



2017 Green Practices Survey

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Cover Photo

Kingspark Plan Home in Briar Chapel Community Chapel Hill, N.C.

NGBS Green Certified at Bronze level

Builder: Homes by Dickerson

Photographer: Tour Factory

About the Builder:

Homes by Dickerson's High Performance Certified Green Homes are so much more than just energy efficient, they offer its owners peace of mind about their comfort, health, money and impact on the environment. Homes by Dickerson is committed to building each of their custom homes with this philosophy in mind, regardless of price point or location, because it is their passion to be good stewards of their clients' money and to offer them the best options available when it comes to health, comfort and sustainability. They achieve this whole home approach through the inclusion of multiple high-performance green features, products and building strategies.

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Executive Summary

The 2017 Green Practices Survey was conducted to gather information on sustainable and high performance building practices being used in single-family home building in 2016. Survey questions were created to capture which green construction methods and strategies were incorporated as standard practice in a typical home built that year. Responses were aligned with practices found in the 2012 and 2015 National Green Building Standard (NGBS) to determine how green the typical single-family home is regardless of if they obtain certification under the standard.

The survey was distributed via three outlets: in-person at the 2017 International Builders' Show (IBS) to single-family builders attending the High Performance Building Zone (HPBZ), to members of various NAHB committees during the 2017 IBS, and via email to over 2,400 single-family builders in April 2017. A total of 246 usable responses were received and are reflected in this analysis.

Survey respondent location demographics closely matched regional single-family housing starts in 2016, with the majority for both being in the South. Eighty percent of the homes were larger than 2,000 sq. ft., with just over half 2,500 sq. ft. or larger. Almost 92 percent of the homes were built in climate zones 2, 3, 4 or 5 with a near even distribution among these zones.

Fifty-one percent of survey respondents indicated their typical home achieved one or more green certifications (NGBS, HERS, or Energy Star). Almost one-quarter of the typical homes met the 2015 NGBS Bronze threshold and 20 percent met the 2012 NGBS Bronze threshold based on the information gathered. Less than 2 percent met Silver under either version (none met Gold or Emerald).

While survey responses for 25 percent of the typical homes scored high enough to meet some level of NGBS certification, only 11 percent of them met all of the 2015 NGBS mandatory requirements based on the responses. When

pursuing NGBS certification, all mandatory requirements must be met as well as achieving a minimum threshold of points in each category. Survey results showed a disconnect between builders who said their typical home was NGBS certified and the mandatory features required to achieve certification, particularly regarding windows and insulation. Respondents were able to answer most of the survey questions applicable to them; however, most checked 'unknown' for specific window properties (U-factor and Solar Heat Gain Coefficient (SHGC)), likely contributing to the disconnect and indicating an alternate method of capturing this data may yield better information in future surveys.

Key findings are summarized in the next section. Of note:

Builder size (measured in dollar volume of businesses in 2016) generally makes little difference in the types of green practices being incorporated, or how often they are used.

On average, typical homes met or exceeded both the 2012 and 2015 NGBS Bronze threshold for Energy, Water, Indoor Environmental Quality and Operation/Maintenance/Education. However, on average, they did not meet the threshold for either Resource Efficiency or Lot Design, Preparation and Development.





Key Findings:



Demographic Trends:

- Individual types of green practices are being incorporated at similar rates, regardless of builder size or region.
- Fifty-eight percent of survey respondents indicated their typical home achieved one or more green certifications (NGBS, HERS, or ENERGY STAR).
- Both the 2016 median and average home size was greater than 2500 sq. ft., limiting eligible points in the Resource Efficiency chapter under the NGBS system.



NGBS Overall:

Almost one-quarter of the typical homes met the 2015 Bronze threshold and 20 percent met the 2012 Bronze threshold based on the information gathered. Less than 2 percent met Silver under either version (none met Gold or Emerald). It is important to note that not all practices listed in the NGBS were included in the survey in the interest of time commitment of the participants. On average, typical homes:

- Exceeded both Bronze and Silver NGBS thresholds for the Energy and Water practices,
- Exceeded the Bronze threshold for the Indoor Environmental Quality practices,
- Met the Bronze threshold for the Operation/Maintenance/Education practices, and
- Did not meet any threshold for the Lot Design, Preparation and Development and Resource Efficiency practices.



Energy Efficiency:

- Seventy-four percent of the typical homes met the requirements for Bronze or higher.
- About one-third had a HERS rating (worth 30 points in 2015 NGBS).
- Approximately one-quarter had an Energy Star rating (worth 30 points in 2012 NGBS; can choose either Energy Star or HERS for 30 points in 2015 NGBS).
- About two-thirds were built to either the 2012 or 2015 International Energy Conservation Code (worth 30 points in both 2012 and 2015 NGBS).





Water Efficiency:

- Eighty-three percent of the typical homes met the requirements for Bronze or higher.
- Inside the home: 27 percent used Energy Star washing machines and 23% used lower flow showerheads.
- Outside the home: over 36 percent reported having irrigation control systems, only 5 percent reported using gray or recycled water to irrigate.



Indoor Environmental Quality

- Seventy-seven percent of the typical homes used low-to-no VOC paints and coatings.
- Forty percent of the typical homes used low-to-no VOC adhesives and sealants.



Operation/Maintenance/Education

- Nearly 90 percent of respondents reported providing a homeowners' manual to buyers.
- Eighty-two percent of owners were provided with training to operate and maintain their homes.



Lot Design, Preparation and Development:

- Over 60 percent of typical homes were built on sites with transit features such as existing sidewalks and right-of-way bicycle lanes.
- Over 50 percent utilized green infrastructure and/or low-impact development strategies.



Resource Efficiency:

- Over 40 percent of respondents reported using two or more building components made of at least 50 percent recycled materials and 27 percent recycled two or more materials offsite.
- Twenty-one percent used precut/preassembled/precast products for at least 90 percent of the floor, wall or roof systems.



Introduction



In 2017, NAHB conducted a Green Practices survey. The survey was designed to capture information on how often single-family builders employ practices that would earn points under the 2015 National Green Building Standard™ (NGBS). Responses were subsequently evaluated under the similar but not identical 2012 and 2015 versions of the NGBS. The NGBS is a collaborative effort of the International Code Council, ASHRAE and NAHB, and is approved by the American National Standards Institute.

It would be virtually impossible to design a survey covering every item mentioned in the NGBS, but the 2017 survey collected information about the aspects of the NGBS considered most important by NAHB's Sustainability and Green Building staff.

The survey was done in three stages, using three different methods:

Stage I: The survey was printed and administered in-person to single-family builders attending the High Performance Building Zone (HPBZ) at the International Builders' Show (IBS) in January 2017. Survey respondents were offered entry to a daily raffle for an Amazon Echo or Echo Dot. A total of 66 responses were collected.

Stage II: Members of various NAHB committees received a hard copy of the questionnaire during meetings at the 2017 IBS. Builders were asked to take survey home and send it back to NAHB by March 3, 2017. An additional 9 responses were received from this group.

Stage III: An electronic version of the survey was emailed to 2,422 single-family builders in April 2017. A total of 188 responses were received, for an 8 percent response rate. Respondents were awarded a \$10 Amazon gift card.

This report is based on responses collected through all three methods. After deleting 17 cases where the respondents did not build any single-family homes in 2016, the analysis is based on a total of 246 usable responses.

The 246 respondents generally answered all of the questions in the survey. Outside of questions 10 through 13, which respondents were asked to skip if they lacked experience acquiring land and

developing lots, at least 219 respondents (and usually considerably more) provided complete information for each question.

A total of 132 respondents indicated they lacked experience developing lots. Of these, 56 nevertheless answered questions 10 through 13. For the 76 respondents without experience developing lots who skipped 10 through 13, NAHB imputed NGBS points for 10-13 at the average for those without experience developing lots who nevertheless answered the questions. The average scores for these respondents were 18 2015 NGBS points and 15 2012 NGBS points. This imputation increased the overall average of NGBS points awarded for "Lot Design, Preparation and Development" by about 6 points under the 2015 standard and 4 points under the 2012 standard. Despite this upward adjustment, scores for the lot design chapter of the NGBS tended to be relatively low.

Although most respondents answered the questions about U-factors and Solar Heat Gain Coefficients (SHGCs) for windows, exterior doors and skylights, the answers they gave most often consisted of checking "Unknown," especially for the SHGCs. For this reason, many builders received no NGBS points for fenestration. Despite this, scores for the "Energy Efficiency" chapter of the NGBS tended to be relatively high.



Profile of Respondents and Their Typical Homes



Census Regions

The 2017 Green Practices Survey contained questions about the typical home built in 2016, including the state in which it was built. Analyzed by the four principal Census regions, the distribution of responses is fairly similar to the distribution of housing starts in 2016, although a

somewhat higher share came from the Midwest (Fig. 1). A small share of respondents who didn't specify the state or said their typical home was located in Canada are excluded from the table.

Figure 1. Where Respondent's Typical Single-family Home is Built and Single-family Starts by Census Region

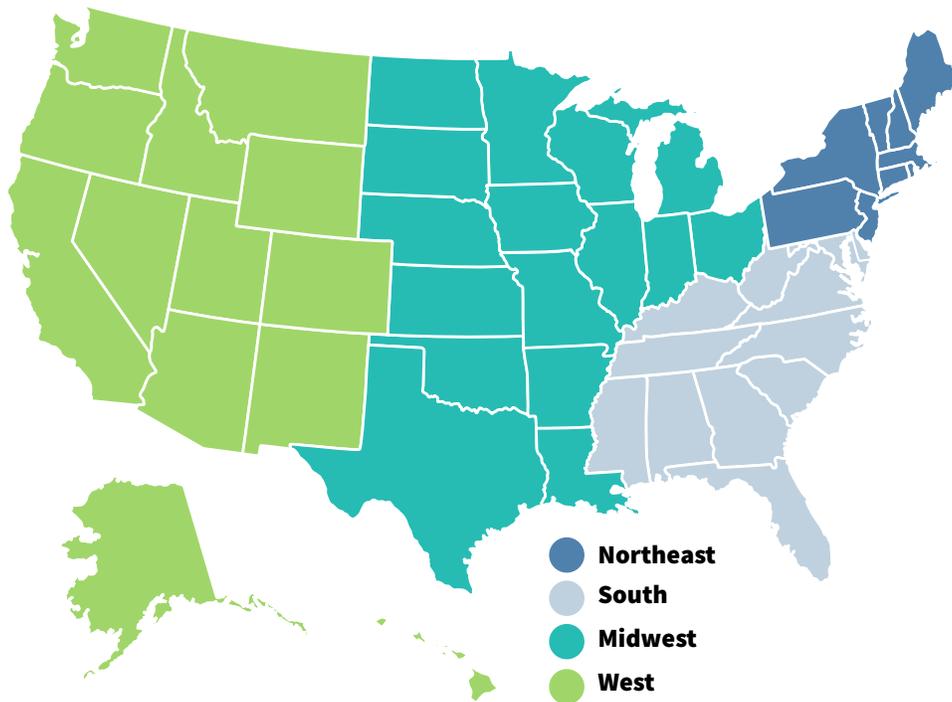
	Green Practices Survey Respondents	Single-family Housing Starts in 2016
Northeast	6.8%	7.7%
Midwest	22.5%	15.4%
South	53.0%	54.0%
West	17.8%	23.0%

For reference, Figure 2 shows the states included in each region. The detailed tables in Appendix A

show responses to every question broken down by Census region.

Figure 2. The Four Principal Census Regions

Source: U.S. Census Bureau Geography Atlas



Climate Zone

In the NGBS chapter on energy efficiency, the number of points awarded for certain green practices depend on the **climate zone** in which the home is built. To estimate the climate zone for a respondent's typical home, the home is assumed to be in the zone the majority of homes in the state are built. This is determined using

an analysis of 2010 permit data conducted by Pacific Northwest National Laboratory. All starts in Hawaii are assumed to be in Zone 1. In Alaska, 10 percent of the starts are assumed to be in Zone 8; the rest in Zone 7. Most of the typical homes were built in zones 2 through 5 (Fig. 3).

Figure 3. Climate Zone in Which the Typical Home is Built

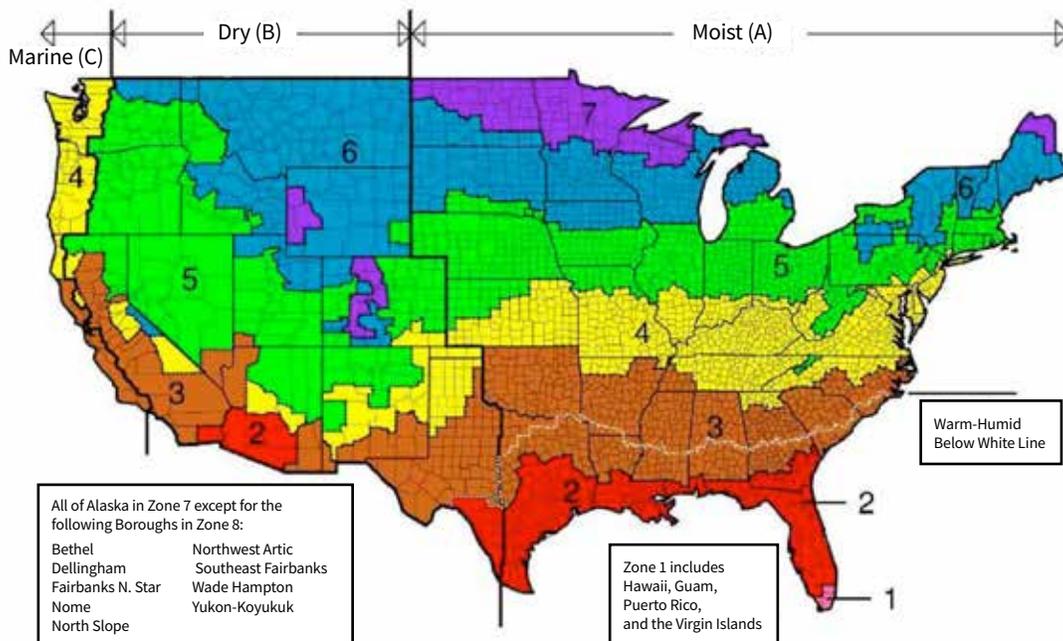
(Percent of Respondents' Typical Homes)



Figure 4. Climate Zone Map

Source: 2012 International Energy Conservation Code

For reference, Figure 4 shows the climate map used by the International Codes Council.



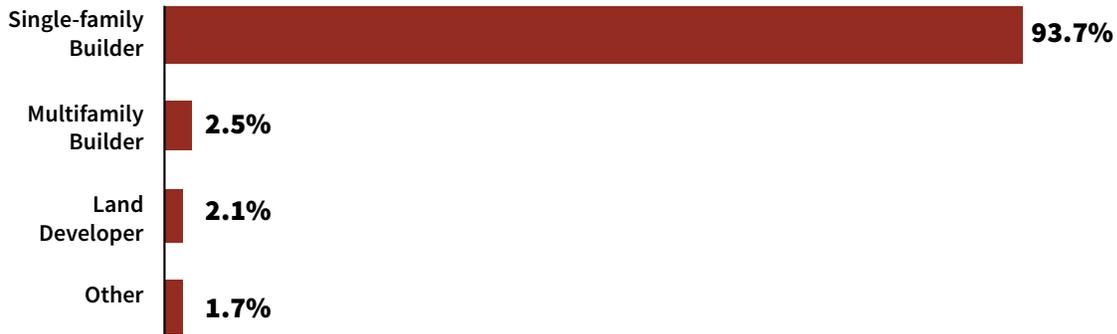
Main Business Operation

In addition to characteristics of the typical homes, the Green Practices survey collected basic information about the builder. Given that the focus of the survey is single-family homes, it is not

surprising that the vast majority (94 percent) of the respondents listed “single-family builder” as their **main business operation** (Fig. 5).

Figure 5. Main Business Operation

(Percent of Respondents)



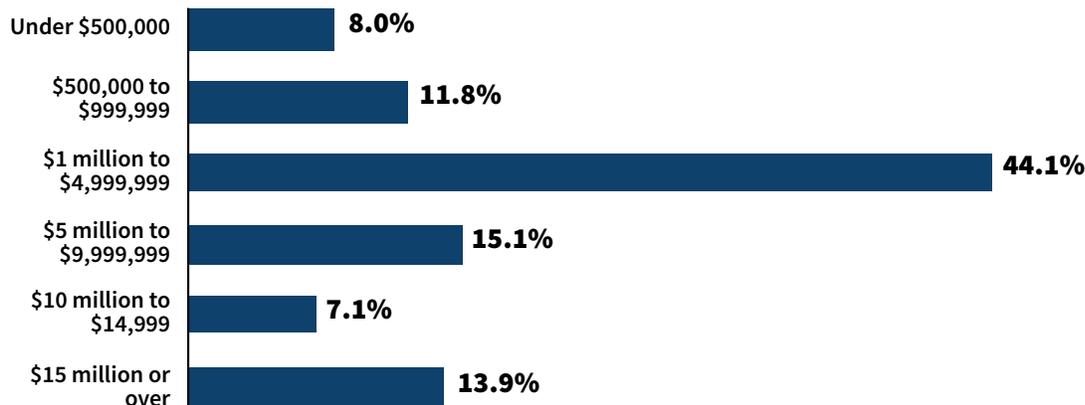
Dollar Volume of Business

The survey also collected information about the size of the builder, in terms of the total **dollar volume of business** in 2016. Although the survey captured a wide range of builder sizes, 44 percent fell in the range between \$1 million and \$5 million (Fig. 6). In the detailed tables of Appendix A,

responses to every question are cross tabulated by the builders’ dollar volume of business. Most of these tabulations show relatively small differences among builders in the different size categories.

Figure 6. Dollar Volume of Business in 2016

(Percent of Respondents)



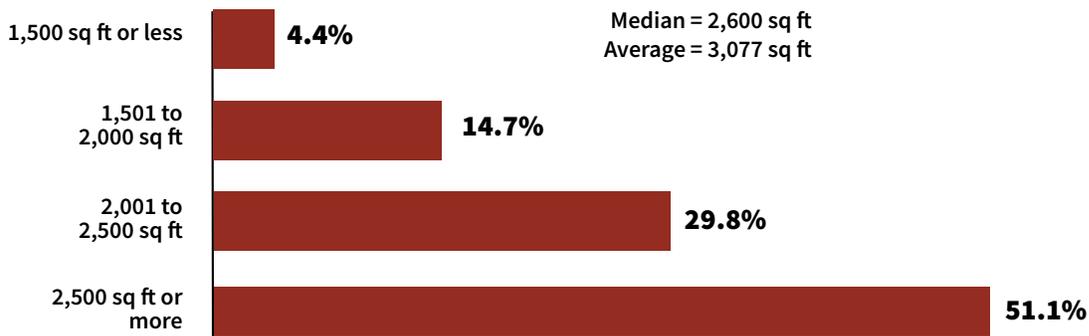
Size of the Typical Home Built

The 2015 NGBS awards a certain number of “resource efficiency” points based on the **size of the typical home built**, (Fig. 7) if it is under 2,500 square feet. Of the Green Practices survey respondents who provided the size of their typical homes, 51.1 percent were too large to qualify for any points. Another 29.8 percent were between 2,001 and 2,500 square feet (qualifying for three

2015 NGBS points), 14.7 percent were between 1,501 and 2,000 square feet (6 points), and 4.4 percent were under 1,500 square feet (9 to 14 points). The NGBS also awards points for re-using components of an existing building, using a scoring system that depends on the home’s square footage.

Figure 7. Size of Typical Home Built

(Percent of Respondents’ Typical Homes)





Total NGBS Points Earned



Points

The NGBS awards **points** for specific green practices. To qualify for a particular green building rating (Bronze, Silver, Gold or Emerald), a necessary condition is that total points earned in all sections of the standard, when added together, meet or exceed a minimum threshold. Although the number of points awarded for particular practices may be somewhat different under the 2012 and 2015 NGBS, the point thresholds are the same under both versions of the standard.

The typical home of each Green Practices Survey respondent was scored under both the 2015 and 2012 versions of the NGBS. A full quarter of the homes had enough total points (231 or more) to

earn a Bronze rating when scored according to the 2015 NGBS. Only 1.6 percent reached the 334 points needed to qualify for Silver. None of the typical homes in the sample had the 489 points needed for Gold, or the highest certification level of Emerald (611 points) (Fig. 8).

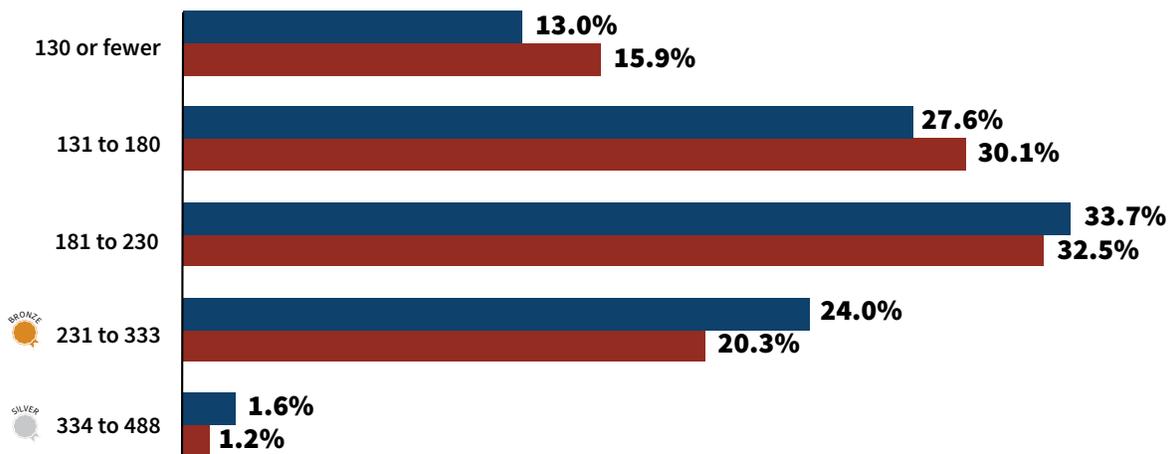
The homes tended to score somewhat higher under the 2015 NGBS than under the 2012 version. The average number of points was 10 points lower when the homes were scored using the 2012 NGBS. A major reason for this is that nearly a third of the homes had a HERS rating, which was worth 30 points in the 2015 NGBS but none in the 2012 version of the standard.



Figure 8. Total NGBS Points Earned

(Percent of Respondents' Typical Homes)

Average Points: ■ 2015 NGBS = 197 | ■ 2012 NGBS = 187



Mandatory Requirements

Achieving a total point threshold is only one of the criteria a home must meet to qualify for a rating under the NGBS. A number of practices, rather than earning points, are simply mandatory, and the Green Practices survey collected data on many of these. For convenience, these **mandatory requirements** are grouped into several categories: flashing, insulation, glazing, CO alarm and operation/maintenance/education.

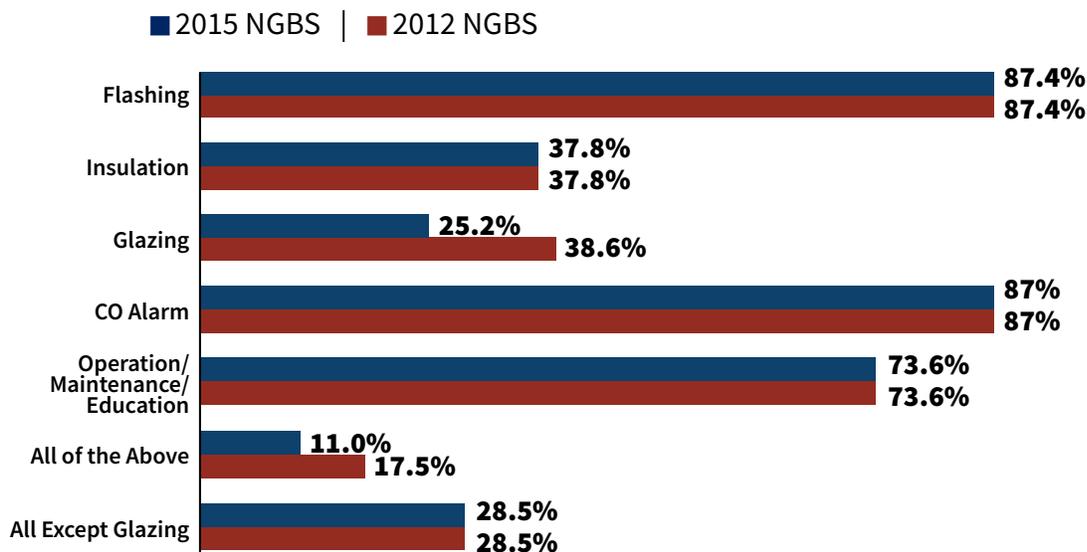
Only 11 percent of the typical homes met all of the mandatory 2015 NGBS requirements listed in the survey. However, many failed to meet the mandatory glazing requirements, because they checked “unknown” to a question about U-factor or SHGC. Even if glazing is ignored, however, only 28.5 percent satisfied all of the other mandatory requirements listed in the survey (Fig. 9).

Even among the homes that builders say are NGBS certified, only 52 percent satisfied all of the non-glazing mandatory NGBS requirements (Appendix A1), indicating possible problems with interpreting the questions or confusion over particular requirements.

Outside of the glazing category, more of the typical homes failed to meet the insulation requirements than any of the other mandatory items. Only 81 percent of the homes stated by their builders to be NGBS-certified had a blower door test, and 77 percent had insulation installed to Grade I standards (Appendix A17), even though both are mandatory under the 2012 and 2015 NGBS.

Figure 9. Homes Satisfying Mandatory NGBS Requirements

(Percent of Respondents' Typical Homes)



With the exception of glazing, all of the mandatory requirements listed in the Green Practices Survey are the same under both the 2015 and 2012 versions of the NGBS. Most of the mandatory

requirements for glazing are more stringent in the 2015 NGBS (and the few that didn't become more stringent were unchanged).



Points Earned By Chapter



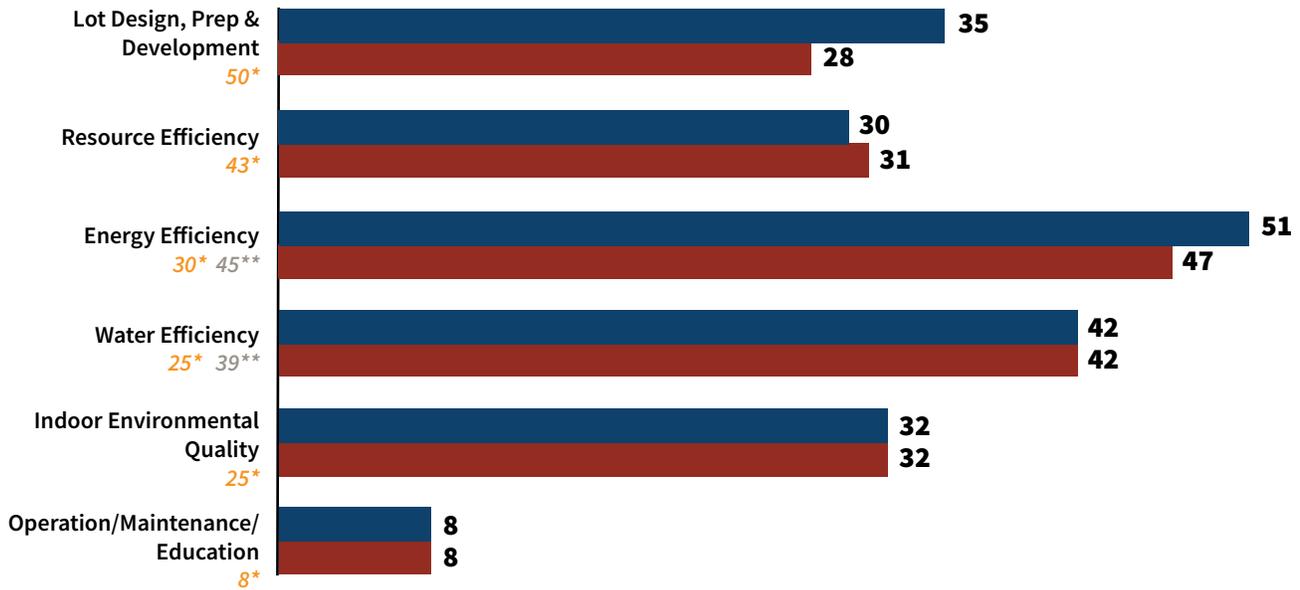
Average Points Earned in Each Chapter

To achieve a rating under the NGBS, a home must not only satisfy a total NGBS point requirement, it must also meet minimal point targets in six distinct areas: lot design, preparation, and development; resource efficiency; energy efficiency; water efficiency; indoor environmental quality; and operation, maintenance, and owner education. The NGBS is organized by chapter, with a separate chapter devoted to each of these six areas.

Figure 10 shows the **average points earned in each chapter** by the typical homes of builders responding to the Green Practices survey. The minimum thresholds for achieving bronze in each chapter are shown for comparison.

Figure 10. Average NGBS Points Earned by Chapter

■ 2015 NGBS | ■ 2012 NGBS
 *Bronze Threshold **Silver Threshold



On average, builders' typical single-family homes scored considerably better in some areas than others. The average number of points earned for energy efficiency under the 2015 standard is 21–51 points above the threshold for bronze. Similarly, the average number of points earned under water efficiency is 17 points above the bronze threshold in that category, and the average for indoor environmental quality is 7 points above its threshold.

On the other hand, the average number of points earned under the lot design chapter of the 2015 NGBS is 15 points below the threshold needed for bronze in that chapter, and the resource efficiency average falls 13 points short of meeting the bronze requirement for that chapter.

Lot Design, Preparation, and Development

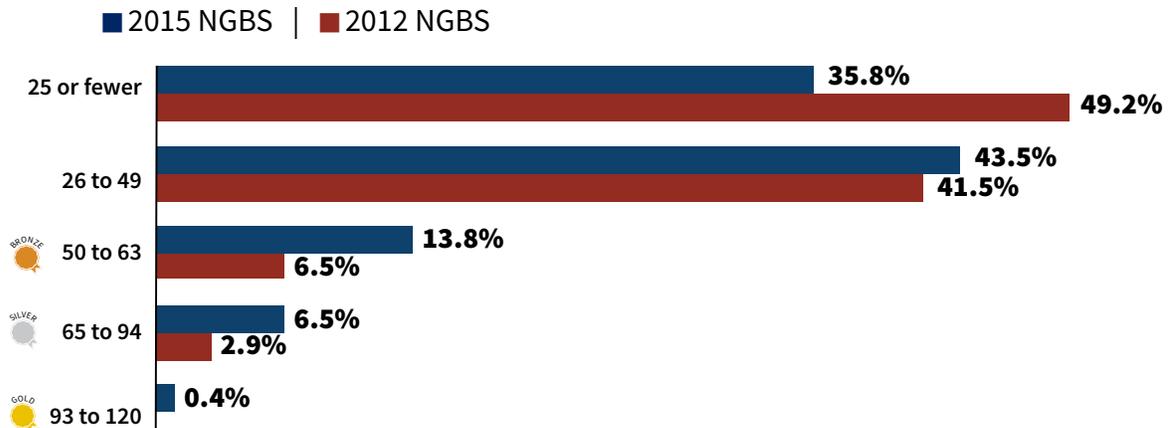
The following charts show how the typical homes score under each chapter of the NGBS in greater detail. As the previous chart indicated, the chapter on **lot design, preparation, and development** is one place where many of the typical homes in the survey fell short of qualifying for an NGBS rating. Only about 21 percent hit or exceeded the target of 50 points needed for bronze when scored to the 2015 NGBS (Fig. 11),

even with answers imputed for the builders who skipped questions 10 through 13 which raised the average lot development score by about 6 points.

Lot design scores tended to be lower when the typical homes were evaluated under the 2012 NGBS. For example, fewer than 10 percent hit or exceeded the 50 point bronze threshold when scored according to the older standard.

Figure 11. NGBS Points for Lot Design, Preparation, and Development

(Percent of Respondents' Typical Homes)



There are several reasons scores tended to be higher under the 2015 standard. One is that the 2015 standard generally awarded more points for location features and some transit features. An infill site (adjoining a previously developed lot), for example, was worth 8 points in the 2012 NGBS and 10 points in the 2015 NGBS. In the survey, an infill site was both fairly common (checked by 31 percent of the builders) and strongly correlated with total NGBS points. Only 15 percent of the homes earning 130 or fewer 2015 NGBS points were on infill sites, compared to 48 percent of the homes earning at least 231 points (Appendix A6).

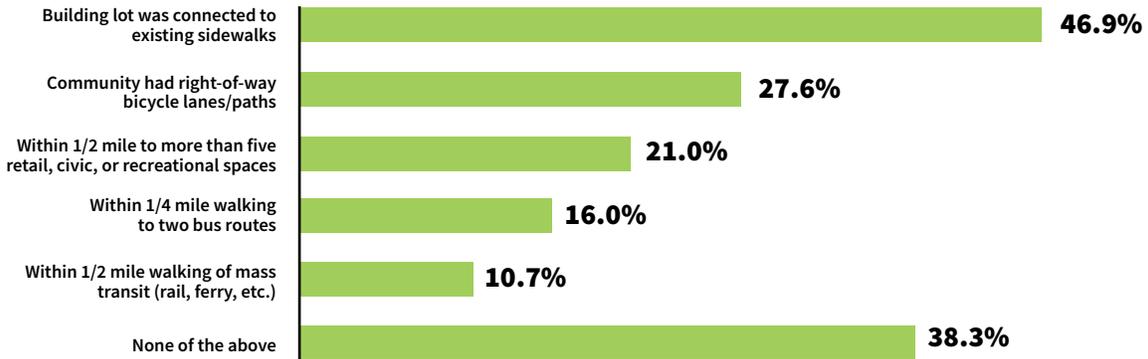
Building on a site with desirable transit features was fairly common among survey respondents. Over 60 percent checked at least one of the transit features listed in the survey (Fig. 12). Among the transit features, a lot connected to existing sidewalks was by far the most common, checked by 47 percent of the builders. Next most common was a site in a community with right-of-way bicycle lanes (28 percent).

Some of these transit features earn the same number of points under the 2012 and 2015 versions of the standards; but, the most common transit feature, connection to existing sidewalks, earns 5 points in the 2015 NGBS, and none in 2012 NGBS.



Figure 12. Homes Built on Sites with Various Transit Features

(Percent of Respondents' Typical Homes)



Another item that earns points (up to 10) in the lot design chapter of the 2015 NGBS but not in the 2012 standard is using low-impact development or green infrastructure to handle storm events. Although over half of respondents said they used green infrastructure this way, it had a minor effect on points earned. Thirty-six percent of

respondents did not know what type of storm event their infrastructure was designed to handle (Appendix A7), and so their typical homes could not be awarded any lot design points for it. This is something to keep in mind when interpreting lot design points under the 2015 NGBS.

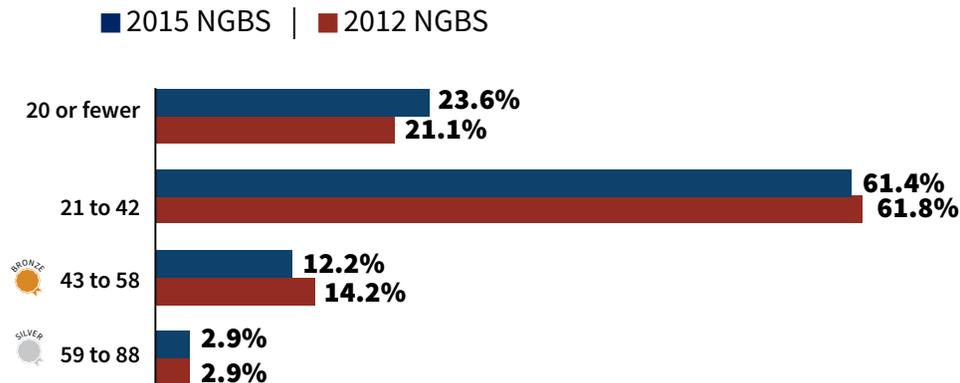
Resource Efficiency

Builders' typical homes also tended to fall short of an NGBS rating in the chapter on **resource efficiency**. Only 17 percent hit or exceeded the 43-point target for a bronze resource efficiency rating under the 2012 NGBS, and only 15 percent hit or exceeded that target under the 2015 NGBS. Under either version of the standard, only 3 percent of builders' typical homes qualified for silver, and none reached the threshold for a gold rating (Fig. 13).

Resource efficiency scoring is very similar under the 2012 and 2015 versions of the NGBS. The only difference is that somewhat more points are awarded for homes under 2,500 sq. ft. in the 2012 NGBS, explaining why a few additional homes qualified for a bronze rating under the older version of the standard.

Figure 13. NGBS Points for Resource Efficiency

(Percent of Respondents' Typical Homes)



Energy Efficiency

In contrast to the chapters on lot design and resource efficiency, builders' typical homes tended to score quite high in the NGBS chapter on **energy efficiency**. Under the criteria in the 2015 NGBS, for example, 74 percent of the homes hit or exceeded the 30-point threshold for a bronze energy-efficiency rating, 58 percent hit or exceeded the 45 points needed for silver, 36 percent hit or exceed 60 points for gold, and 34 percent even had at least 70 points for emerald (Fig. 14).

These high scores were achieved even though answers to the questions about U-factors and SHGCs often made it impossible to award any energy-efficiency points for fenestration. For example, three-fourths of the respondents checked "Unknown" for the SGHG of their windows and exterior doors (Appendix A14).

Energy-efficiency scores were often considerably higher under the 2015 version of the NGBS than under the 2012 version. A major reason for this

is that homes with HERS ratings were relatively common in the survey, and this is worth 30 points in the 2015 NGBS but no points in the 2012 version of the standard (although an ENERGY STAR certification is worth 30 points under both versions of the standard, and in the 2015 version, a home can only receive the 30 points once, either for HERS or ENERGY STAR). As Figure 15 shows, a third of the builders' typical homes had HERS ratings, one-fourth had an ENERGY STAR rating, and 11 percent were certified under the NGBS.

The NGBS homes often held other certifications as well: 48 percent of them had HERS ratings, and 41 percent were ENERGY STAR homes. The converse was not true, however. Only 16 percent of the HERS homes and 18 percent of the ENERGY STAR homes also were also certified under the NGBS (Appendix A5).

Figure 14. NGBS Points for Energy Efficiency

(Percent of Respondents' Typical Homes)

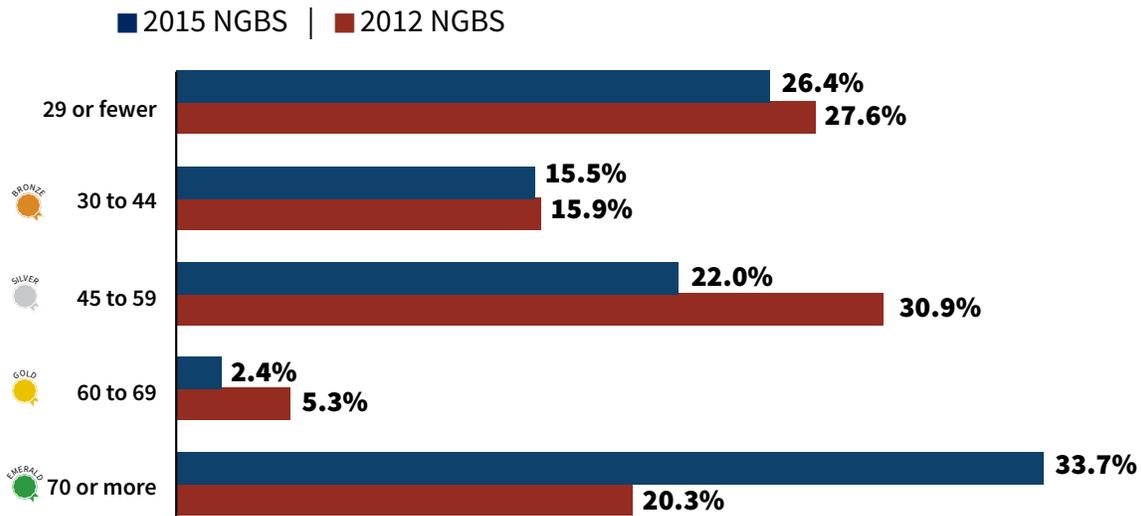
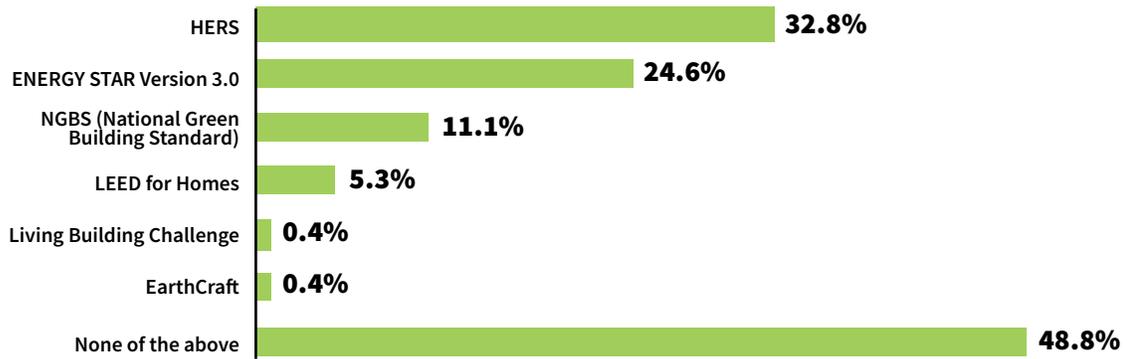


Figure 15. Green Certifications Held

(Percent of Respondents' Typical Homes)



Another reason the typical homes tended to score well in the energy efficiency chapter is that roughly two-thirds of them were built to either the 2012 or 2015 International Energy Conservation

Code (Appendix A21), which was worth 30 points under both the 2012 and 2015 editions of the NGBS.

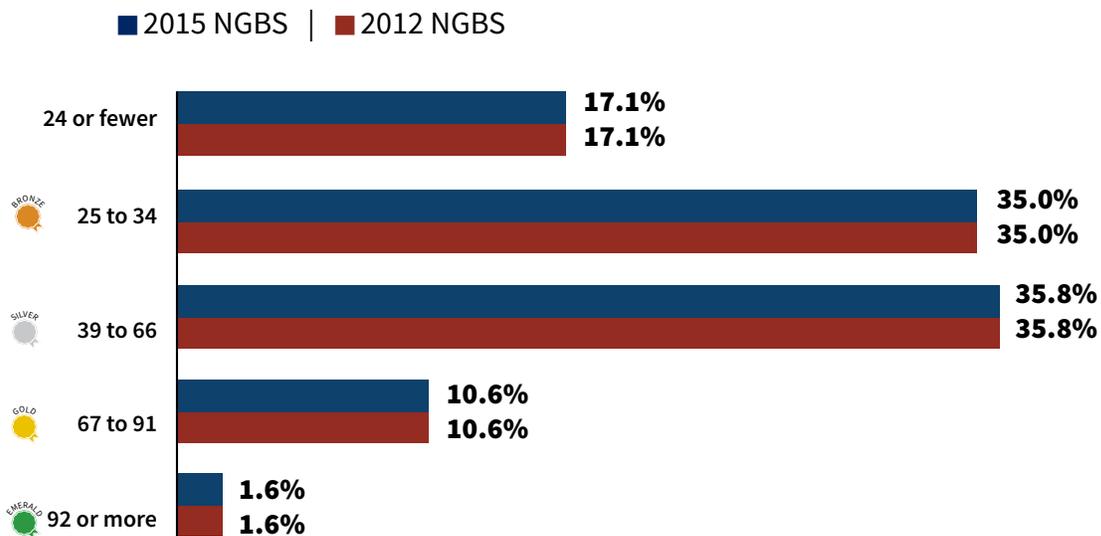
Water Efficiency

The builders' typical homes also tended to score well under the NGBS chapter on water efficiency. In this chapter, the points awarded are the same in the 2012 and 2015 versions of the NGBS. Scored by either version, 83 percent of the homes hit or exceeded the 25-point threshold for a bronze

water-efficiency rating, 48 percent hit or exceeded the 39 points needed for silver, 12 percent hit or exceed 67 points for gold, and a little under 2 percent had the 92 points needed for emerald (Fig. 16).

Figure 16. NGBS Points for Water Efficiency

(Percent of Respondents' Typical Homes)



An important aspect of a home's efficient use of water is the volume of water used outside the house itself. Indeed, as described in a 2000 NAHB study, outdoor water use in a sample of single-family homes averaged 231 gallons per day, compared to 173 gallons for all indoor uses combined.¹

One of the ways the NGBS addresses this is by awarding points for particular irrigation practices. Among the irrigation practices listed in the survey, gray or recycled water and a system controlled by an irrigation controller earn the most NGBS water efficiency points—10 and 8, respectively. Use of gray or recycled water for irrigation is relatively uncommon, used by about 5 percent of respondents in their typical homes, but over 36 percent of the typical homes have systems controlled by an irrigation controller (Appendix A11).

Inside the house, 27 percent of the typical homes earned 24 water-efficiency points for ENERGY STAR washing machines with a water factor of 4.0 or less, and 23 percent earned 18 points for shower heads with flow rates of under 1.6 gallons per minute (Appendix A23). All of the shower heads flow rates listed in the survey, however, were worth at least 10 points. In the water efficiency chapter, substantial points are available for appliances that use rain water, or water closets that use gray or recycled water, but these were present in only 1 to 2 percent of builders' typical homes (Appendix A25).

¹"Residential Water Use" published in *Housing Economics*, June 2000. Among other things, this study published NAHB tabulations of data from the 1999 Residential End Uses of Water Survey sponsored by the AWWA Research Foundation.



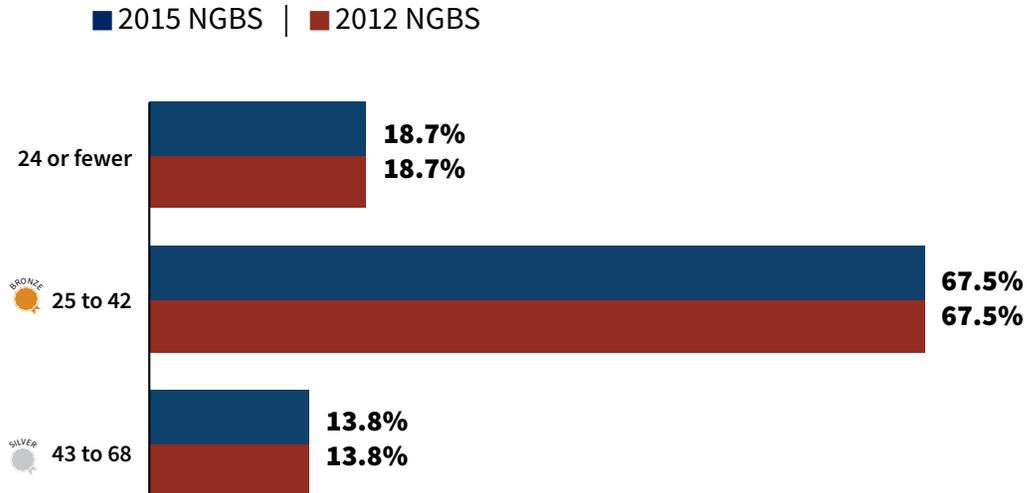
Indoor Environmental Quality

Most (81 percent) of builders' typical homes achieved or exceeded the 25 points required for a bronze rating in the **indoor environmental quality** chapter of the NGBS. Only 14 percent, however, had enough points for silver, and none

had enough for a gold rating (Fig. 17). The points awarded in this chapter are identical in the 2012 and 2015 versions of the NGBS.

Figure 17. NGBS Points for Indoor Environmental Quality

(Percent of Respondents' Typical Homes)



Under indoor environmental quality, a home can earn up to 10 points for its parking facility, if that facility is a carport or detached garage. Only 8 percent of the builders' typical homes earned 10 points for their parking facilities, but 82 percent did earn at least 4 points for having an attached garage with common walls and doors sealed and gasketed (Appendix A11).

Over 90 percent of the typical homes scored 5 points in this chapter for having no air handling equipment or return ducts in the garage—or, if they were in the garage, in an isolated mechanical room (Appendix A17).

Seventy-nine percent of builders' typical homes used interior paints and coatings or interior adhesives and sealants with low-to-no volatile organic compounds (VOCs), each of which is worth 5 points in the NGBS (Appendix A30). Low-to-no VOC paints and coatings were more common (in 77 percent of the typical homes) than low-to-no VOC adhesives and sealants (40 percent).

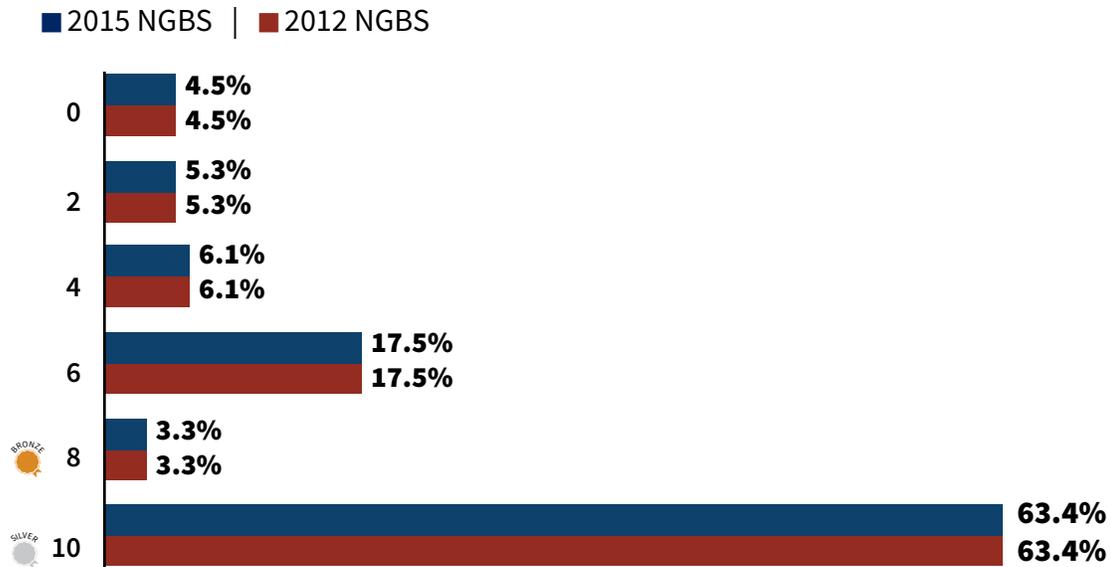


Operation, Maintenance, and Building Owner Education

Fewer NGBS points are awarded in **Operation, Maintenance, and Building Owner Education** than in other chapters of the NGBS, and relatively few questions were devoted to it in the Green Practices Survey. In the survey, only six different

operation chapter scores are possible, so the entire distribution can easily be shown in a single chart (Fig. 18).

Figure 18. NGBS Points for Operation, Maintenance, and Building Owner Education
(Percent of Respondents' Typical Homes)



Again in this chapter, scoring is identical under the 2012 and 2015 versions of the NGBS. According to the above figure, two-thirds of the builders' typical homes hit or exceeded the threshold for a bronze operation chapter rating, and 63 percent exactly hit the target for silver, but this needs to be interpreted with caution. Due to the limited nature of this section of the survey, it was impossible for a home to earn more than 10 points here. The survey contained a total of five questions devoted to home operation, but three of these addressed mandatory requirements; only two involved items explicitly worth NGBS points.

Providing a list of local service providers and a checklist of common maintenance items are worth four points each. Providing a homeowners' manual is mandatory and by itself not worth any points. Instead, up to 4 points are awarded if the manual contains particular items. According to NAHB's Energy and Green Building staff, it is

relatively easy to include these particular items once you have a manual. Nearly 90 percent of respondents reported providing a manual to the buyers of their typical homes (Appendix A29), and NAHB's Economics and Housing Policy Group decided it was most reasonable to give these 2 points (half the maximum possible) when scoring them.

The following section contains a set of detailed tables that show average points in each chapter and mandatory requirements under both the 2012 and 2015 NGBS, as well as tabulated responses to each of the 67 questions in the 2017 Green Practices Survey. In each table, the responses are broken down by region of the country, the size of the builder (based on dollar volume of business done in 2016), the most common types of green certifications, and total points awarded under both the 2012 and 2015 versions of the NGBS.



2017 **Green Practices Survey**

APPENDIX A:
DETAILED TABLES



Average 2015 Green Building Points

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Lot Design, Prep & Development	35	31	32	35	37	32	35	38	35	40	37	32	18	27	36	50	19	30	37	52
Resource Efficiency	30	33	31	28	31	31	31	30	32	34	33	27	16	25	32	41	18	25	32	43
Energy Efficiency	51	40	51	53	46	51	50	53	62	76	74	31	20	35	55	78	24	38	57	78
Water Efficiency	42	45	41	42	38	41	46	39	53	45	49	37	24	32	42	62	23	32	45	65
Indoor Environmental Quality	32	36	37	30	30	32	33	31	38	34	35	29	23	28	33	38	24	29	33	39
Operation/Maintenance/Education	8	7	8	8	8	8	8	9	8	9	9	7	6	8	8	9	7	8	8	9
TOTAL POINTS	197	192	201	196	190	194	203	199	229	238	236	163	108	155	204	278	115	163	212	284
Responses	246	16	53	125	42	47	105	86	27	80	60	119	32	68	83	63	39	74	80	53

Percent Satisfying 2015 Mandatory Requirements for Green Buildings

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Flashing	87.4	93.8	88.7	85.6	90.5	80.9	85.7	96.5	92.6	86.3	88.3	88.2	65.6	85.3	92.8	93.7	66.7	87.8	93.8	92.5
Insulation	37.8	31.3	52.8	34.4	33.3	29.8	43.8	37.2	59.3	62.5	58.3	22.7	12.5	23.5	33.7	71.4	17.9	21.6	37.5	75.5
Glazing	25.2	25.0	39.6	17.6	28.6	25.5	25.7	26.7	22.2	40.0	23.3	16.8	3.1	27.9	18.1	42.9	10.3	23.0	23.8	41.5
CO Alarm	87.0	93.8	90.6	83.2	90.5	85.1	87.6	88.4	92.6	88.8	91.7	81.5	68.8	86.8	88.0	95.2	69.2	87.8	88.8	96.2
Operation/Maintenance/Education	73.6	87.5	75.5	72.0	69.0	59.6	73.3	88.4	81.5	86.3	76.7	65.5	46.9	76.5	73.5	84.1	53.8	73.0	78.8	81.1
All of the Above	11.0	6.3	20.8	7.2	9.5	10.6	12.4	10.5	14.8	23.8	11.7	4.2	0.0	8.8	6.0	25.4	2.6	6.8	11.3	22.6
All Except Glazing	28.5	31.3	39.6	25.6	21.4	19.1	31.4	32.6	51.9	53.8	41.7	13.4	6.3	16.2	24.1	58.7	10.3	14.9	28.8	60.4
Responses	246	16	53	125	42	47	105	86	27	80	60	119	32	68	83	63	39	74	80	53



Average 2012 Green Building Points

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Lot Design, Prep & Development	28	25	25	29	28	26	29	29	29	32	30	25	13	21	29	41	14	23	30	42
Resource Efficiency	31	35	33	29	33	33	32	32	33	36	35	28	18	26	33	42	19	27	33	44
Energy Efficiency	47	40	44	51	41	49	46	48	58	61	76	33	19	34	51	69	21	36	53	72
Water Efficiency	42	45	41	42	38	41	46	39	53	45	49	37	24	32	42	62	23	32	45	65
Indoor Environmental Quality	32	36	37	30	30	32	33	31	38	34	35	29	23	28	33	38	24	29	33	39
Operation/Maintenance/Education	8	7	8	8	8	8	8	9	8	9	9	7	6	8	8	9	7	8	8	9
TOTAL POINTS	187	186	188	189	178	188	193	187	219	216	233	159	104	149	195	261	108	155	202	270
Responses	246	16	53	125	42	47	105	86	27	80	60	119	32	68	83	63	39	74	80	53

Percent Satisfying 2012 Mandatory Requirements for Green Buildings

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Flashing	87.4	93.8	88.7	85.6	90.5	80.9	85.7	96.5	92.6	86.3	88.3	88.2	65.6	85.3	92.8	93.7	66.7	87.8	93.8	92.5
Insulation	37.8	31.3	52.8	34.4	33.3	29.8	43.8	37.2	59.3	62.5	58.3	22.7	12.5	23.5	33.7	71.4	17.9	21.6	37.5	75.5
Glazing	38.6	31.3	41.5	32.8	57.1	34.0	40.0	43.0	37.0	51.3	36.7	32.8	9.4	45.6	28.9	58.7	15.4	40.5	33.8	60.4
CO Alarm	87.0	93.8	90.6	83.2	90.5	85.1	87.6	88.4	92.6	88.8	91.7	81.5	68.8	86.8	88.0	95.2	69.2	87.8	88.8	96.2
Operation/Maintenance/Education	73.6	87.5	75.5	72.0	69.0	59.6	73.3	88.4	81.5	86.3	76.7	65.5	46.9	76.5	73.5	84.1	53.8	73.0	78.8	81.1
All of the Above	17.5	12.5	22.6	16.0	16.7	17.0	17.1	19.8	25.9	32.5	23.3	8.4	3.1	11.8	10.8	39.7	5.1	10.8	15.0	39.6
All Except Glazing	28.5	31.3	39.6	25.6	21.4	19.1	31.4	32.6	51.9	53.8	41.7	13.4	6.3	16.2	24.1	58.7	10.3	14.9	28.8	60.4
Responses	246	16	53	125	42	47	105	86	27	80	60	119	32	68	83	63	39	74	80	53



Q1. Please indicate the most important operation and all other operations of your firm.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points				
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more	
Most Important																					
Single-family builder	93.7	87.5	94.1	96.0	89.5	84.4	97.1	94.0	100.0	96.2	93.2	93.9	89.7	95.5	93.8	93.5	91.7	93.1	94.9	94.2	
Multifamily builder	2.5	12.5	3.9		2.6	2.2	1.0	4.8		1.3	1.7	2.6	3.4	1.5	2.5	3.2	2.8	2.8	2.5	1.9	
Land Developer	2.1			2.4	5.3	6.7	1.0	1.2		1.3	1.7	1.8	3.4	1.5	2.5	1.6	2.8	2.8	1.3	1.9	
Other	1.7		2.0	1.6	2.6	6.7	1.0			1.3	3.4	1.8	3.4	1.5	1.2	1.6	2.8	1.4	1.3	1.9	
All Other																					
Single-family builder	27.2	31.3	25.5	30.6	21.1	24.4	28.8	28.9	26.9	27.8	18.6	28.9	34.5	25.4	24.7	29.0	30.6	26.4	22.8	32.7	
Multifamily builder	12.1	25.0	13.7	10.5	7.9	13.3	10.6	14.5	19.2	17.7	16.9	7.9	6.9	9.0	13.6	16.1	5.6	11.1	15.2	13.5	
Land Developer	28.0	43.8	23.5	27.4	28.9	20.0	23.1	41.0	19.2	34.2	33.9	24.6	24.1	29.9	24.7	32.3	22.2	30.6	29.1	26.9	
Other	11.7	6.3	11.8	11.3	13.2	11.1	19.2	3.6	11.5	7.6	11.9	11.4	3.4	6.0	19.8	11.3	2.8	9.7	17.7	11.5	
Responses	239	16	51	124	38	45	104	83	26	79	59	114	29	67	81	62	36	72	79	52	

Q2. In what State is the typical home you built in 2016 located?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Region																				
Northeast	6.8	100.0				8.7	6.0	6.1	19.2	2.7	12.1	5.1	9.7	7.5	5.0	6.9	13.2	5.6	3.9	8.2
Midwest	22.5		100.0			23.9	26.0	18.3	7.7	22.7	22.4	21.2	22.6	22.4	17.5	29.3	23.7	20.8	22.1	24.5
South	53.0			100.0		56.5	51.0	52.4	50.0	58.7	56.9	53.4	54.8	50.7	55.0	51.7	47.4	48.6	58.4	55.1
West	17.8				100.0	10.9	17.0	23.2	23.1	16.0	8.6	20.3	12.9	19.4	22.5	12.1	15.8	25.0	15.6	12.2
Climate Zone																				
2	21.6			40.8		19.6	20.0	25.6	15.4	22.7	20.7	21.2	19.4	16.4	18.8	32.8	15.8	16.7	22.1	32.7
3	20.8			36.8	7.1	23.9	22.0	15.9	26.9	20.0	22.4	22.0	22.6	23.9	23.8	12.1	21.1	20.8	24.7	14.3
4	22.5	18.8	3.8	22.4	47.6	21.7	19.0	24.4	19.2	20.0	19.0	27.1	25.8	23.9	26.3	13.8	23.7	26.4	22.1	16.3
5	27.5	81.3	69.8		35.7	26.1	28.0	30.5	38.5	34.7	29.3	20.3	25.8	25.4	23.8	36.2	34.2	25.0	23.4	32.7
6	6.4		22.6		7.1	8.7	9.0	2.4			8.6	8.5	6.5	7.5	6.3	5.2	5.3	6.9	7.8	4.1
7	1.3		3.8		2.4		2.0	1.2		2.7		0.8		3.0	1.3			4.2		
Responses	236	16	53	125	42	46	100	82	26	75	58	118	31	67	80	58	38	72	77	49

Q3. What was your company's total dollar volume of business in 2016?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Under \$500,000	8.0	6.7	13.5	6.7	7.3	40.4			3.7	3.8	13.6	8.8	14.3	9.4	4.8	7.9	11.8	7.0	7.5	7.5
\$500,000 to \$999,999	11.8	20.0	7.7	15.0	4.9	59.6			7.4	11.4	15.3	9.7	14.3	10.9	10.8	12.7	14.7	8.5	13.8	11.3
\$1 million to \$4,999,999	44.1	40.0	50.0	42.5	41.5		100.0		59.3	44.3	40.7	45.1	39.3	39.1	49.4	44.4	41.2	39.4	46.3	49.1
\$5 million to \$9,999,999	15.1	20.0	15.4	15.0	14.6			41.9	7.4	13.9	13.6	15.9	14.3	17.2	10.8	19.0	14.7	15.5	11.3	20.8
\$10 million to \$14,999	7.1	6.7	5.8	5.8	12.2			19.8	3.7	6.3	5.1	8.8	10.7	7.8	7.2	4.8	8.8	9.9	5.0	5.7
\$15 million or over	13.9	6.7	7.7	15.0	19.5			38.4	18.5	20.3	11.9	11.5	7.1	15.6	16.9	11.1	8.8	19.7	16.3	5.7
Responses	238	15	52	120	41	47	105	86	27	79	59	113	28	64	83	63	34	71	80	53

Q4. How many stories does your typical home have?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
1	39.6	12.5	49.1	40.3	45.2	66.0	35.2	30.2	25.9	36.3	40.0	42.9	58.1	44.1	37.3	28.6	50.0	44.6	38.8	26.4
2	55.1	68.8	45.3	57.3	52.4	31.9	60.0	61.6	70.4	57.5	53.3	53.8	35.5	52.9	56.6	65.1	42.1	52.7	55.0	67.9
3	4.9	12.5	5.7	2.4	2.4	2.1	4.8	7.0	3.7	6.3	6.7	2.5	6.5	1.5	6.0	6.3	5.3	2.7	6.3	5.7
4+	0.4	6.3						1.2				0.8		1.5			2.6			
Responses	245	16	53	124	42	47	105	86	27	80	60	119	31	68	83	63	38	74	80	53

Q5. What is the total square footage of the home (finished space)?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
1,500 sq ft or less	4.4	7.7	2.0	3.5	10.3	11.4	3.9	1.3		5.3	7.0	2.9		3.4	5.0	6.6		4.5	3.8	7.8
1,501 to 2,000 sq ft	14.7	15.4	18.0	13.3	17.9	25.0	10.8	12.8	20.0	15.8	19.3	13.5	19.2	15.5	16.3	9.8	16.7	18.2	12.8	11.8
2,001 to 2,500 sq ft	29.8	38.5	32.0	25.7	41.0	31.8	22.5	38.5	24.0	34.2	26.3	34.6	46.2	34.5	25.0	24.6	43.3	31.8	26.9	23.5
2,500 sq ft or more	51.1	38.5	48.0	57.5	30.8	31.8	62.7	47.4	56.0	44.7	47.4	49.0	34.6	46.6	53.8	59.0	40.0	45.5	56.4	56.9
Mean	3,077	2,696	3,071	3,196	2,676	2,398	3,348	3,122	3,369	2,959	3,031	3,001	2,910	3,042	3,129	3,112	3,155	2,863	3,204	3,113
Median	2,600	2,200	2,500	2,800	2,400	2,200	3,000	2,500	2,800	2,500	2,500	2,500	2,425	2,500	2,800	2,800	2,500	2,500	2,800	2,800
Responses	225	13	50	113	39	44	102	78	25	76	57	104	26	58	80	61	30	66	78	51

Q6. Which of the following certifications does your typical home hold?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
NGBS (National Green Building Standard)	11.1	31.3	3.8	10.5	14.3	6.4	15.2	9.4	100.0	16.3	18.3	0.8	0.0	4.5	16.9	15.9	0.0	5.5	16.3	18.9
LEED for Homes	5.3	25.0	0.0	4.0	7.1	4.3	4.8	7.1	11.1	5.0	5.0	0.0	0.0	4.5	3.6	11.1	2.6	5.5	1.3	13.2
Living Building Challenge	0.4	0.0	0.0	0.8	0.0	2.1	0.0	0.0	0.0	1.3	1.7	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.9
EarthCraft	0.4	0.0	0.0	0.8	0.0	0.0	1.0	0.0	3.7	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	1.4	0.0	0.0
HERS	32.8	12.5	32.1	35.5	28.6	25.5	33.3	37.6	48.1	100.0	50.0	0.0	9.7	17.9	30.1	63.5	15.8	20.5	33.8	60.4
EnergyStar Version 3.0	24.6	43.8	24.5	26.6	11.9	36.2	22.9	21.2	40.7	37.5	100.0	0.0	3.2	9.0	25.3	50.8	2.6	9.6	27.5	56.6
None of the above	48.8	37.5	47.2	50.8	57.1	44.7	48.6	48.2	3.7	0.0	0.0	100.0	90.3	71.6	44.6	9.5	81.6	67.1	42.5	9.4
Responses	244	16	53	124	42	47	105	85	27	80	60	119	31	67	83	63	38	73	80	53

Q7. Does your typical home have any of the following location features?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Infill Site (Adjoining previously developed lot)	31.1	26.7	21.2	33.9	32.5	15.2	30.1	41.2	11.5	37.7	26.3	31.0	14.8	26.2	27.2	48.4	15.2	29.2	25.6	51.9
Greyfield (Previously Developed)	10.2	13.3	13.5	8.5	7.5	8.7	9.7	11.8	0.0	10.4	7.0	8.8	0.0	6.2	8.6	21.0	3.0	6.9	10.3	19.2
Brownfield (recognized by EPA or local agency)	3.0	0.0	3.8	1.7	5.0	6.5	1.9	2.4	0.0	2.6	3.5	1.8	3.7	3.1	2.5	3.2	3.0	4.2	1.3	3.8
In a Flood Zone	11.5	6.7	3.8	16.1	7.5	10.9	8.7	15.3	11.5	13.0	7.0	11.5	14.8	10.8	6.2	17.7	12.1	9.7	7.7	19.2
None of the above	59.6	73.3	67.3	56.8	57.5	65.2	62.1	52.9	80.8	57.1	64.9	58.4	74.1	66.2	63.0	41.9	72.7	62.5	64.1	40.4
Responses	235	15	52	118	40	46	103	85	26	77	57	113	27	65	81	62	33	72	78	52

Q8. Does your typical home have any of the following transit features?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Within 1/4 mile walking to two bus routes	16.0	13.3	9.4	12.9	34.1	13.0	15.2	18.8	7.4	17.5	15.0	17.8	3.2	13.6	15.7	25.4	2.7	17.8	11.3	30.2
Within 1/2 mile walking of mass transit (rail, ferry, etc.)	10.7	13.3	13.2	7.3	14.6	6.5	11.4	12.9	14.8	13.8	11.7	9.3	3.2	4.5	9.6	22.2	2.7	8.2	8.8	22.6
Within 1/2 mile to more than five retail, civic, or recreational spaces	21.0	33.3	20.8	19.4	19.5	4.3	22.9	29.4	25.9	25.0	26.7	18.6	9.7	13.6	18.1	38.1	8.1	19.2	17.5	37.7
Community had right-of-way bicycle lanes/paths	27.6	13.3	37.7	24.2	24.4	21.7	28.6	29.4	29.6	36.3	33.3	22.0	12.9	16.7	25.3	49.2	10.8	21.9	27.5	47.2
Building lot was connected to existing sidewalks	46.9	46.7	50.9	40.3	58.5	39.1	39.0	62.4	37.0	61.3	43.3	44.9	35.5	39.4	45.8	61.9	43.2	43.8	42.5	60.4
None of the above	38.3	46.7	32.1	46.0	24.4	45.7	41.9	28.2	44.4	25.0	35.0	42.4	61.3	43.9	39.8	19.0	54.1	38.4	43.8	18.9
Responses	243	15	53	124	41	46	105	85	27	80	60	118	31	66	83	63	37	73	80	53

Q9. Does your company have substantial experience in acquiring raw land and developing lots?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	45.2	68.8	41.5	43.4	41.5	39.1	38.8	58.8	48.1	47.4	44.8	44.1	36.7	47.1	48.8	42.9	35.1	50.7	48.7	39.6
No	54.8	31.3	58.5	56.6	58.5	60.9	61.2	41.2	51.9	52.6	55.2	55.9	63.3	52.9	51.3	57.1	64.9	49.3	51.3	60.4
Responses	241	16	53	122	41	46	103	85	27	78	58	118	30	68	80	63	37	73	78	53



Q10. Does your typical home have any of the following site features?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Terracing, retaining walls, or stabilization techniques for long-term erosion control were used	44.4	41.7	41.0	41.3	46.4	42.9	49.4	40.6	50.0	46.7	51.1	39.3	30.0	26.4	50.0	62.7	29.2	31.6	50.0	62.8
25% or more of driveway(s) and parking was aligned with natural topography	33.3	33.3	15.4	35.9	42.9	28.6	41.6	28.1	54.5	38.3	27.7	28.6	0.0	17.0	44.6	51.0	0.0	19.3	44.6	55.8
Limits of clearing and grading were noted on lot plan	49.4	58.3	43.6	47.8	53.6	42.9	48.1	57.8	54.5	56.7	53.2	48.8	25.0	34.0	58.9	64.7	25.0	38.6	57.1	67.4
During construction, limits of clearing and grading were staked out	52.2	50.0	51.3	52.2	46.4	42.9	55.8	53.1	72.7	61.7	51.1	45.2	35.0	30.2	64.3	68.6	29.2	36.8	62.5	72.1
During construction, excavated soils to be reused were stabilized within 14 days	35.0	50.0	28.2	39.1	28.6	37.1	33.8	35.9	50.0	38.3	34.0	34.5	15.0	26.4	44.6	41.2	12.5	31.6	41.1	44.2
The final grade of the site sloped away from the building at 5% or more for at least ten feet	63.3	58.3	71.8	60.9	60.7	71.4	66.2	54.7	54.5	61.7	61.7	63.1	50.0	67.9	57.1	70.6	54.2	64.9	57.1	74.4
None of the above	7.8	0.0	5.1	8.7	14.3	5.7	6.5	9.4	9.1	13.3	10.6	7.1	15.0	11.3	3.6	5.9	12.5	10.5	3.6	7.0
Responses	180	12	39	92	28	35	77	64	22	60	47	84	20	53	56	51	24	57	56	43



Q11. Was low-impact development or green infrastructure used to handle storm events (vegetated swales, rain garden, cisterns, etc)?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes, to handle 95th percentile storm events	9.0	0.0	8.1	4.4	24.1	9.1	5.2	13.8	9.1	10.2	4.4	7.2	5.3	3.9	8.8	16.0	4.3	7.1	8.9	14.3
Yes, to handle 90th percentile storm events	2.3	0.0	2.7	1.1	6.9	0.0	2.6	3.1	0.0	3.4	0.0	2.4	0.0	2.0	5.3	0.0	0.0	1.8	5.4	0.0
Yes, to handle 80th percentile storm events	4.5	16.7	5.4	2.2	6.9	3.0	7.8	1.5	9.1	1.7	8.9	3.6	5.3	2.0	3.5	8.0	4.3	5.4	1.8	7.1
Yes, but unsure of what storm event it can handle	35.6	58.3	35.1	34.4	24.1	42.4	32.5	35.4	59.1	45.8	48.9	25.3	5.3	29.4	45.6	42.0	8.7	28.6	48.2	42.9
No, Green Infrastructure was not built	48.6	25.0	48.6	57.8	37.9	45.5	51.9	46.2	22.7	39.0	37.8	61.4	84.2	62.7	36.8	34.0	82.6	57.1	35.7	35.7
Responses	177	12	37	90	29	33	77	65	22	59	45	83	19	51	57	50	23	56	56	42

Q12. Permeable materials were used for what percent of the hardscape (driveways, sidewalks, parking areas, etc)?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
None	45.2	41.7	51.3	42.7	39.3	31.3	42.9	54.7	45.5	45.8	37.0	51.2	72.2	49.1	43.6	33.3	68.2	48.3	44.4	30.2
Less than 25%	29.9	33.3	33.3	27.0	39.3	43.8	27.3	25.0	31.8	27.1	37.0	25.6	22.2	30.2	25.5	37.3	18.2	32.8	24.1	39.5
25% to 50%	10.7	0.0	10.3	13.5	10.7	3.1	15.6	9.4	4.5	11.9	13.0	11.0	5.6	11.3	9.1	13.7	9.1	8.6	11.1	14.0
51% to 99%	10.7	16.7	2.6	13.5	7.1	12.5	10.4	10.9	9.1	13.6	10.9	8.5	0.0	7.5	12.7	15.7	4.5	8.6	11.1	16.3
100%	3.4	8.3	2.6	3.4	3.6	9.4	3.9	0.0	9.1	1.7	2.2	3.7	0.0	1.9	9.1	0.0	0.0	1.7	9.3	0.0
Responses	177	12	39	89	28	32	77	64	22	59	46	82	18	53	55	51	22	58	54	43



Q13. Altogether, were at least 50% of all hardscape areas either high SRI, permeable, or shaded by trees/structures?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	43.3	33.3	42.9	44.9	42.3	57.6	43.1	35.9	50.0	40.7	44.4	38.0	11.1	36.7	51.9	52.0	9.1	40.7	52.8	52.4
No	56.7	66.7	57.1	55.1	57.7	42.4	56.9	64.1	50.0	59.3	55.6	62.0	88.9	63.3	48.1	48.0	90.9	59.3	47.2	47.6
Responses	171	12	35	89	26	33	72	64	20	59	45	79	18	49	54	50	22	54	53	42

Q14. Indicate which of the following landscaping features were used in your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
A landscape plan was created	61.3	53.3	53.8	62.3	65.9	39.1	62.7	73.8	72.0	69.6	70.0	56.0	50.0	43.1	67.1	77.8	51.4	46.5	67.1	79.2
Turf grass was less than 20% of landscaping areas	16.0	6.7	9.6	16.4	24.4	17.4	20.6	10.7	16.0	21.5	20.0	11.2	3.6	4.6	18.3	30.2	2.9	7.0	17.7	34.0
Only non-invasive, native and/or regional plants were used for landscaping	42.4	33.3	34.6	46.7	36.6	47.8	42.2	41.7	52.0	49.4	53.3	32.8	7.1	30.8	43.9	68.3	11.4	31.0	46.8	71.7
Any existing invasive plants were removed from the lot	23.1	6.7	15.4	32.0	14.6	19.6	20.6	27.4	12.0	29.1	20.0	22.4	0.0	21.5	20.7	38.1	5.7	18.3	26.6	35.8
Plants with similar watering needs were grouped together	23.1	20.0	17.3	22.1	29.3	19.6	24.5	25.0	36.0	30.4	28.3	17.2	0.0	13.8	23.2	42.9	2.9	15.5	25.3	43.4
Some to all existing trees were protected during construction with fencing	40.8	40.0	36.5	45.9	26.8	34.8	44.1	40.5	40.0	41.8	36.7	38.8	7.1	30.8	46.3	58.7	14.3	26.8	49.4	64.2
A community food garden was planted on the lot	0.8	0.0	0.0	0.8	2.4	2.2	0.0	1.2	0.0	1.3	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	3.8
None of the above	16.8	13.3	28.8	11.5	22.0	21.7	15.7	14.3	12.0	13.9	10.0	20.7	42.9	18.5	13.4	7.9	37.1	21.1	11.4	5.7
Responses	238	15	52	122	41	46	102	84	25	79	60	116	28	65	82	63	35	71	79	53

Q15. Indicate which of the following irrigation practices were applied in your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
An irrigation plan was implemented by a qualified professional	42.5	6.7	41.2	44.5	47.5	25.0	39.4	58.0	38.5	50.0	42.4	40.2	38.5	33.3	40.7	55.6	40.6	30.0	46.2	54.7
Drip irrigation was installed at all landscape beds	22.3	6.7	5.9	26.1	32.5	13.6	23.1	27.2	30.8	28.2	28.8	17.9	7.7	7.9	24.7	39.7	9.4	7.1	28.2	41.5
Drip irrigation was installed at all turf grass areas	3.9	0.0	3.9	2.5	2.5	2.3	4.8	3.7	0.0	6.4	5.1	1.8	0.0	0.0	4.9	7.9	0.0	1.4	3.8	9.4
Irrigation system was controlled by irrigation controller	36.5	13.3	25.5	42.9	30.0	25.0	38.5	42.0	34.6	41.0	33.9	33.9	15.4	31.7	38.3	47.6	18.8	25.7	47.4	45.3
Reclaimed, gray, or recycled water was used for irrigation	4.7	13.3	2.0	4.2	5.0	6.8	5.8	2.5	7.7	6.4	6.8	1.8	0.0	1.6	3.7	11.1	0.0	2.9	5.1	9.4
Rainwater was collected into a 50 gallon or larger cistern and used for irrigation	6.4	20.0	2.0	7.6	2.5	9.1	5.8	6.2	15.4	7.7	11.9	1.8	0.0	0.0	4.9	17.5	0.0	1.4	3.8	20.8
All irrigation demand was supplied by rain-water collection system designed by qualified professional	4.3	13.3	2.0	4.2	2.5	6.8	3.8	3.7	3.8	7.7	8.5	0.9	3.8	0.0	0.0	14.3	3.1	0.0	0.0	17.0
None of the above	42.1	53.3	45.1	43.7	37.5	54.5	43.3	30.9	38.5	34.6	37.3	49.1	53.8	52.4	44.4	23.8	53.1	52.9	39.7	24.5
Responses	233	15	51	119	40	44	104	81	26	78	59	112	26	63	81	63	32	70	78	53



Q16. What type of parking amenity does your typical home have?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Carpport	2.1	6.3		2.4			2.9	2.4		2.5	3.3	1.7			3.6	3.2			3.8	3.8
Detached garage	5.8	6.3	5.7	7.3		8.5	5.8	3.5	14.8	5.1	11.7	5.0		1.5	4.8	14.3		1.4	6.3	15.1
Attached garage – with common wall(s) and door(s) sealed and gasketed	81.9	81.3	86.8	81.5	81.0	80.9	81.7	83.5	85.2	84.8	80.0	79.0	80.0	83.6	84.3	77.8	78.4	86.3	83.8	75.5
Attached garage – with common wall(s) and door(s) not sealed or gasketed	7.0		3.8	7.3	11.9	8.5	3.8	9.4		3.8	3.3	10.1	20.0	10.4	3.6	1.6	18.9	9.6	2.5	1.9
None of the above	3.3	6.3	3.8	1.6	7.1	2.1	5.8	1.2		3.8	1.7	4.2		4.5	3.6	3.2	2.7	2.7	3.8	3.8
Responses	243	16	53	124	42	47	104	85	27	79	60	119	30	67	83	63	37	73	80	53

Q17. Did mass walls make up over 75% of the exterior wall area?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	24.2	31.3	30.0	27.7	4.8	24.4	20.6	28.2	11.1	28.2	34.5	21.2	17.9	17.2	20.7	38.7	14.7	19.7	21.5	40.4
No	64.0	62.5	54.0	61.3	88.1	60.0	66.7	62.4	77.8	64.1	56.9	64.6	64.3	70.3	64.6	56.5	70.6	66.2	64.6	55.8
Not sure/Dont know	11.9	6.3	16.0	10.9	7.1	15.6	12.7	9.4	11.1	7.7	8.6	14.2	17.9	12.5	14.6	4.8	14.7	14.1	13.9	3.8

Q18. Were skylights installed in ALL rooms without windows?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	2.9		1.9	1.6	2.4	4.3	2.9	2.4		2.5		2.5	3.3	1.5	2.4	4.8	2.7	1.4	2.5	5.7
No	69.5	93.8	66.0	64.5	85.4	53.2	73.1	74.1	70.4	72.2	70.0	69.5	66.7	76.5	68.3	65.1	64.9	79.5	67.5	62.3
N/A-All rooms had windows	27.6	6.3	32.1	33.9	12.2	42.6	24.0	23.5	29.6	25.3	30.0	28.0	30.0	22.1	29.3	30.2	32.4	19.2	30.0	32.1
Responses	243	16	53	124	41	47	104	85	27	79	60	118	30	68	82	63	37	73	80	53

Q19. Was your typical home designed to promote cross ventilation, with operable windows/doors on adjacent or opposite walls?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	64.9	62.5	79.6	55.2	75.6	75.6	69.0	54.9	69.2	70.3	67.3	58.4	40.0	57.8	67.9	81.4	41.7	59.2	70.7	81.6
No	35.1	37.5	20.4	44.8	24.4	24.4	31.0	45.1	30.8	29.7	32.7	41.6	60.0	42.2	32.1	18.6	58.3	40.8	29.3	18.4
Responses	231	16	49	116	41	45	100	82	26	74	55	113	30	64	78	59	36	71	75	49

Q20 & 22. What were the U-factor and SHGC of windows and exterior glass doors?

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
U-factor																				
Average, when provided	.32	.34	.29	.31	.32	.31	.30	.35	.33	.29	.33	.33	.28	.32	.33	.31	.29	.35	.29	.32
Pct Unknown	53.3	56.3	56.6	58.4	35.7	59.6	49.5	50.0	59.3	40.0	50.0	59.7	81.3	50.0	62.7	30.2	76.9	51.4	60.0	28.3
SHGH																				
Average, when provided	.30	.29	.34	.27	.40	.33	.28	.31	.25	.33	.31	.27	.30	.27	.34	.29	.30	.32	.31	.27
Pct Unknown	74.8	93.8	81.1	66.4	78.6	74.5	77.1	69.8	81.5	62.5	76.7	79.0	84.4	76.5	80.7	60.3	84.6	78.4	77.5	58.5
Responses	246	16	53	125	42	47	105	86	27	80	60	119	32	68	83	63	39	74	80	53

Q21 & 23. What were the U-factor and SHGC of skylights?

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
U-factor																				
Average, when provided	0.43	0.48	0.28	0.35	0.38	0.33	0.36	0.52	0.38	0.36	0.57	0.42		0.39	0.38	0.47	0.3	0.39	0.41	0.47
Pct Unknown	24	18.8	35.8	20	26.2	25.5	20	26.7	18.5	21.3	28.3	25.2	25	23.5	20.5	28.6	20.5	24.3	25	24.5
SHGH																				
Average, when provided	0.47	0.29	0.44	0.2	1	0.46	0.25	0.71		0.5	0.37				1	0.36		1		0.36
Pct Unknown	31.3	31.3	35.8	23.2	45.2	34	26.7	34.9	29.6	27.5	38.3	33.6	28.1	36.8	26.5	33.3	30.8	32.4	30	32.1
Pct Not installed	51.6	50	43.4	60.8	42.9	42.6	58.1	52.3	51.9	52.5	43.3	53.8	56.3	51.5	56.6	42.9	51.3	59.5	48.8	45.3
Responses	246	16	53	125	42	47	105	86	27	80	60	119	32	68	83	63	39	74	80	53

Q24. Which of the following demolition and recycling practices were used in the construction of your typical home?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
A construction waste management plan was implemented	17.8	21.4	13.5	19.0	17.5	15.2	20.8	15.9	29.2	22.4	20.7	12.9	7.4	9.2	16.0	33.3	5.9	11.3	15.4	37.7
At least 50% of construction and demolition waste was reused or recycled offsite	17.4	7.1	21.2	13.2	25.0	13.0	19.8	17.1	25.0	23.7	19.0	13.8	3.7	9.2	22.2	25.4	2.9	14.1	17.9	30.2
At least two types of materials were recycled offsite	27.1	35.7	23.1	23.1	37.5	28.3	28.7	25.6	37.5	32.9	29.3	21.6	7.4	18.5	29.6	41.3	8.8	19.7	30.8	43.4
At least 50% of land-clearing waste was ground up and applied on-site as soil amendment/fill	6.8	0.0	3.8	9.1	2.5	10.9	5.0	7.3	8.3	10.5	8.6	4.3	0.0	6.2	4.9	12.7	0.0	7.0	3.8	15.1
Used reclaimed/salvaged material	9.3	7.1	7.7	9.9	7.5	10.9	12.9	4.9	20.8	11.8	13.8	4.3	0.0	3.1	12.3	15.9	2.9	1.4	12.8	18.9
Major elements/components of an existing building were modified/reused	4.2	7.1	3.8	5.0	0.0	2.2	6.9	2.4	8.3	5.3	1.7	4.3	3.7	0.0	2.5	11.1	2.9	0.0	3.8	11.3
None of the above	50.4	50.0	46.2	52.9	50.0	50.0	45.5	56.1	33.3	40.8	50.0	57.8	77.8	63.1	42.0	36.5	76.5	59.2	42.3	34.0
Responses	236	14	52	121	40	46	101	82	24	76	58	116	27	65	81	63	34	71	78	53



Q25. Indicate which of the following foundation features were used in your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
A capillary break between the footing and foundation wall was provided	20.9	12.5	35.3	14.5	24.4	19.1	21.0	22.9	28.0	31.6	27.1	13.3	0.0	19.4	14.8	39.7	0.0	17.6	17.7	43.4
Foundation waterproofing was installed	54.3	62.5	88.2	40.2	41.5	48.9	58.0	53.0	48.0	64.5	69.5	45.1	39.3	48.4	55.6	65.1	44.1	51.5	54.4	64.2
Interior and exterior perimeter drains were installed and drained to daylight/dry well/ sump pit	41.9	68.8	62.7	29.1	34.1	42.6	42.0	42.2	48.0	47.4	54.2	35.4	21.4	33.9	45.7	54.0	26.5	33.8	45.6	56.6
Unconditioned vented crawlspace: 6-mil+ vapor retarder installed on crawlspace floor	23.1	18.8	13.7	18.8	43.9	17.0	23.0	27.7	16.0	15.8	20.3	28.3	3.6	27.4	29.6	19.0	2.9	25.0	31.6	20.8
Conditioned crawlspace: sealed, conditioned air rate of 0.02 cfm/sqft+, concrete slab over a Class I vapor retarder	13.7	6.3	15.7	10.3	17.1	14.9	15.0	12.0	8.0	17.1	16.9	11.5	3.6	9.7	14.8	20.6	5.9	10.3	13.9	22.6
None of the above	23.5	6.3	5.9	39.3	12.2	21.3	23.0	24.1	24.0	15.8	16.9	29.2	46.4	25.8	16.0	20.6	41.2	22.1	19.0	20.8
Responses	234	16	51	117	41	47	100	83	25	76	59	113	28	62	81	63	34	68	79	53



Q26. Indicate which of the following termite protection strategies were used in your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
There was a continuous physical foundation termite barrier provided	19.0	18.8	5.9	29.2	7.3	19.6	18.2	17.6	30.8	21.8	27.1	14.9	11.1	16.7	17.3	27.0	11.8	16.9	17.7	28.3
A no-to-low toxicity treatment was installed	33.8	0.0	9.8	60.0	2.4	26.1	34.3	38.8	34.6	43.6	30.5	32.5	18.5	33.3	39.5	33.3	17.6	31.0	41.8	35.8
Termite-resistant materials were used	29.1	50.0	25.5	31.7	24.4	45.7	21.2	29.4	38.5	23.1	32.2	32.5	29.6	25.8	32.1	28.6	23.5	29.6	29.1	32.1
None of the above	34.6	37.5	60.8	8.3	68.3	21.7	43.4	31.8	30.8	34.6	27.1	33.3	40.7	36.4	27.2	39.7	47.1	36.6	25.3	37.7
Responses	237	16	51	120	41	46	99	85	26	78	59	114	27	66	81	63	34	71	79	53



Q27. Indicate all types of materials used in your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
2 or more building components were made of 50% or more recycled materials	40.7	43.8	43.4	36.0	47.6	36.2	47.6	37.2	51.9	48.8	41.7	36.1	21.9	22.1	51.8	55.6	20.5	27.0	53.8	54.7
2 or more building components were made of 75% or more regional materials	21.5	12.5	18.9	20.8	28.6	31.9	18.1	22.1	22.2	26.3	25.0	16.8	12.5	11.8	19.3	39.7	12.8	13.5	21.3	39.6
10 different products installed have an Environmental Product Declaration	6.9	12.5	1.9	7.2	9.5	10.6	5.7	7.0	18.5	7.5	6.7	2.5	0.0	2.9	9.6	11.1	0.0	4.1	8.8	13.2
2 or more certified wood products (FSC, PEFC, SFI, ATFS, or RPP) were used	22.8	37.5	22.6	19.2	28.6	21.3	23.8	23.3	40.7	26.3	23.3	14.3	9.4	14.7	21.7	39.7	12.8	13.5	21.3	45.3
Precut/ preassembled/ precast products used for 90%+ of floor, wall, or roof systems	21.5	43.8	28.3	18.4	16.7	19.1	25.7	17.4	22.2	26.3	25.0	18.5	12.5	20.6	15.7	34.9	15.4	17.6	18.8	35.8
Modular or manufactured home construction made up at least 90% of building	2.0	6.3	0.0	2.4	2.4	4.3	1.0	2.3	0.0	1.3	1.7	3.4	3.1	1.5	3.6	0.0	2.6	1.4	3.8	0.0
Responses	246	16	53	125	42	47	105	86	27	80	60	119	32	68	83	63	39	74	80	53



Q28. Indicate which of the following insulation and sealing practices were used in your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Insulation was installed to Grade I standards	57.9	50.0	73.1	53.7	57.1	53.2	67.0	51.2	76.9	70.9	70.0	50.9	33.3	44.8	60.2	79.4	35.3	46.6	60.0	84.9
A blower door test was completed	62.5	68.8	63.5	60.3	64.3	51.1	65.0	67.4	80.8	92.4	83.3	39.7	37.0	49.3	61.4	88.9	44.1	50.7	63.8	88.7
Joints, seams, and all penetrations in building envelope were sealed	85.0	100.0	82.7	89.3	69.0	83.0	89.0	81.4	92.3	89.9	91.7	81.0	74.1	77.6	84.3	98.4	73.5	76.7	88.8	98.1
None of the above	2.9	0.0	3.8	3.3	2.4	4.3	3.0	2.3	0.0	0.0	0.0	5.2	7.4	4.5	2.4	0.0	8.8	2.7	2.5	0.0
Responses	240	16	52	121	42	47	100	86	26	79	60	116	27	67	83	63	34	73	80	53

Q29. Indicate which of the following flashing practices were used in your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Flashing installed at roof valleys, building intersections, built-in gutters & around fenestrations	91.1	93.8	92.2	89.9	90.5	80.9	89.1	98.8	96.2	89.6	91.4	91.3	75.0	92.1	93.9	93.7	76.5	92.9	94.9	92.5
Flashing was installed at expansion joints in stucco walls	22.5	18.8	23.5	21.0	28.6	10.6	28.7	22.6	34.6	29.9	27.6	15.7	7.1	9.5	20.7	44.4	8.8	12.9	22.8	43.4
Pan flashing was installed at sills of exterior windows/doors	53.0	62.5	51.0	51.3	52.4	48.9	63.4	44.0	69.2	64.9	53.4	47.8	21.4	47.6	51.2	74.6	32.4	41.4	55.7	77.4
None of the above	4.2	0.0	2.0	5.9	4.8	6.4	5.9	1.2	0.0	2.6	0.0	7.0	21.4	4.8	1.2	0.0	17.6	5.7	0.0	0.0
Responses	236	16	51	119	42	47	101	84	26	77	58	115	28	63	82	63	34	70	79	53



Q30. Indicate which of the following roofing practices were used in your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Roof overhangs of at least 12" were installed above 90% or more of exterior walls	84.7	73.3	90.0	85.7	78.6	86.7	86.9	82.1	76.9	80.5	78.0	86.0	66.7	90.6	82.7	88.9	73.5	87.0	84.8	88.7
At least 90% of roofing surface was either vegetated, high SRI, or ENERGY STAR cool roof	8.5	13.3	6.0	9.2	9.5	13.3	6.1	9.5	7.7	11.7	10.2	5.3	0.0	6.3	7.4	15.9	0.0	7.2	6.3	18.9
Gutters, downspouts, and grading carry rain water at least 5 feet away from foundation	73.2	80.0	88.0	65.5	71.4	77.8	73.7	70.2	73.1	77.9	81.4	67.5	48.1	64.1	71.6	95.2	55.9	59.4	77.2	96.2
None of the above	3.0	0.0	0.0	5.0	2.4	6.7	2.0	2.4	0.0	2.6	0.0	4.4	14.8	1.6	2.5	0.0	11.8	2.9	1.3	0.0
Responses	235	15	50	119	42	45	99	84	26	77	59	114	27	64	81	63	34	69	79	53

Q31. Were an air handling equipment or return ducts located in the garage?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes, in an isolated mechanical room	12.1	0.0	11.3	9.8	24.4	10.9	12.7	10.6	24.0	16.5	15.0	8.5	6.9	7.5	12.3	19.0	8.3	6.9	15.2	17.0
Yes, but directly in the garage (not isolated)	8.3	0.0	1.9	4.1	31.7	6.5	3.9	12.9	0.0	5.1	5.0	12.0	17.2	13.4	6.2	1.6	16.7	13.9	5.1	0.0
No	79.6	100.0	86.8	86.1	43.9	82.6	83.3	76.5	76.0	78.5	80.0	79.5	75.9	79.1	81.5	79.4	75.0	79.2	79.7	83.0
Responses	240	15	53	122	41	46	102	85	25	79	60	117	29	67	81	63	36	72	79	53



Q32. Were air handling return ducts/transfer grills installed in every room with a door ? Except for bathrooms, kitchens, closets, pantries, or laundry rooms

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	69.1	75.0	90.6	66.7	51.2	59.6	72.0	71.4	73.1	71.8	76.3	63.7	51.9	58.5	70.4	85.7	60.6	58.6	71.3	84.9
No	30.9	25.0	9.4	33.3	48.8	40.4	28.0	28.6	26.9	28.2	23.7	36.3	48.1	41.5	29.6	14.3	39.4	41.4	28.8	15.1
Responses	236	16	53	117	41	47	100	84	26	78	59	113	27	65	81	63	33	70	80	53

Q33. Was any ductwork installed in exterior walls?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	5.7	25.0	12.8	0.8	2.6	2.2	3.1	9.8	0.0	6.6	8.9	4.4	7.4	1.6	7.9	6.5	5.9	2.9	8.1	5.8
No	94.3	75.0	87.2	99.2	97.4	97.8	96.9	90.2	100.0	93.4	91.1	95.6	92.6	98.4	92.1	93.5	94.1	97.1	91.9	94.2
Responses	229	16	47	119	38	45	96	82	24	76	56	114	27	64	76	62	34	69	74	52

Q34. Select the option that best describes all installed furnace(s) or boiler(s).

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
All installed in conditioned space and power-vented	27.4	33.3	54.9	15.2	20.5	21.4	33.7	23.4	34.6	31.9	37.0	20.8	22.2	23.7	24.0	37.9	24.2	26.2	23.6	36.7
All installed in conditioned space and direct-vented	38.8	53.3	43.1	34.3	43.6	42.9	36.8	39.0	46.2	34.7	42.6	35.8	40.7	33.9	44.0	36.2	42.4	30.8	45.8	36.7
Not installed in conditioned space	33.8	13.3	2.0	50.5	35.9	35.7	29.5	37.7	19.2	33.3	20.4	43.4	37.0	42.4	32.0	25.9	33.3	43.1	30.6	26.5
Responses	219	15	51	105	39	42	95	77	26	72	54	106	27	59	75	58	33	65	72	49

Q35. Indicate which of the following HVAC features apply to your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
HVAC airflow was measured and tested for balance	52.3	46.7	51.0	55.4	43.9	50.0	54.5	51.8	68.0	68.4	69.5	37.4	24.1	38.5	46.3	87.3	25.0	35.7	56.4	86.8
An independent third party tested HVAC air duct leakage	44.7	40.0	37.3	48.8	39.0	41.3	41.4	52.9	68.0	75.9	67.8	22.6	24.1	36.9	40.0	68.3	27.8	37.1	42.3	69.8
MERV 8 or greater filter was installed on the central forced air system	20.7	33.3	19.6	24.8	7.3	19.6	25.3	17.6	32.0	32.9	35.6	12.2	10.3	13.8	13.8	41.3	8.3	14.3	17.9	41.5
MERV 14 or greater filter was installed on the central forced air system	11.8	13.3	9.8	14.0	4.9	13.0	11.1	11.8	16.0	10.1	22.0	8.7	0.0	9.2	11.3	20.6	2.8	8.6	11.5	22.6
None of the above	23.6	13.3	33.3	19.8	31.7	30.4	22.2	20.0	0.0	6.3	11.9	38.3	51.7	29.2	21.3	7.9	47.2	31.4	16.7	7.5
Responses	237	15	51	121	41	46	99	85	25	79	59	115	29	65	80	63	36	70	78	53

Q36. Were all space heating systems ductless?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	9.2	12.5	7.8	7.1	14.6	8.7	11.2	6.3	4.0	13.7	5.2	8.1	3.7	6.5	8.5	15.5	6.1	7.4	7.6	16.3
No	90.8	87.5	92.2	92.9	85.4	91.3	88.8	93.8	96.0	86.3	94.8	91.9	96.3	93.5	91.5	84.5	93.9	92.6	92.4	83.7
Responses	229	16	51	113	41	46	98	80	25	73	58	111	27	62	82	58	33	68	79	49

Q37. Were all space cooling systems ductless?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	5.4	6.3	6.0	4.4	5.4	8.7	5.3	2.6	0.0	8.3	5.2	2.8	0.0	6.5	2.6	10.2	2.9	6.2	2.6	10.2
No	94.6	93.8	94.0	95.6	94.6	91.3	94.7	97.4	100.0	91.7	94.8	97.2	100.0	93.5	97.4	89.8	97.1	93.8	97.4	89.8
Responses	224	16	50	113	37	46	94	77	25	72	58	107	27	62	76	59	34	65	76	49

Q38. What energy efficiency code was utilized on your project?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
IECC 2015	34.8	26.7	42.3	33.3	30.8	45.5	31.0	33.3	53.8	45.9	60.0	23.3	10.3	22.6	37.0	55.7	14.7	24.6	38.0	56.9
IECC 2012	31.8	6.7	25.0	35.8	38.5	18.2	34.0	37.0	23.1	39.2	21.8	31.0	10.3	25.8	44.4	31.1	11.8	29.0	44.3	29.4
IECC 2009	17.2	60.0	13.5	16.7	7.7	13.6	21.0	12.3	15.4	8.1	9.1	21.6	31.0	30.6	9.9	6.6	32.4	27.5	7.6	7.8
Other	3.4	0.0	0.0	4.2	7.7	2.3	3.0	4.9	3.8	0.0	1.8	5.2	3.4	8.1	2.5	0.0	2.9	7.2	2.5	0.0
None	12.9	6.7	19.2	10.0	15.4	20.5	11.0	12.3	3.8	6.8	7.3	19.0	44.8	12.9	6.2	6.6	38.2	11.6	7.6	5.9
Responses	233	15	52	120	39	44	100	81	26	74	55	116	29	62	81	61	34	69	79	51

Q39. Were solar panels installed?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	8.1	20.0	1.9	5.8	15.0	11.1	8.0	7.1	23.1	16.0	12.3	2.6	0.0	1.7	3.7	23.8	0.0	2.9	2.5	28.3
No	91.9	80.0	98.1	94.2	85.0	88.9	92.0	92.9	76.9	84.0	87.7	97.4	100.0	98.3	96.3	76.2	100.0	97.1	97.5	71.7
Responses	235	15	52	120	40	45	100	85	26	75	57	115	30	60	82	63	34	69	79	53

Q40. Indicate which of the following controls were used in your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Programmable thermostat that can be controlled remotely	41.9	40.0	51.0	42.6	26.8	28.9	49.5	40.2	48.1	40.0	53.4	38.3	27.6	32.8	46.9	51.6	26.5	34.7	46.8	54.7
Programmable thermostat that can be set based on occupant presence or usage pattern	50.0	53.3	44.9	50.0	51.2	46.7	46.5	56.1	59.3	54.7	46.6	47.0	44.8	43.8	55.6	51.6	47.1	47.2	53.2	50.9
Energy-monitoring device/system	1.7	13.3	2.0	0.8	0.0	2.2	2.0	1.2	3.7	1.3	5.2	0.9	0.0	0.0	1.2	4.8	0.0	0.0	1.3	5.7
Energy management control system	3.4	0.0	6.1	2.5	2.4	4.4	2.0	3.7	3.7	8.0	5.2	1.7	3.4	4.7	0.0	6.5	2.9	4.2	0.0	7.5
Lighting control system	9.7	6.7	8.2	11.5	2.4	4.4	9.9	13.4	7.4	16.0	8.6	5.2	0.0	4.7	7.4	22.6	0.0	5.6	6.5	26.4
None of the above	12.3	20.0	8.2	10.7	22.0	20.0	10.9	11.0	0.0	8.0	6.9	18.3	27.6	21.9	4.9	4.8	26.5	18.1	6.5	3.8
Responses	236	15	49	122	41	45	101	82	27	75	58	115	29	64	81	62	34	72	77	53

Q41. Was an electrical vehicle charging station installed?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	9.0	0.0	5.9	8.4	12.5	4.5	8.8	12.0	14.8	17.3	10.7	3.5	0.0	1.7	6.1	23.8	0.0	7.4	1.3	28.3
No	91.0	100.0	94.1	91.6	87.5	95.5	91.2	88.0	85.2	82.7	89.3	96.5	100.0	98.3	93.9	76.2	100.0	92.6	98.7	71.7
Responses	234	15	51	119	40	44	102	83	27	75	56	114	30	59	82	63	34	68	79	53

Q42. Was a grid-interactive thermal storage system installed?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	0.9	7.1	0.0	0.8	0.0	0.0	1.0	1.2	0.0	1.4	1.8	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.0	4.1
No	99.1	92.9	100.0	99.2	100.0	100.0	99.0	98.8	100.0	98.6	98.2	100.0	100.0	100.0	100.0	96.6	100.0	100.0	100.0	95.9
Responses	233	14	51	120	39	44	100	81	26	72	57	116	29	65	81	58	34	72	78	49

Q43. Was a meter installed for every energy source?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	37.5	28.6	23.5	38.7	56.4	34.9	31.7	43.4	38.5	39.2	29.1	37.7	43.3	31.7	37.5	40.3	44.1	35.3	32.1	44.2
No	62.5	71.4	76.5	61.3	43.6	65.1	68.3	56.6	61.5	60.8	70.9	62.3	56.7	68.3	62.5	59.7	55.9	64.7	67.9	55.8
Responses	232	14	51	119	39	43	101	83	26	74	55	114	30	60	80	62	34	68	78	52

Q44. Was plumbing installed in unconditioned spaces?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	27.7	20.0	1.9	38.3	31.7	22.7	28.7	29.4	14.8	22.4	25.9	31.9	26.7	30.8	30.0	22.2	22.9	29.2	32.1	22.6
No	72.3	80.0	98.1	61.7	68.3	77.3	71.3	70.6	85.2	77.6	74.1	68.1	73.3	69.2	70.0	77.8	77.1	70.8	67.9	77.4
Responses	238	15	53	120	41	44	101	85	27	76	58	116	30	65	80	63	35	72	78	53

Q45. Which of the following appliances were Energy-Star?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Dishwasher	90.7	93.8	92.5	92.0	85.7	89.4	92.4	91.9	100.0	88.8	95.0	89.1	84.4	80.9	96.4	96.8	79.5	85.1	97.5	96.2
Washing Machine with water factor of 4.0 or less	27.2	37.5	32.1	25.6	21.4	27.7	37.1	17.4	51.9	30.0	45.0	17.6	3.1	10.3	22.9	63.5	2.6	9.5	30.0	66.0
Washing Machine with water factor of more than 4.0	11.4	18.8	20.8	8.0	7.1	12.8	13.3	9.3	7.4	11.3	15.0	9.2	6.3	4.4	12.0	20.6	5.1	4.1	17.5	17.0
Responses	246	16	53	125	42	47	105	86	27	80	60	119	32	68	83	63	39	74	80	53

Q46. Indicate the flow rate(s) of showerheads installed.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
2.0 to 2.4 gpm	19.1	20	13.5	23.1	16.2	19.5	16.2	19.3	18.5	18.1	19.6	21.2	25	29	14.6	12.9	25	25.4	15.4	13.2
1.6 to 1.9 gpm	57.8	53.3	59.6	57.3	59.5	43.9	66.7	55.4	48.1	61.1	51.8	57.5	62.5	43.5	63.4	62.9	64.3	50.7	60.3	60.4
Less than 1.6 gpm	23	26.7	26.9	19.7	24.3	36.6	17.2	25.3	33.3	20.8	28.6	21.2	12.5	27.4	22	24.2	10.7	23.9	24.4	26.4
Responses	230	15	52	117	37	41	99	83	27	72	56	113	24	62	82	62	28	71	78	53

Q47. Indicate the flow rate(s) of bathroom faucets installed.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
1.5 gpm or less	68.9	46.7	69.4	73.7	65.7	80.5	75.3	53.8	81.5	81.4	79.6	60.2	43.5	62.5	69.1	83.9	42.3	59.1	71.4	90.6
1.6 gpm or more	31.1	53.3	30.6	26.3	34.3	19.5	24.7	46.3	18.5	18.6	20.4	39.8	56.5	37.5	30.9	16.1	57.7	40.9	28.6	9.4
Responses	222	15	49	114	35	41	97	80	27	70	54	108	23	56	81	62	26	66	77	53

Q48. Indicate the flush rate(s) of water closets installed.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
1.2 gallons or less	35.1	33.3	42	27.6	42.1	38.1	37.8	28.4	37	36.6	40	33.6	24	26.7	40.7	40.3	24.1	27.5	40.3	43.4
1.21 to 1.28 gallons	47.8	53.3	36	57.8	39.5	42.9	45.9	53.1	55.6	52.1	47.3	45.1	44	51.7	42	53.2	44.8	47.8	45.5	52.8
More than 1.28 gallons	17.1	13.3	22	14.7	18.4	19	16.3	18.5	7.4	11.3	12.7	21.2	32	21.7	17.3	6.5	31	24.6	14.3	3.8
Responses	228	15	50	116	38	42	98	81	27	71	55	113	25	60	81	62	29	69	77	53

Q49. Was a composting toilet installed?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	0.9	0.0	3.9	0.0	0.0	0.0	1.0	1.2	0.0	1.3	0.0	0.9	3.4	1.7	0.0	0.0	3.0	1.5	0.0	0.0
No	99.1	100.0	96.1	100.0	100.0	100.0	99.0	98.8	100.0	98.7	100.0	99.1	96.6	98.3	100.0	100.0	97.0	98.5	100.0	100.0
Responses	234	15	51	119	40	45	101	84	27	75	56	115	29	59	83	63	33	68	80	53

Q50. Which of the following best describes all installed water heater(s)?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Installed in conditioned space and power-vented	31.8	43.8	66.0	15.5	25.6	31.1	35.4	29.3	40.7	37.0	46.4	25.4	17.2	23.8	37.5	39.3	17.1	27.5	35.9	41.2
Installed in conditioned space and direct-vented	29.6	37.5	30.2	29.3	30.8	40.0	28.3	26.8	37.0	26.0	30.4	26.3	27.6	30.2	30.0	29.5	28.6	30.4	28.2	31.4
Not installed in conditioned space	38.6	18.8	3.8	55.2	43.6	28.9	36.4	43.9	22.2	37.0	23.2	48.2	55.2	46.0	32.5	31.1	54.3	42.0	35.9	27.5
Responses	233	16	53	116	39	45	99	82	27	73	56	114	29	63	80	61	35	69	78	51

Q51. Was a solar water heater installed?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	0.4	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.9
No	99.6	100.0	100.0	100.0	100.0	100.0	99.0	100.0	100.0	98.6	100.0	100.0	100.0	100.0	100.0	98.4	100.0	100.0	100.0	98.1
Responses	235	16	52	119	39	46	101	83	26	74	56	114	29	62	81	63	34	70	78	53

Q52. How many appliances or fixtures use rainwater?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
None	97.9	100.0	100.0	97.5	95.1	97.8	98.0	97.6	96.3	96.1	100.0	98.3	96.7	100.0	100.0	93.5	97.2	100.0	100.0	92.3
3	1.7	0.0	0.0	1.7	4.9	2.2	1.0	2.4	0.0	2.6	0.0	1.7	3.3	0.0	0.0	4.8	2.8	0.0	0.0	5.8
All	0.4	0.0	0.0	0.8	0.0	0.0	1.0	0.0	3.7	1.3	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.9
Responses	240	16	53	121	41	46	101	85	27	76	58	117	30	66	82	62	36	72	80	52

Q53. Is reclaimed, gray, recycled water used to flush water closets?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes, 3 water closets	0.4	0.0	0.0	0.0	2.5	0.0	1.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.9
Yes, 4 water closets	0.4	0.0	0.0	0.8	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.3	0.0
No	99.2	100.0	100.0	99.2	97.5	100.0	99.0	98.8	100.0	100.0	100.0	99.1	100.0	100.0	98.8	98.4	100.0	100.0	98.8	98.1
Responses	236	16	52	120	40	45	101	85	27	74	56	115	30	61	83	62	35	69	80	52

Q54. Were any reclaimed water, grey water, or rainwater systems rough-plumbed for future use?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	2.9	0.0	0.0	4.9	2.6	0.0	4.9	2.4	3.7	5.3	1.7	2.6	0.0	1.5	2.5	6.3		1.4	2.6	7.5
No	97.1	100.0	100.0	95.1	97.4	100.0	95.1	97.6	96.3	94.7	98.3	97.4	100.0	98.5	97.5	93.7	100.0	98.6	97.4	92.5
Responses	238	16	53	122	38	45	102	83	27	76	58	116	29	66	80	63	35	73	77	53

Q55. Was a water meter installed for the home?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	78.9	86.7	78.8	80.7	73.0	79.5	73.0	86.7	65.4	80.0	80.7	79.5	75.0	83.6	75.0	81.0	75.8	85.3	74.4	79.2
No	21.1	13.3	21.2	19.3	27.0	20.5	27.0	13.3	34.6	20.0	19.3	20.5	25.0	16.4	25.0	19.0	24.2	14.7	25.6	20.8
Responses	232	15	52	119	37	44	100	83	26	75	57	112	28	61	80	63	33	68	78	53

Q56. Was a carbon monoxide alarm installed?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	89.5	93.8	92.3	86.0	92.7	87.0	91.1	89.4	92.6	94.7	96.5	82.9	75.9	90.8	89.0	95.2	79.4	89.0	89.9	96.2
No	10.5	6.3	7.7	14.0	7.3	13.0	8.9	10.6	7.4	5.3	3.5	17.1	24.1	9.2	11.0	4.8	20.6	11.0	10.1	3.8
Responses	239	16	52	121	41	46	101	85	27	75	57	117	29	65	82	63	34	73	79	53

Q57. Indicate which of the following lighting features were used in your typical home.

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Dimmer or occupancy switches on 75% or more of interior lighting	31.8	31.3	38.0	29.4	30.8	37.0	36.0	24.4	38.5	27.4	41.8	24.8	13.8	23.0	34.6	45.2	14.7	24.6	33.3	50.0
Photo or motion sensors on 75% or more of outdoor lighting	15.9	37.5	14.0	12.6	12.8	26.1	17.0	9.8	26.9	20.5	21.8	9.7	6.9	9.8	14.8	27.4	8.8	8.7	17.9	26.9
None of the above	60.5	43.8	56.0	64.7	61.5	54.3	54.0	70.7	38.5	61.6	47.3	69.9	82.8	72.1	56.8	43.5	82.4	69.6	57.7	38.5
Responses	233	16	50	119	39	46	100	82	26	73	55	113	29	61	81	62	34	69	78	52

Q58. Which of the following were installed? For any installed, was it direct-vented?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points				
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more	
Installed																					
Fireplace	80.1	68.8	85.7	80.0	76.2	58.1	85.1	83.3	85.2	86.7	79.6	76.7	82.8	80.3	79.5	79.3	86.1	79.5	78.2	79.6	
Woodstove	6.4	18.8	4.1	5.0	2.4	4.7	8.9	4.8	11.1	8.0	11.1	5.2	0.0	4.5	7.2	10.3	0.0	5.5	6.4	12.2	
Pellet stove	0.8	0.0	0.0	0.0	4.8	2.3	1.0	0.0	0.0	0.0	0.0	1.7	3.4	0.0	1.2	0.0	2.8	0.0	1.3	0.0	
Masonry heater	0.8	6.3	2.0	0.0	0.0	2.3	1.0	0.0	3.7	0.0	0.0	0.9	0.0	0.0	2.4	0.0	0.0	1.4	1.3	0.0	
None of the above	16.9	12.5	12.2	19.2	19.0	34.9	10.9	16.7	3.7	12.0	14.8	20.7	13.8	18.2	18.1	15.5	11.1	19.2	19.2	14.3	
Direct-vented																					
Fireplace	65.7	62.5	75.5	60.0	71.4	48.8	69.3	71.4	74.1	76.0	61.1	58.6	65.5	66.7	62.7	69.0	69.4	69.9	57.7	69.4	
Woodstove	4.2	12.5	0.0	4.2	4.8	4.7	5.9	2.4	11.1	5.3	9.3	3.4	3.4	1.5	3.6	8.6	2.8	1.4	3.8	10.2	
Pellet stove	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Masonry heater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Responses	236	16	49	120	42	43	101	84	27	75	54	116	29	66	83	58	36	73	78	49	

Q59. Was any radon control measure installed?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	39.4	87.5	59.6	23.6	39.0	39.1	43.6	38.4	55.6	40.5	53.3	34.8	25.0	41.8	42.2	39.7	28.6	41.1	40.0	43.4
No	60.6	12.5	40.4	76.4	61.0	60.9	56.4	61.6	44.4	59.5	46.7	65.2	75.0	58.2	57.8	60.3	71.4	58.9	60.0	56.6
Responses	241	16	52	123	41	46	101	86	27	79	60	115	28	67	83	63	35	73	80	53

Q60. Were any of the following low or no VOC?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Interior paints and coatings	77.0	81.3	80.4	75.0	77.5	78.3	83.0	70.2	85.2	81.8	86.0	69.9	46.7	73.8	80.2	90.5	52.8	75.0	80.8	90.6
Interior adhesives and sealants	39.6	43.8	43.1	35.0	47.5	41.3	41.0	39.3	59.3	51.9	47.4	27.4	6.7	24.6	44.4	63.5	8.3	29.4	44.9	66.0
None of the above	20.9	18.8	13.7	23.3	22.5	17.4	16.0	27.4	14.8	15.6	10.5	29.2	50.0	26.2	18.5	4.8	44.4	25.0	16.7	5.7
Responses	235	16	51	120	40	46	100	84	27	77	57	113	30	61	81	63	36	68	78	53

Q61. Were any of the following fixed entrance mats installed at doorway?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Exterior grille or mat (removable for cleaning)	2.1	6.3	1.9	0.8	2.5	2.2	4	0	7.7	2.6	5.3	0.9	0	0	0	8.3	0	0	0	9.8
Interior grille or mat (removable for cleaning)	4.2	6.3	5.8	3.3	5	6.5	4	1.2	0	3.8	7	3.4	6.7	2.9	3.8	5	5.4	2.8	5.1	3.9
None of the above	94.1	87.5	92.3	96.7	92.5	91.3	92.9	98.8	92.3	94.9	89.5	95.7	93.3	97.1	96.3	88.3	94.6	97.2	94.9	88.2
Responses	238	16	52	121	40	46	99	85	26	78	57	116	30	68	80	60	37	72	78	51

Q62. Was a kitchen exhaust or range hood installed and ducted to the outdoors?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	85.8	87.5	88.2	82.1	90.2	68.1	93.1	87.2	96.3	92.3	88.1	79.1	67.7	85.7	84.3	96.8	72.2	87.3	83.8	96.2
No	14.2	12.5	11.8	17.9	9.8	31.9	6.9	12.8	3.7	7.7	11.9	20.9	32.3	14.3	15.7	3.2	27.8	12.7	16.3	3.8
Responses	240	16	51	123	41	47	102	86	27	78	59	115	31	63	83	63	36	71	80	53

Q63. Was a homeowners' manual provided to the homeowner, including any maintenance information?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	87.6	93.3	86.8	84.8	92.5	80.4	84.5	97.6	96.2	92.3	88.3	82.2	71.0	89.7	85.0	96.8	76.3	87.5	87.3	96.2
No	12.4	6.7	13.2	15.2	7.5	19.6	15.5	2.4	3.8	7.7	11.7	17.8	29	10.3	15	3.2	23.7	12.5	12.7	3.8
Responses	242	15	53	125	40	46	103	85	26	78	60	118	31	68	80	63	38	72	79	53

Q64. Were all major appliance manuals or data sheets provided to the homeowner?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	< \$1 Million	\$1-4.9 Million	> \$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	98.7	100.0	98.1	99.2	97.4	95.7	99.0	100.0	100.0	100.0	100.0	97.4	90.3	100.0	100.0	100.0	91.9	100.0	100.0	100.0
No	1.3	0.0	1.9	0.8	2.6	4.3	1.0	0.0	0.0	0.0	0.0	2.6	9.7	0.0	0.0	0.0	8.1	0.0	0.0	0.0
Responses	238	16	52	122	39	47	103	83	26	77	59	115	31	64	81	62	37	70	79	52

Q65. Was training provided to the homeowners or building owners on operating and maintenance of appliances and systems?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	82.0	93.8	83.0	80.8	78.0	68.1	81.7	94.1	88.9	92.4	83.3	74.6	58.1	85.3	85.4	85.7	65.8	82.2	88.8	83.0
No	18.0	6.3	17.0	19.2	22.0	31.9	18.3	5.9	11.1	7.6	16.7	25.4	41.9	14.7	14.6	14.3	34.2	17.8	11.3	17.0
Responses	244	16	53	125	41	47	104	85	27	79	60	118	31	68	82	63	38	73	80	53

Q66. Was a list of local service providers offering service/maintenance provided?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	80.0	62.5	78.8	82.9	75.0	74.5	84.5	78.8	81.5	91.0	84.7	68.7	61.3	73.4	85.4	88.9	64.9	74.3	87.5	86.8
No	20.0	37.5	21.2	17.1	25.0	25.5	15.5	21.2	18.5	9.0	15.3	31.3	38.7	26.6	14.6	11.1	35.1	25.7	12.5	13.2
Responses	240	16	52	123	40	47	103	85	27	78	59	115	31	64	82	63	37	70	80	53

Q67. Was a checklist of common maintenance provided, such as changing HVAC filters?

(Percent of respondents)

	Total	Region				Volume of Business in 2016			Green Certification				2015 NGBS Green Building Points				2012 NGBS Green Building Points			
		NE	MW	S	W	<\$1 Million	\$1-4.9 Million	>\$5 Million	NGBS	HERS	ENERGY STAR	None	130 or fewer	131 to 180	181 to 230	231 or more	130 or fewer	131 to 180	181 to 230	231 or more
Yes	80.2	71.4	79.2	77.6	87.8	76.1	75.7	88.2	84.0	83.5	85.0	73.7	61.3	85.1	74.1	92.1	65.8	84.7	74.7	92.5
No	19.8	28.6	20.8	22.4	12.2	23.9	24.3	11.8	16.0	16.5	15.0	26.3	38.7	14.9	25.9	7.9	34.2	15.3	25.3	7.5
Responses	242	14	53	125	41	46	103	85	25	79	60	118	31	67	81	63	38	72	79	53





2017 **Green Practices Survey**

APPENDIX B:
2017 GREEN PRACTICES SURVEY QUESTIONNAIRE

Green Practices Survey Questionnaire

When answering this survey, please refer all your answers to the typical (most common) single-family home (attached or detached) your company built in 2016.

Did not build any single-family homes in 2016? If no, then terminate the survey, thank you.

1. Please indicate the most important operation and all other operations of your firm.

	Most Important Operation (check only one)	All Other Operations (check all applicable)
Single-family Builder	<input type="checkbox"/>	<input type="checkbox"/>
Multifamily Builder	<input type="checkbox"/>	<input type="checkbox"/>
Land Developer	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify) _____		

2. In what State is the typical home you built in 2016 located? _____

3. What was your company's total dollar volume of business in 2016? (check only one)

- | | |
|---|---|
| <input type="checkbox"/> Under \$500,000 | <input type="checkbox"/> \$10 million to \$14,999,999 |
| <input type="checkbox"/> \$500,000 to \$999,999 | <input type="checkbox"/> \$15 million or over |
| <input type="checkbox"/> \$1 million to \$4,999,999 | <input type="checkbox"/> No business activity |
| <input type="checkbox"/> \$5 million to \$9,999,999 | |

4. How many stories does your typical home have? 1 2 3 4+

5. What is the total square footage of the home? (finished space) _____

6. Which of the following certifications does your typical home hold? (check all applicable)

- NGBS Green Certification (National Green Building Standard)
- LEED for Homes Certification
- Living Building Challenge Petal or Full Certification
- EarthCraft Certified
- HERS
- EnergyStar Version 3.0 Certified Home
- None of the above

7. Does your typical home have any of the following location features? (check all applicable)

- Infill Site (adjoining a previously developed lot)
- Grayfield (previously developed)
- Brownfield (recognized by EPA or local agency)
- In a Flood Zone
- None of the above

8. Does your typical home have any of the following transit features? (check all applicable)

- Within ¼ mile walking to two bus routes
- Within ½ mile walking of mass transit (rail, ferry, etc.)
- Within ½ mile to more than five retail, civic, or recreational spaces
- Community had rightofway bicycle lanes/paths
- Building lot was connected to existing sidewalks
- None of the above

Site Development

9. Does your company have substantial experience in acquiring raw land and developing lots?

- Yes (If 'Yes,' please answer questions 10–13)
- No (If 'No,' please skip to question 14)

10. Does your typical home have any of the following site features? (check all applicable)

- Terracing, retaining walls, or stabilization techniques for longterm erosion control were used
- 25% or more of driveway(s) and parking was aligned with natural topography
- Limits of clearing and grading were noted on lot plan
- During construction, limits of clearing and grading were staked out
- During construction, excavated soils to be reused were stabilized within 14 days
- The final grade of the site sloped away from the building at 5% or more for at least ten feet
- None of the above

11. Was low-impact development or green infrastructure used to handle storm events?

(These include vegetated swales, rain garden, cisterns, etc.)

- Yes, it was built to handle 95th percentile storm events
- Yes, it was built to handle 90th percentile storm events
- Yes, it was built to handle 80th percentile storm events
- Yes, green infrastructure was built, but I am unsure of what storm event it can handle
- No, Green Infrastructure was not built

12. Permeable materials were used for what percent of the hardscape (driveways, sidewalks, parking areas, etc.)?

- None
- Less than 25%
- 25% to 50%
- 51% to 99%
- 100%

Green Practices Survey Questionnaire

13. Altogether, were at least 50% of all hardscape areas either high SRI (reflective or light colored), permeable, or shaded by trees/structures? (Note: gray and white concrete count as high SRI)

- Yes
- No

Landscaping

14. Indicate which of the following landscaping features were used in your typical home.

- A landscape plan was created
- Turf grass was less than 20% of landscaping areas
- Only noninvasive, native and/or regional plants were used for landscaping
- Any existing invasive plants were removed from the lot
- Plants with similar watering needs were grouped together
- Some to all existing trees were protected during construction with fencing
- A community food garden was planted on the lot
- None of the above

15. Indicate which of the following irrigation practices were applied in your typical home.

- An irrigation plan was implemented by a qualified professional
- Drip irrigation was installed at all landscape beds
- Drip irrigation was installed at all turf grass areas
- Irrigation system was controlled by irrigation controller
- Reclaimed, gray, or recycled water was used for irrigation
- Rainwater was collected into a 50 gallon or larger cistern and used for irrigation
- All irrigation demand was supplied by rainwater collection system designed by qualified professional
- None of the above

Building/Home Design

16. What type of parking amenity does your typical home have?

- Carport
- Detached garage
- Attached garage – with common wall(s) and door(s) sealed and gasketed
- Attached garage – with common wall(s) and door(s) *not* sealed or gasketed
- None of the above

17. Did mass walls make up over 75% of the exterior wall area?

(Mass walls are either above grade concrete, steel walls 30lb/sf, or solid wood walls 20lb/sf)

- Yes
- No
- Not sure/Don't know

18. Were skylights installed in *all* rooms without windows? (Not counting closets or laundry rooms)

- Yes
- No
- Not applicable, all room had windows

19. Was your typical home designed to promote cross ventilation, with operable windows/doors on adjacent or opposite walls?

- Yes
- No

20. What was the U-factor of windows and exterior glass doors?

Unknown

21. What was the U-factor of skylights?

Unknown

22. What was the SHGC (Solar Heat Gain Coefficient) of windows and exterior glass doors?

Unknown

23. What was the SHGC (Solar Heat Gain Coefficient) of skylights?

Unknown

Green Practices Survey Questionnaire

Construction

24. Which of the following demolition and recycling practices were used in the construction of your typical home?

- A construction waste management plan was implemented
- At least 50% of construction and demolition waste was reused or recycled offsite (not including land clearing)
- At least two types of materials were recycled offsite (wood, asphalt, metal, drywall, concrete, etc.)
- At least 50% of landclearing waste was ground up and applied onsite as soil amendment/fill
- Used reclaimed/salvaged material
- Major elements/components of an existing building were modified/reused
- None of the above

25. Indicate which of the following foundation features were used in your typical home.

- A capillary break between the footing and foundation wall was provided
- Foundation waterproofing was installed (either a rubberized coating or a drainage mat)
- Interior and exterior perimeter drains were installed and drained to daylight, a dry well, or a sump pit
- An unconditioned vented crawlspace and 6mil or thicker vapor retarder was installed on the crawlspace floor
- A conditioned crawlspace, sealed with conditioned air rate of at least 0.02 cfm/sqft, and a concrete slab were installed over a Class I vapor retarder (i.e. 6mil sheeting)
- None of the above

26. Indicate which of the following termite protection strategies were used in your typical home.

- There was a continuous physical foundation termite barrier provided
- A no-to-low toxicity treatment was installed
- Termite-resistant materials were used
- None of the above

27. Indicate all types of materials used in your typical home.

- 2 or more building components were made of 50% or more recycled materials
- 2 or more building components were made of 75% or more regional materials (500 miles)
- 10 different products installed have an Environmental Product Declaration
- 2 or more certified wood products (FSC, PEFC, SFI, ATFS, or RPP) were used
- Precut, preassembled, or precast products were used for at least 90% of floor, wall, or roof systems
- Modular construction or manufactured home construction made up at least 90% of building

28. Indicate which of the following insulation and sealing practices were used in your typical home.

- Insulation was installed to Grade I standards
- A blower door test was completed
- Joints, seams, and all penetrations in building envelope were sealed (caulked, weather stripped, etc.)
- None of the above

29. Indicate which of the following flashing practices were used in your typical home.

- Flashing was installed at roof valleys, building intersections, built-in gutters, & around fenestrations
- Flashing was installed at expansion joints in stucco walls
- Pan flashing was installed at sills of exterior windows/doors
- None of the above

30. Indicate which of the following roofing practices were used in your typical home.

- Roof overhangs of at least 12" were installed above 90% or more of exterior walls
- At least 90% of roofing surface was either vegetated, high SRI, or ENERGY STAR cool roof
- Gutters, downspouts, and grading carry rain water at least 5 feet away from foundation
- None of the above

Green Practices Survey Questionnaire

Mechanical

31. Were an air handling equipment or return ducts located in the garage?

- Yes, in an isolated mechanical room
- Yes, but directly in the garage (not isolated)
- No

32. Were air handling return ducts/transfer grills installed in every room with a door (except for bathrooms, kitchens, closets, pantries, or laundry rooms)?

- Yes
- No

33. Was any ductwork installed in exterior walls?

- Yes
- No

34. Select the option that best describes all installed furnace(s) or boiler(s):

- All furnaces or boilers were installed in conditioned space and power-vented
- All furnaces or boilers were installed in conditioned space and direct-vented
- Furnace or boiler were *not* installed in conditioned space

35. Indicate which of the following HVAC features apply to your typical home.

- HVAC airflow was measured and tested for balance
- An independent third party tested HVAC air duct leakage
- MERV 8 or greater filter was installed on the central forced air system
- MERV 14 or greater filter was installed on the central forced air system
- None of the above

35. Indicate which of the following HVAC features apply to your typical home.

- HVAC airflow was measured and tested for balance
- An independent third party tested HVAC air duct leakage
- MERV 8 or greater filter was installed on the central forced air system
- MERV 14 or greater filter was installed on the central forced air system
- None of the above

36. Were all space heating systems ductless?

- Yes
- No

37. Were all space cooling systems ductless?

- Yes
- No

Energy

38. What energy efficiency code was utilized on your project?

- IECC 2015
- IECC 2012
- IECC 2009
- Other (specify): _____
- None

39. Were solar panels installed?

- Yes
- No

40. Indicate which of the following controls were used in your typical home.

- Programmable thermostat that can be controlled remotely
- Programmable thermostat that can be set based on occupant presence or usage pattern
- Energy monitoring device/system
- Energy management control system
- Lighting control system
- None of the above

41. Was an electrical vehicle charging station(s) installed?

- Yes
- No

42. Was a grid interactive thermal storage system installed?

- Yes
- No

43. Was a meter installed for every energy source?

- Yes
- No

Plumbing

44. Was any plumbing installed in unconditioned spaces?

- Yes
- No

Green Practices Survey Questionnaire

45. Which of the following appliances were Energy-Star?

- Dishwasher
- Washing Machine with water factor of 4.0 or less
- Washing Machine with water factor of *more than* 4.0

46. Indicate the flow rate(s) of showerheads installed.

- 2.0 to 2.4 gpm
- 1.6 to 1.9 gpm
- Less than 1.6 gpm

47. Indicate the flow rate(s) of bathroom faucets installed.

- 1.5 gpm or less
- 1.6 gpm or more

48. Indicate the flush rate(s) of water closets installed.

- 1.2 gallons or less
- 1.21 to 1.28 gallons
- More than 1.28 gallons

49. Was a composting toilet installed?

- Yes
- No

50. Which of the following best describes all installed water heater(s):

- All water heaters were installed in conditioned space and power-vented
- All water heaters were installed in conditioned space and direct-vented
- A water heater was *not* installed in conditioned space

51. Was a solar water heater installed?

- Yes
- No

52. How many indoor appliances or fixtures use rainwater?

- None of the indoor appliances and fixtures use rainwater
- 1
- 2
- 3
- All indoor appliances and fixtures use rainwater

53. Is reclaimed, gray, recycled water used to flush water closets?

- Yes, 1 water closet
- Yes, 2 water closets
- Yes, 3 water closets
- Yes, 4 water closets
- No

54. Were any reclaimed water, gray water, or rainwater systems rough-plumbed for future use?

- Yes
- No

55. Was a water meter installed for the home?

- Yes
- No

Interiors

56. Was a carbon monoxide alarm installed?

- Yes
- No

57. Indicate which of the following lighting features were used in your typical home.

- Dimmer or occupancy switches were installed on 75% or more of interior lighting
- Photo or motion sensors were installed on 75% or more of outdoor lighting
- None of the above

58. Which of the following were installed? For any installed, was it direct-vented?

- | Installed? | Direct-Vented? |
|--|--------------------------|
| <input type="checkbox"/> Fireplace | <input type="checkbox"/> |
| <input type="checkbox"/> Woodstove | <input type="checkbox"/> |
| <input type="checkbox"/> Pellet stove | <input type="checkbox"/> |
| <input type="checkbox"/> Masonry heater | <input type="checkbox"/> |
| <input type="checkbox"/> None of the above | <input type="checkbox"/> |

59. Was any radon control measure installed?

- Yes
- No

Green Practices Survey Questionnaire

60. Were any of the following low or no VOC?

- Interior paints and coatings
- Interior adhesives and sealants
- None of the above

61. Were any of the following fixed entrance mats installed at doorway?

- Exterior grille or mat (removable for cleaning)
- Interior grille or mat (removable for cleaning)
- None of the above

62. Was a kitchen exhaust or range hood installed and ducted to the outdoors?

- Yes
- No

Post-Occupancy and Homeowners

63. Was a homeowners' manual provided to the homeowner, including any maintenance information?

- Yes
- No

64. Were all major appliance manuals or data sheets provided to the homeowner?

- Yes
- No

65. Was training provided to the homeowners or building owners on operating and maintenance of appliances and systems?

- Yes
- No

66. Was a list of local service providers offering service/maintenance provided?

- Yes
- No

67. Was a checklist of common maintenance provided, such as changing HVAC filters?

- Yes
- No



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