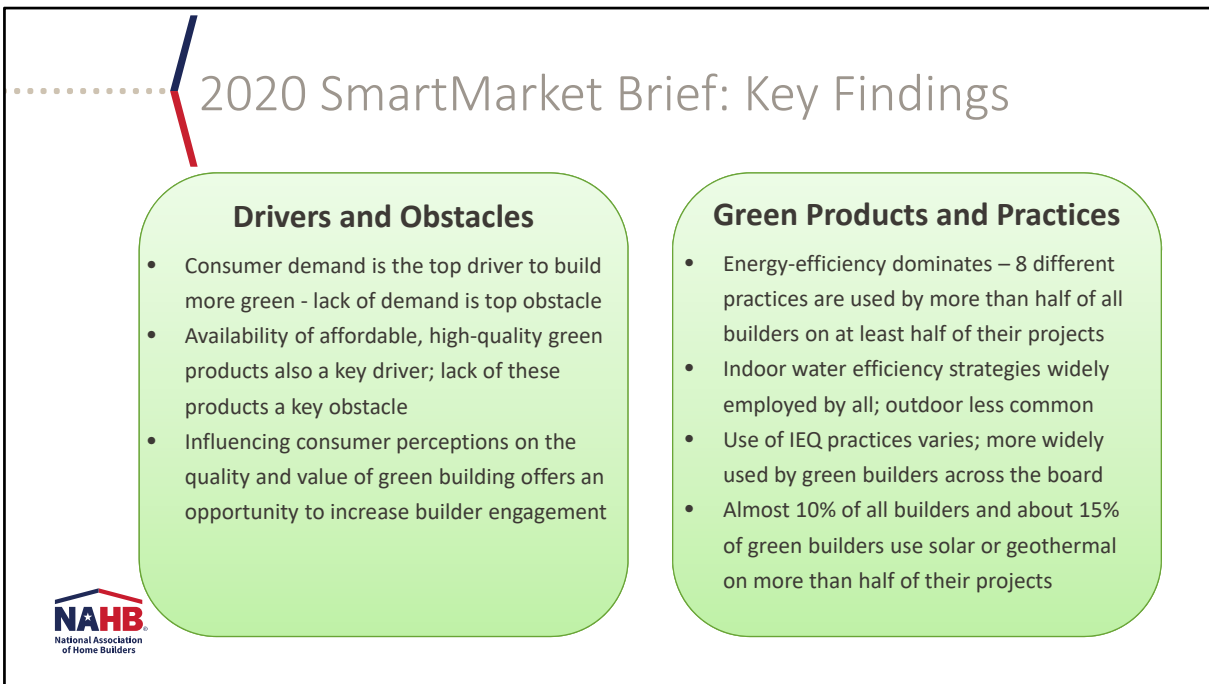
- A final look at the top green products and practices being used by survey participants demonstrates the broad incorporation of green into homes, regardless of the level of green engagement of the builder or remodeler.
- All of the products and practices listed are being used by 60% or more of respondents on at least half of their projects.
- **Energy-conserving products and practices top the list**, which is not a surprise given the percentage of respondents consistently ranking energy efficiency as a top way to improve home performance - and the perception of its importance to consumers reflected in the survey results.
- The two water-conserving features to make the list - fixtures and faucets and appliances - are well-known and very visible to consumers. Market penetration of these products has generally made them cost-competitive.
- **A new entry into the top products & practices table, not seen in previous studies, is minimizing waste during design and construction** – this will continue to be tracked moving forward.



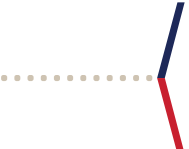
We wrap up with summary of the key findings from the four surveys that comprise the 2020 SmartMarket Brief



- The **Green Building Market Activity** survey showed that a perceived lack of market demand is the top reason builders do not build green.
- Almost all respondents use energy efficiency strategies and more than two thirds of them do so on the majority of their projects.
- Over two thirds of respondents use indoor environmental quality and water efficiency strategies, with one third using them on the majority of their projects
- Green builders are more likely to be using resilient features and smart home tech on their projects
- Recapping the **Marketing Green Homes** survey, almost all builders believe it costs more to build green, with half saying it costs 5-10% more. But 15% of green builders report no cost differential.
- Buyers seeking to upscale or downsize are perceived as the most likely to be willing to pay more for a green home.
- Obtaining third-party certification is the top way single-family builders demonstrate green.
- And green features are rarely being included in MLS real estate listings or reflected in home appraisals.





- **Consumer demand is the top driver** for building more green homes and **lack of demand is the top obstacle**.
- The availability of affordable, high-quality green products is also a key driver with the lack of these products seen as a key obstacle.
- Influencing consumer perception on the quality and value of green building offers an opportunity to increase builder engagement.
- Among **green products and practices**, energy efficiency dominates – 8 different practices are used by more than half of all builders on at least half of their projects.
- Indoor water efficiency strategies are widely employed by all participants, while use of outdoor strategies is less common and varies by region.
- Almost 10% of builders and about 15% of green builders use solar or geothermal on more than half of their projects.



## For More Information

NAHB Sustainability: [www.nahb.org/sustainability](http://www.nahb.org/sustainability)  
2020 SmartMarket Brief available for download: [www.nahb.org/smr](http://www.nahb.org/smr)  
Twitter: [@NAHB\\_Green](https://twitter.com/NAHB_Green)

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The 2020 SmartMarket brief is available for download at [nahb.org/smr](http://nahb.org/smr)

You can contact any of the NAHB Sustainability and Green Building staff listed here for additional information or assistance with all things green building.