NCBPA
North Carolina Building Performance Association

2017 NORTH CAROLINA

ENERGY EFFICIENT, GREEN AND HIGH PERFORMANCE HOME AND BUILDING INVENTORY REPORT

Market research and best practices for increasing consumer awareness of and financial value for high performance homes and buildings in North Carolina

About North Carolina Building Performance Association

North Carolina Building Performance Association (NCBPA) is a 501(c)(6) not-for-profit trade association of building performance professionals and companies seeking to lead high performance construction in the state through quality construction, workforce development, political advocacy, public education and member services. The association works with member companies and partner organizations to promote opportunities that improve the quality of buildings in North Carolina so that all residents and businesses can live and work in healthy, safe, durable, cost-effective and environmentally-friendly homes and buildings. Visit **www.BuildingNC.org** for more information.

About this report

In 2015, NCBPA completed a first-of-its-kind report that analyzed the state's market of energy efficient, green and high performance homes and buildings. The report quantified the number of units in the state, defined areas of strong and weak saturation, and provided recommendations to industry stakeholders seeking to grow and promote the industry. A key finding of the report was a lack of available high performance home data in Multiple Listing Services (MLS) directories. This data is needed to help stakeholders including Realtors®, appraisers, lenders and consumers identify these homes and attribute a greater market value to them.

Now in its third year, the inventory report has grown to incorporate data from more than 42 local, state, regional and national certification and rating programs. As in prior years, NCBPA collected valuable address-level HERS® Index Score data from rating companies and Providers directly but lacks a complete set of rating data to use in the study. As a result, NCBPA has included non-address level HERS® Index Scores to ensure that the total number of ratings for 2013 to 2016 matches the total reported by RESNET®. Subsequently, some duplicate data exists. These instances are detailed in the report where relevant.

For the first time, the 2017 report includes a sale price analysis of the 2015 to 2016 sales of high performance homes compared to all home sales in the Charlotte, Triad and Triangle markets. The recommendations section of the report was updated to include activities underway that support improved valuation of high performance homes and buildings. Next year, NCBPA plans to add appraised values to the residential data and perform the sale price and appraised value analysis on commercial buildings.

Data collection and integrity continues to be an issue that NCBPA feels is properly addressed in the analysis and report. This study should be considered an estimate of the unit inventory and market-based pricing in North Carolina and provide reason for increased availability and transparency of data to support industry growth and development. NCBPA is working to obtain more accurate address-level data from the multiple sources involved to improve the accuracy and reliability of this report in future years.

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ACKNOWLEDGEMENTS:

NCBPA would like to thank MetroStudy and RESNET® for providing data for the sale price analysis, National Association of Home Builders (NAHB) for funding the sale price analysis section of this report and the associations' member companies and partners for providing data used in the study.

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EXECUTIVE SUMMARY

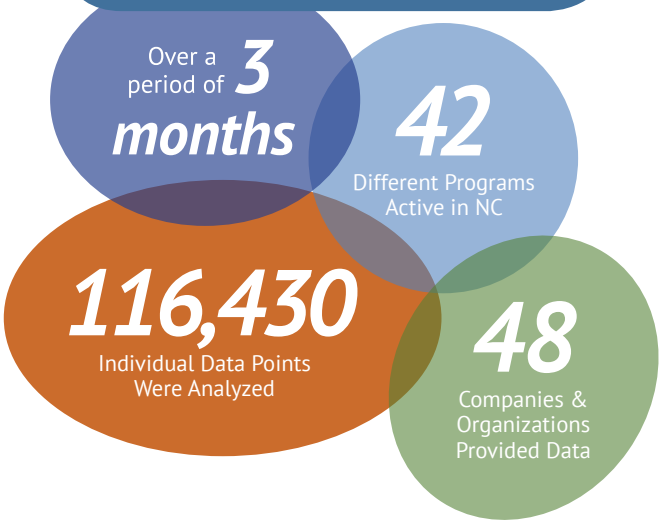
The National Perspective:

"There is increasing interest in high performance construction, specifically green building certification for multifamily new construction and rehab projects throughout the U.S. We believe this is due to several factors. In the market rate sector, many developers are taking advantage of financing and utility incentives and some developers have a corporate policy to certify all their projects green. In the affordable housing sector, high performance construction is often required or heavily incentivized in Low Income Housing Tax Credit allocation. In the single-family housing market, we expect demand for green and high performance construction will continue to grow slowly over time."

Carl Seville

PARTNER AT SK COLLABORATIVE IN ATLANTA, GA

HOW WAS THIS DATA COLLECTED?



NCBPA's 2017 inventory report identified 34,152 energy efficient, green and high performance home and building units[1] being built or retrofitted in North Carolina in 2016. This is a slight decline from 34,628 units in the prior year. In total, the study has identified 198,525 units since 2007.

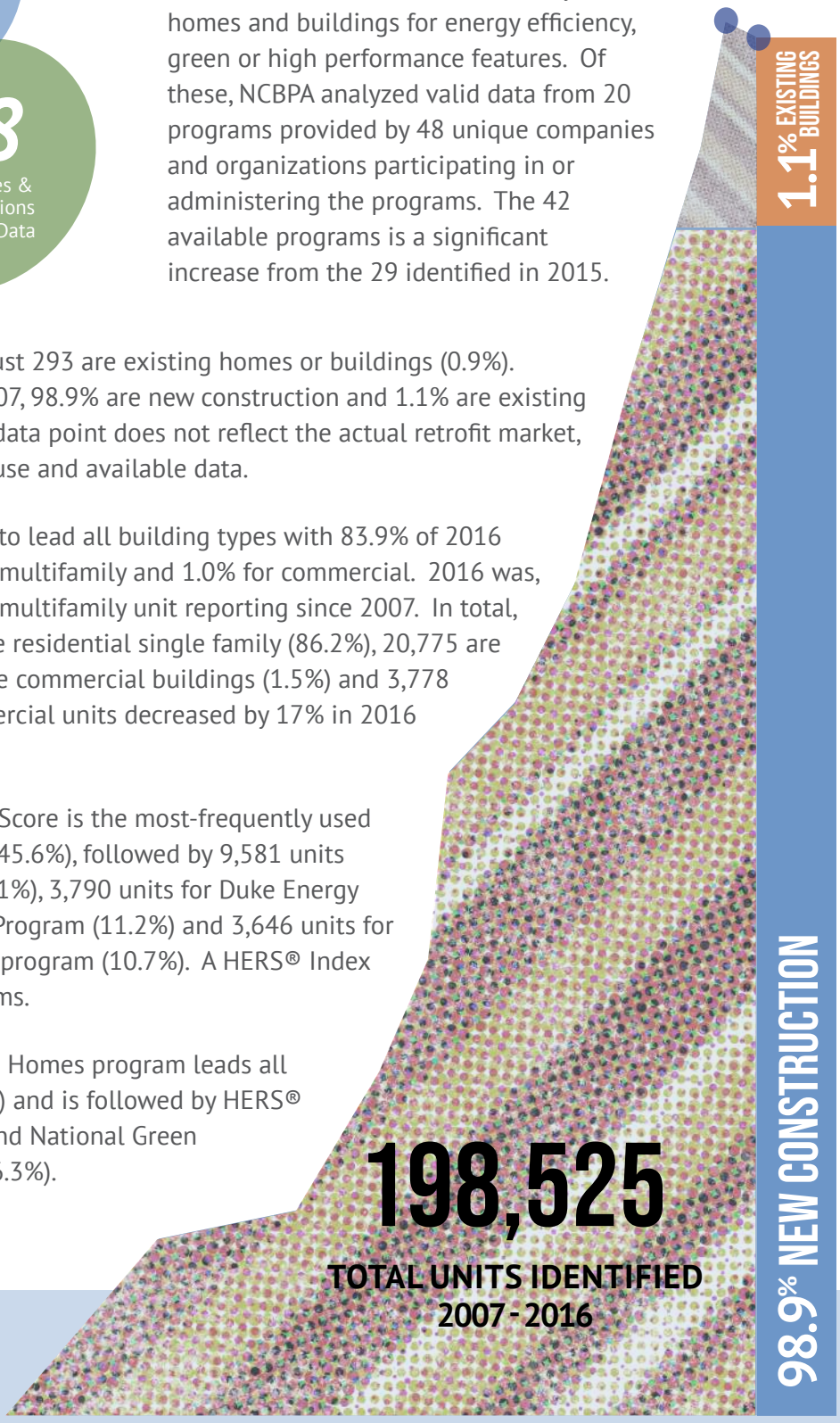
The study found 42 unique programs available in North Carolina to certify or rate homes and buildings for energy efficiency, green or high performance features. Of these, NCBPA analyzed valid data from 20 programs provided by 48 unique companies and organizations participating in or administering the programs. The 42 available programs is a significant increase from the 29 identified in 2015.

Of the 34,152 units identified in 2016, just 293 are existing homes or buildings (0.9%). Of the 198,525 units identified since 2007, 98.9% are new construction and 1.1% are existing construction. NCBPA believes the 1.1% data point does not reflect the actual retrofit market, but instead indicates a lack of program use and available data.

Residential single family units continue to lead all building types with 83.9% of 2016 units compared to 15.1% for residential multifamily and 1.0% for commercial. 2016 was, however, the largest year for residential multifamily unit reporting since 2007. In total, 171,075 of units reported since 2007 are residential single family (86.2%), 20,775 are residential multifamily (10.5%), 2,897 are commercial buildings (1.5%) and 3,778 are manufactured homes (1.9%). Commercial units decreased by 17% in 2016 compared to 2015.

2016 data shows that the HERS® Index Score is the most-frequently used program in the state with 15,568 units (45.6%), followed by 9,581 units for ENERGY STAR® Certified Homes (28.1%), 3,790 units for Duke Energy Progress' Residential New Construction Program (11.2%) and 3,646 units for the National Green Building Standard™ program (10.7%). A HERS® Index Score is created in each of these programs.

Since 2007, the ENERGY STAR® Certified Homes program leads all programs with with 82,515 units (41.6%) and is followed by HERS® Index Score with 64,174 units (32.3%) and National Green Building Standard™ with 12,463 units (6.3%).



[1] *Units are defined in this report as individual single or multi-family homes or buildings built or retrofitted between 2007 - 2016 that meet or exceed energy efficient, green or high performance certification or rating program standards.*

WHERE ARE THE UNITS LOCATED?

88.7% of all units are attributable to the Asheville, Charlotte, Triad, Triangle and Wilmington metro areas

Since 2007, 176,013 of all units are attributable to the Asheville, Charlotte, Triad, Triangle and Wilmington metro areas (88.7%). In minor metro areas defined independently by the study as cities and counties located in or near Greenville, Jacksonville and Fayetteville, the unit volume has been decreasing steadily over the past four years. For all other rural cities and counties included in the study, residential single family units saw a large decline in 2016, whereas residential multifamily increased.

WHAT PROGRAMS CARRY THE MOST VALUE PER SQUARE FOOT?

NGBS
$143.44
57 HOME SALES
NC is 2ND in the USA

LEED® FOR HOMES
$116.68
32 HOME SALES
NC is 7TH in the USA

ENERGY STAR®
$116.42
1,172 HOME SALES
NC is 3RD in the USA

HERS® INDEX SCORE
$114.48
2,635 HOME SALES
NC is 3RD in the USA

GREEN BUILT NC
$89.71
12 HOME SALES

For the first time in the study's history, the 2017 report includes an analysis of the sale prices and price per square footage of 3,908 high performance homes sold in 2015 and 2016 in the Charlotte, Triad and Triangle markets. These values are compared to all home sales in those metro markets (9.2% of the total) to demonstrate that, on average, high performance homes have higher sale prices than all homes.

On average, high performance homes in the Triangle market are 2,962 square feet and 14.4% larger in size than the average of all homes in the market. High performance homes in the Charlotte market have the smallest square footage increase, 5.6%, compared to homes in the Triangle and Triad markets. High performance homes in the Triangle market have the highest average sale price, $400,989, of each of the metro areas, a 22.0% increase over all homes in the metro areas. Combined, high performance homes in all metro areas have an average sale price of $339,210, a 9.5% increase over all homes. The Triangle market has the largest increase in average price median, 32.0%, of any of the metro areas.

Of the five certification and rating programs included in the sale price analysis, the program with the highest average price per square foot across the three metro areas combined is the National Green Building Standard™ certification at $143.44. LEED® for Homes followed at $116.68 and ENERGY STAR® Certified Homes at $116.42. NCBPA attributes the value of energy efficiency, green and high performance certifications and ratings to increased sale prices as correlation only, not causation. A variety of other factors, such as kitchen upgrades and lot size that impact the sale price of a home are not included in this analysis.

Most of the programs included in this study utilitize HERS® Index Scores as a compliance path. A HERS® Index Score is a potential starting point to obtaining higher sale prices for high performance homes.

"The push toward greater energy efficiency in homes has become a great equalizer for builders. Because of national energy efficiency programs and codes, consumers have begun to expect higher levels of energy efficiency – the bar has been raised. Now, consumers are coming to realize and appreciate more and more the benefits of a comprehensively high-performance home that builds on that higher efficiency baseline and provides a healthier indoor environment, more durability, and less maintenance in addition. It's providing consumers a home that is an overall better investment."

Michelle Foster

VICE PRESIDENT, INNOVATION SERVICES FOR HOME INNOVATION RESEARCH LABS

Conclusion

The 2017 report concludes with updates on 20 market activites that NCBPA and partner organizations have been working on in the past year to improve the market valuation of high performance homes and buildings in the state. Since the 2015 report was released, NCBPA has become a leader in advocating for open and transparent access to program data for use in "greening" MLS directories.

If NCBPA's efforts to add more "green" fields and auto-populate local, state, regional and national program data were successful in just three metro markets in North Carolina, the enhancements would apply to roughly 40% of the national MLS market, yielding benefits to industry stakeholders and consumers across the country.

To support continued progress on these efforts in North Carolina and other states, the report's Appendix includes best practices that local MLS directories can follow to "green" their MLS systems, as well as best practices for homebuilders to participate in and benefit from these efforts.

NCBPA would like to thank the 48 organizations that provided data for this study.

Please contact NCBPA's Executive Director Ryan Miller at 919-841-6207 or Ryan@BuildingNC.org for questions, comments or more information on the study.

DATA COLLECTION AND METHODOLOGY

Data Collection and Sources

Each year since 2015, NCBPA has collected and analyzed certification and rating program data from local, state, regional and national builders, contractors, utilities and program administrators for this study. The resulting analysis identifies the quantities and types of energy efficient, green and high performance homes and buildings built or retrofitted in North Carolina since 2007. For the 2016 report, 42 unique "programs" were identified that could be used to certify or rate homes or buildings to this criteria. Of these 42, NCBPA received valid data on 20 programs from a total of 48 unique sources[2]. In total, NCBPA has collected 116,430 individual data points with 22,857 provided in 2016.

Analytical Methodology

Homes and buildings are deemed to be energy efficient, green or high performance if they are attributed to any one of the 42 programs. In many cases, homes and buildings are submitted with multiple program attributions; a home with both a HERS® Index Score and ENERGY STAR® Certified Homes certification is a common example. In these cases and only where street addresses are available and can be matched, only one home or building is reported. For program-specific reporting, both programs are counted. For the full data set, 16,514 (14.2%) individual data points contain full addresses. Examples of how homes and buildings qualify for the study include:

- ENERGY STAR® Certified Homes Certification = energy efficient new home
- HERS® Index Score = energy efficient new home
- LEED® for Buildings Certification = green new building
- Deep Energy Retrofit (company reported) = energy efficient and high performance existing home or building

Data Assumptions and Collection Barriers

Each year the study's results become more valid as more program data, more address-level data and better quality data is provided and analyzed. NCBPA believes that the data included in the report accurately represents many aspects of North Carolina's energy efficient, green and high performance construction market. However, assumptions are made during the data normalization, analysis and reporting processes to address collection barriers. Key data assumptions and collection barriers include:

- Address-level data is not available for all homes rated in the state. Accordingly, NCBPA collects data directly from rating companies and Providers and adds data without an exact address, city, score or date to each year to match the annual totals that RESNET® reports for years 2013 to 2016.
- Duplicate homes and buildings are known to be included in the data set but cannot be identified where addresses are not provided. NCBPA removes duplicates where they can be clearly identified.
- Buildings (all types of non-residential) reported without a data point for individual units (e.g. apartments or condos) are counted as one building. Buildings reported with data points for individual units are counted as multi-family residential units.
- Saturation maps are each on different scales.

[2] *See Table 1 on page 10 for a full list of these programs.*

Programs and Rating Systems

NCBPA received valid data from 48 companies and organizations working with or administering 20 of the 42 distinct programs available for use in North Carolina. Table 1 identifies which of the 42 programs provided data for the study.

TABLE 1

PROGRAM ADMINISTRATOR	PROGRAM	DATA PROVIDED?
Above and Beyond Energy	High Performance Home Program	Yes
Advanced Energy	SystemVision™ (existing)	Yes
	SystemVision™ (new)	Yes
ASHRAE	ASHRAE Building and Energy Code Standards	No
	ASHRAE Building Energy Quotient® (bEQ)	No
Department of Energy	Better Buildings® Challenge	No
	DOE Zero Energy Ready Home	No
	Home Energy Score (HES)	No
Duke Energy Progress	Residential New Construction Program	Yes
	Home Energy House Call	Yes
EarthCraft	EarthCraft Building	No
	EarthCraft House	No
EcoStructure Energy Consulting	EcoStructure Certification	Yes
Enterprise	Enterprise Green Communities	No
Environmental Protection Agency	ENERGY STAR® 2.0 for Multifamily Buildings	Yes
	ENERGY STAR® Buildings and Plants	Yes
	ENERGY STAR® Certified New Homes	Yes
	Home Performance with ENERGY STAR®	Yes
Foundation for Senior Living	Home Energy Solutions	No
Green Building Initiative	Green Globes®	No
Green Built Alliance (formerly WNCGBC)	Green Gauge	No
	Green Built NC®	Yes
Green Business Certification Inc.	Arc Rating	No
Green Plus	Green Plus Certification	No
Home Innovation Research Labs™	Multifamily National Green Building Standard™ Certification	Yes
	Single-Family NGBS Certification	Yes
	Remodeling NGBS Certification	No
Insurance Institute for Business & Home Safety	FORTIFIED Home™	No
International Living Future Institute™	Living Building Certification	No
	Net Zero Energy Building Certification	No
	Petal Certification	No
International Well Building Institute	WELL Building Standard™	No
North Carolina Department of Insurance	North Carolina HERO/Stretch Energy Code	Yes
Passive House Institute	PHIUS + Certification	Yes
Pearl Certification	Pearl Certification	No
RESNET®	Home Energy Rating System (HERS®)	No
	HERS® H20	No
Southern Energy Management	ecoSelect™	Yes
TopBuild Home Services	Environments for Living®	Yes
U.S. Green Building Council (USGBC)	LEED® for Building Design & Construction	Yes
	LEED® for Building Operations & Maintenance	Yes
	LEED® for Homes	Yes

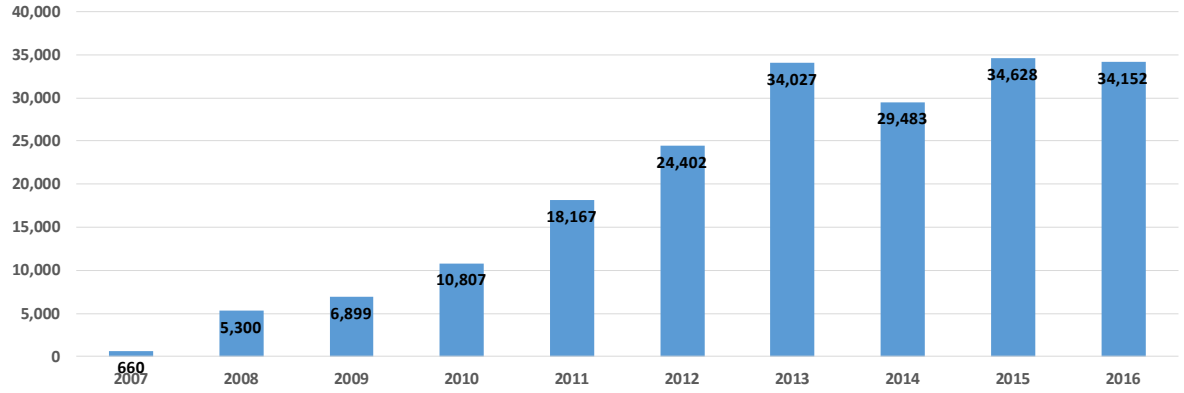
2017 INVENTORY RESULTS

Total Quantity

34,152 energy efficient, green and high performance home and building units were identified in 2016. This is a slight decrease from 34,628 units in 2015 but shows a 15% increase over 2014. In total, the study has identified 198,525 units built or retrofitted since 2007.

GRAPH 1

Total Energy Efficient, Green and High Performance Units by Year

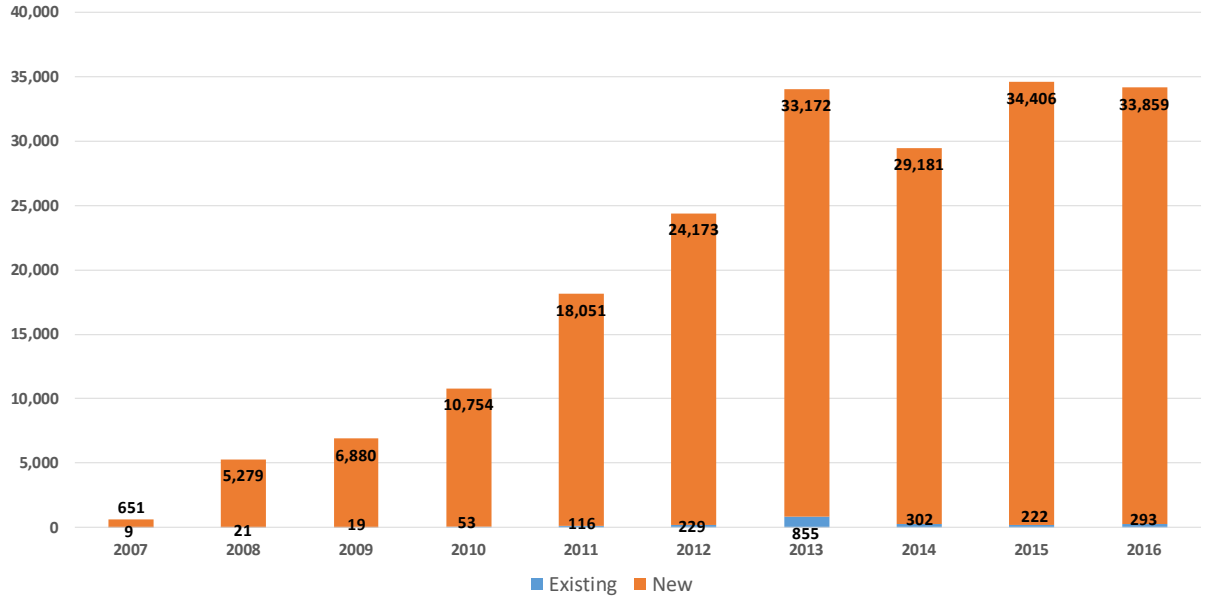


In prior years, the study knowingly incorporated (and stated in the report) some duplicate data in new construction residential due to a lack of available address-level data that would allow for the identification and removal of duplicate units. For this study, NCBPA changed its process to ensure that the total number of HERS® Index Scores reported for years 2013 to 2016 matches RESNET's publicly available annual figures for North Carolina. In November of 2017, NCBPA reached agreement with RESNET® to obtain additional address-level data for use in the study, conditional on Providers agreeing to it. In order to perform a full sale price analysis of high performance vs. code-built homes, it would be necessary to have addresses for all HERS® Index Scores in the state, so that homes without them could then be used as comparables.

Of the 34,152 units identified in 2016, just 293 (0.9%) are existing homes or buildings. Of the 198,525 units since 2007, 98.9% are new construction and 1.1% are existing construction. NCBPA believes the number of homes and buildings retrofitted to these criteria is higher than the annual numbers reported and continues to seek out data sources to provide evidence.

GRAPH 2

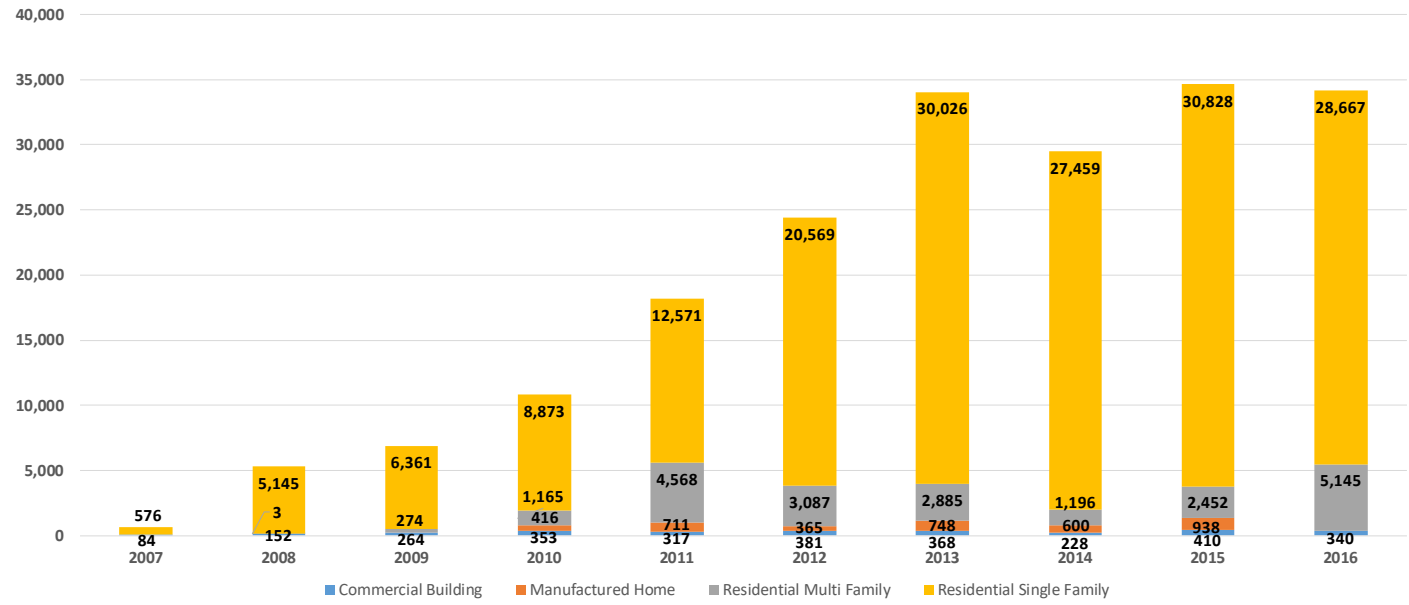
Total Energy Efficient, Green and High Performance Units by Year and New vs. Existing



Residential single family units continue to dominate the number of units collected in the study. In 2016, 28,667 units were residential single family (83.9%), 5,145 were residential multifamily (15.1%) and 340 were commercial (1.0%). 2016 is the largest year for residential multifamily since 2007, showing continued growth since a recent low point in 2014. Since 2007, 171,075 of all units are residential single family (86.2%), 20,775 are residential multifamily (10.5%), 2,897 are commercial buildings (1.5%) and 3,778 are manufactured homes (1.9%). Of note, manufactured home data was not provided for the study in 2016 but was in prior years.

GRAPH 3

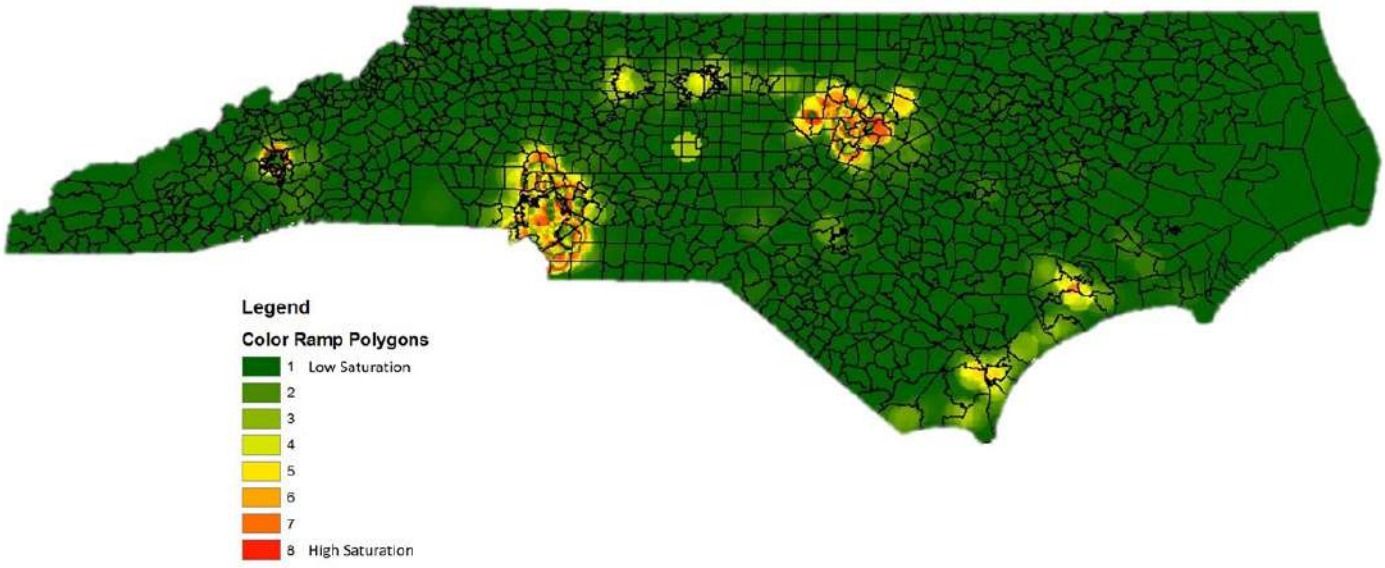
Total Energy Efficient, Green and High Performance Units by Year and Building Type



Using available data from 2007 to 2016, NCBPA mapped the geographic saturation of energy efficient, green and high performance units in the state. Graph 4 shows highest levels of saturation in four well-known markets for this type of construction: Triangle, Charlotte Metro, Asheville and Wilmington. There are no significant changes in geographical saturation for 2016. Greater detail on these metro areas and non-metro areas is provided later in this report.

GRAPH 4

Geographic Saturation Map of Energy Efficient, Green and High Performance Homes and Buildings in North Carolina

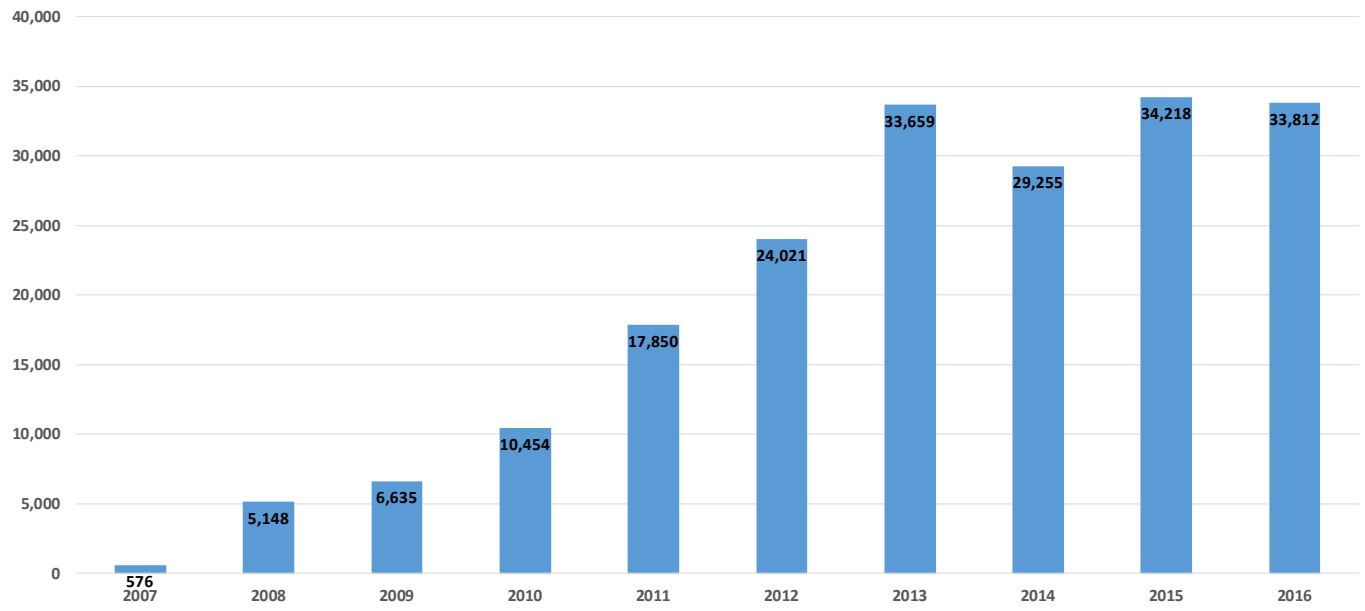


Residential Homes

The report identifies 33,812 single family, multifamily and manufactured home units in 2016. This is a slight decrease from 2015 but an increase from 2014. In total, 195,628 residential units have been built or retrofitted since 2007.

GRAPH 5

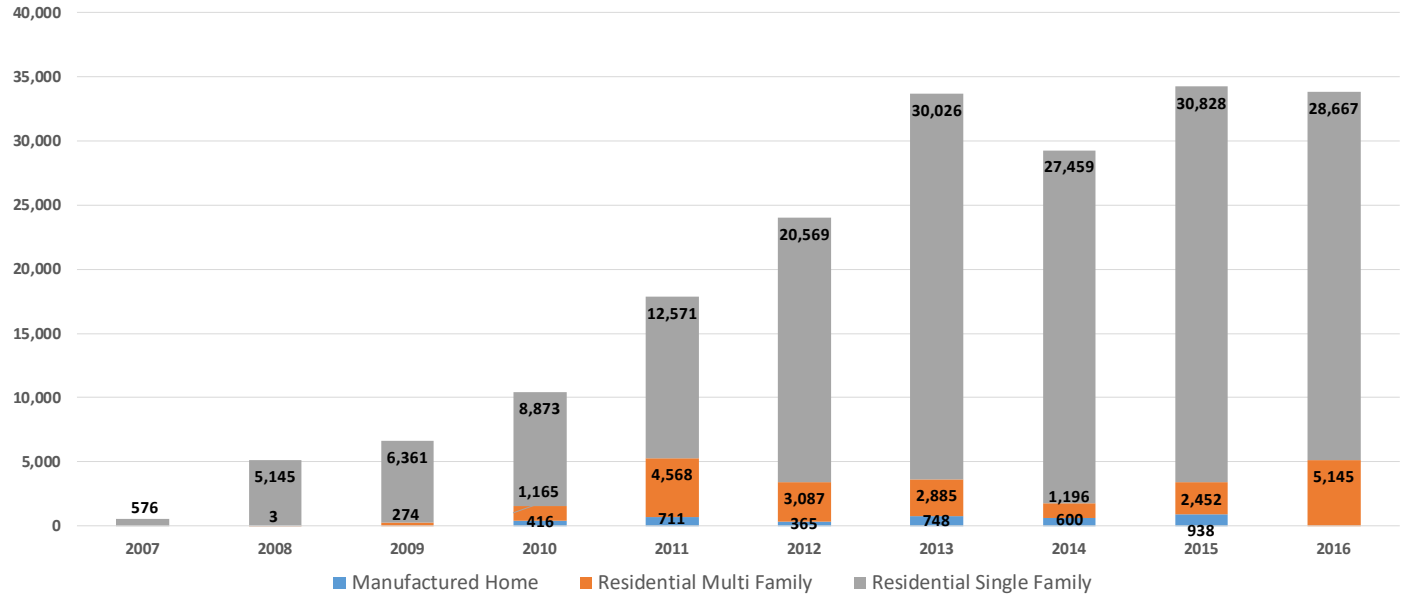
Residential Energy Efficient, Green and High Performance Units by Year



2016 data shows that 28,667 of residential units are for single family homes (84.8%) and 5,145 are for multifamily units (15.2%). As noted earlier, manufactured home data was not provided for 2016. Since 2007, 171,075 of units are residential single family (87.4%), 20,775 are multifamily (10.6%) and 3,778 are manufactured homes (1.9%).

GRAPH 6

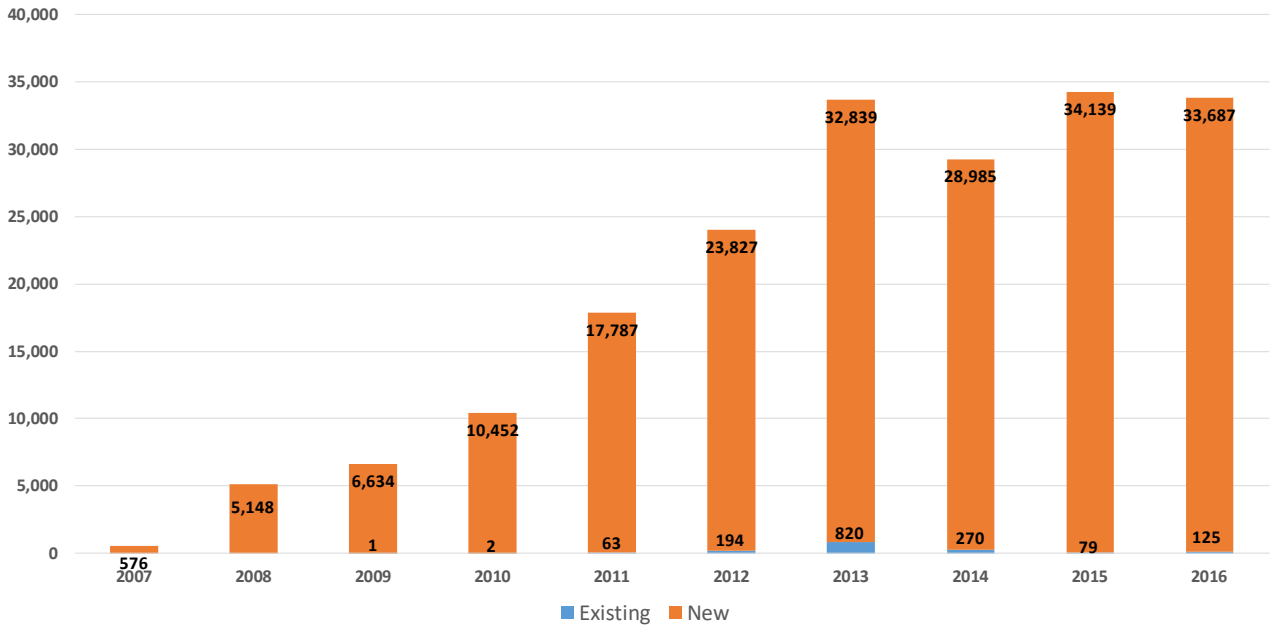
Residential Energy Efficient, Green and High Performance Units by Year and Building Type



125 existing residential units were identified in 2016, up from 79 in 2015. The 820 units identified in 2013 are the result of federally-funded retrofit programs in place at the time. In total, new construction accounts for 193,813 of all residential units in the state (99.2%). NCBPA believes that on an annual basis hundreds of existing units are not accounted for in this data and will continue to improve the collection process to account for these units in future iterations of the study.

GRAPH 7

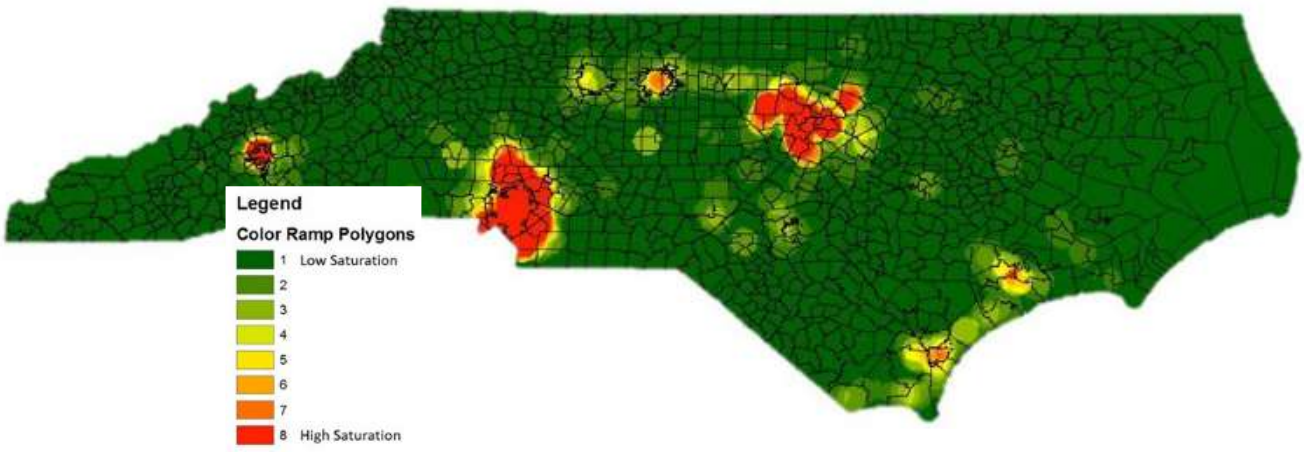
Residential Energy Efficient, Green and High Performance Units by Year and New vs. Existing



Graph 8 shows a strong concentration of residential units in the Charlotte, Triangle and Asheville markets. In 2016, the Charlotte market finished first with 10,767 units (31.5%) followed closely by the Triangle market with 9,325 units (27.3%). The Triad finished third with 1,935 units (5.7%). Since 2007, Charlotte places first with 71,650 units (36.1%), the Triangle second with 70,355 units (35.4%) and Triad third with 13,661 units (6.9%). As indicated on the map, Asheville has a very high (and likely the highest as a percentage of all units built or retrofitted) saturation of energy efficient, green and high performance homes in a metro market.

GRAPH 8

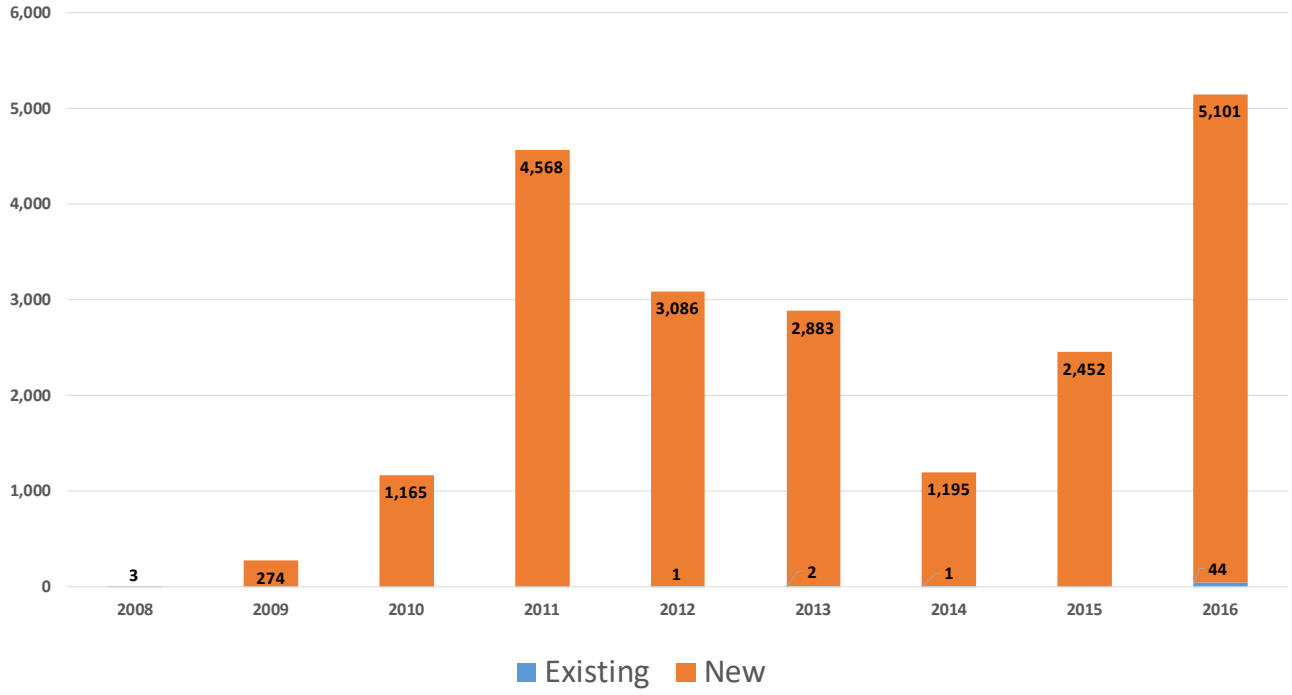
Geographic Saturation Map of Energy Efficient, Green and High Performance Single Family Homes in North Carolina



Graph 9 details a very low volume of residential multifamily existing units collected in each year of the study. NCBPA believes that there are hundreds more units that have not been collected as part of the study. This will be a focal point for the 2018 study.

GRAPH 9

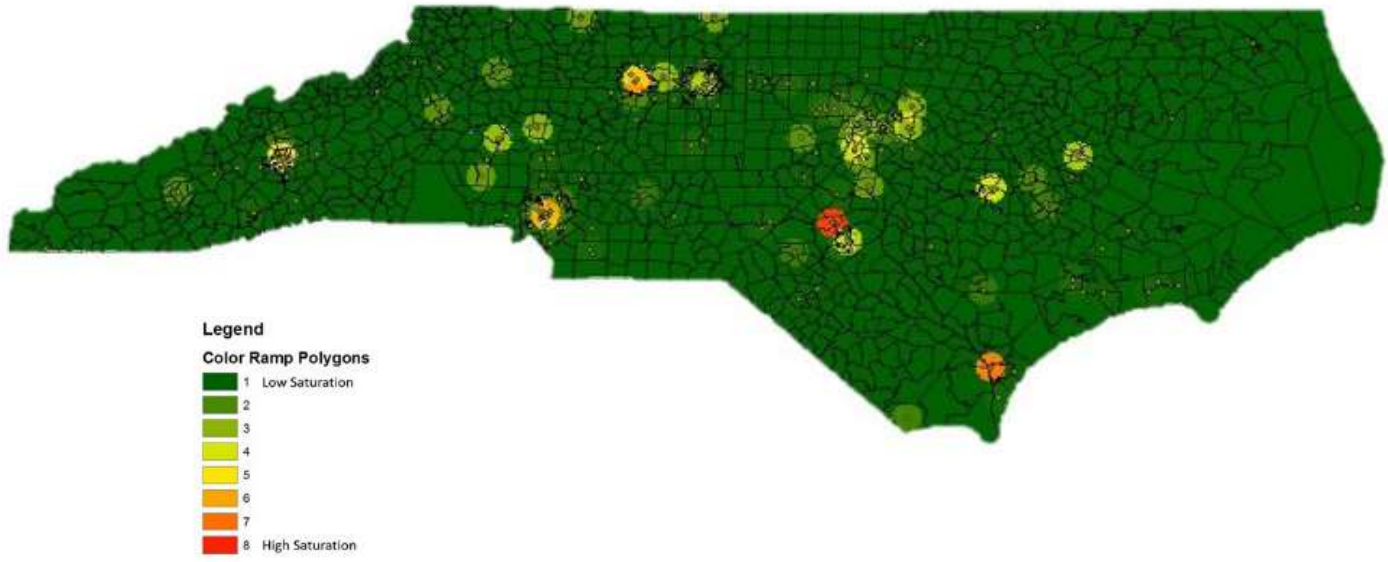
Residential Multifamily Energy Efficient, Green and High Performance Units by Year and New vs. Existing



Multifamily units do not follow the same geographic saturation pattern as single family homes or commercial buildings in the state. As shown in Graph 10, multifamily units are spread out much more across the state and far less concentrated in metro markets than single family homes.

GRAPH 10

Geographic Saturation Map of Energy Efficient, Green and High Performance Multifamily Homes in North Carolina

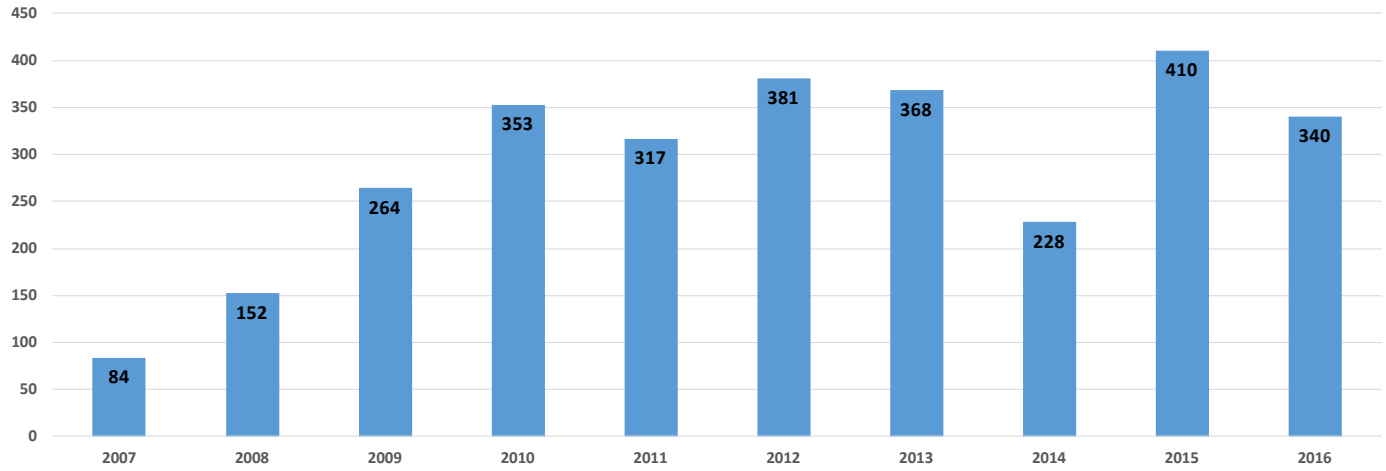


Commercial Buildings

The results of the study show that high performance commercial construction decreased by 17% from 2015 to 2016, though 2016 volume is similar to previous levels from 2010 – 2013. 2014 was the lowest year since 2008 according to data collected. Since 2007, 2,897 buildings have been built or retrofitted in the state. This inventory includes office buildings, public buildings, institutional buildings, hospitals and many other types.

GRAPH 11

Commercial Energy Efficient, Green and High Performance Buildings by Year

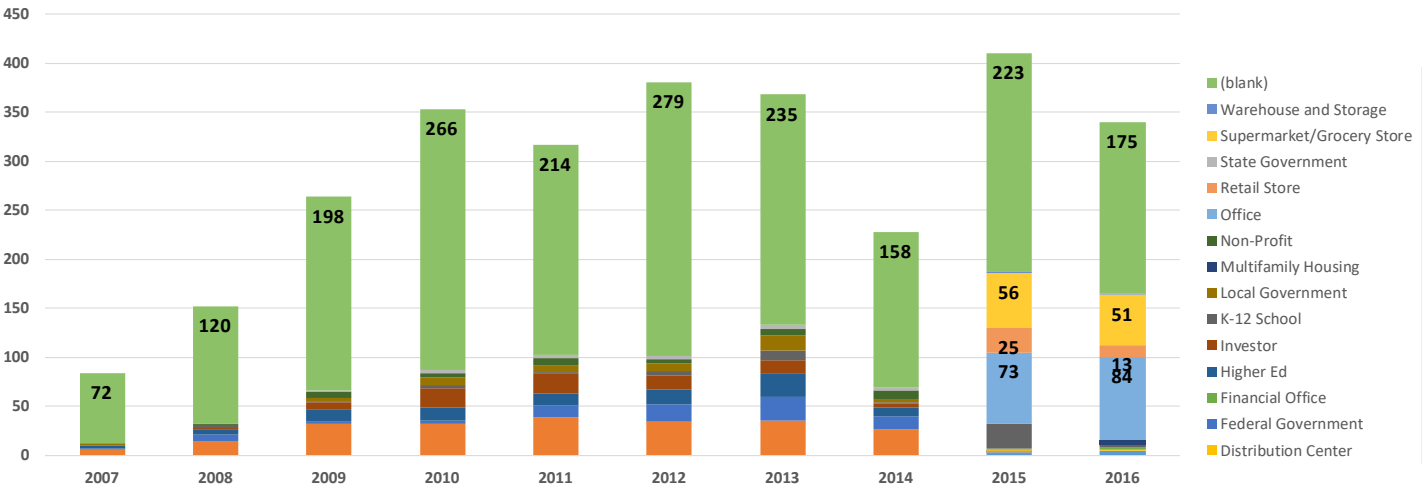


The majority of LEED® data provided does not include a building type field, causing a large portion of data in the chart below to be shown as "Blank". In contrast, ENERGY STAR® data included the building type field. NCBPA will work with all providers to obtain this data in next year's report and will consolidate categories to better report on general building types ("office building" vs. "corporate", for example).

For 2016 where building type is available (excluding blanks there are 165 building types listed), office buildings lead the way with 84 (50.1%), followed by grocery stores with 51 (30.9%) and retail stores with 13 (7.8%). Since 2007 where building type is available (excluding blanks there are 957 building types listed), "office" and "corporate" buildings combined account for 378 (39.5%) of all buildings followed by grocery stores at 107 (11.1%) and "Higher Ed" at 94 (9.8%).

GRAPH 12

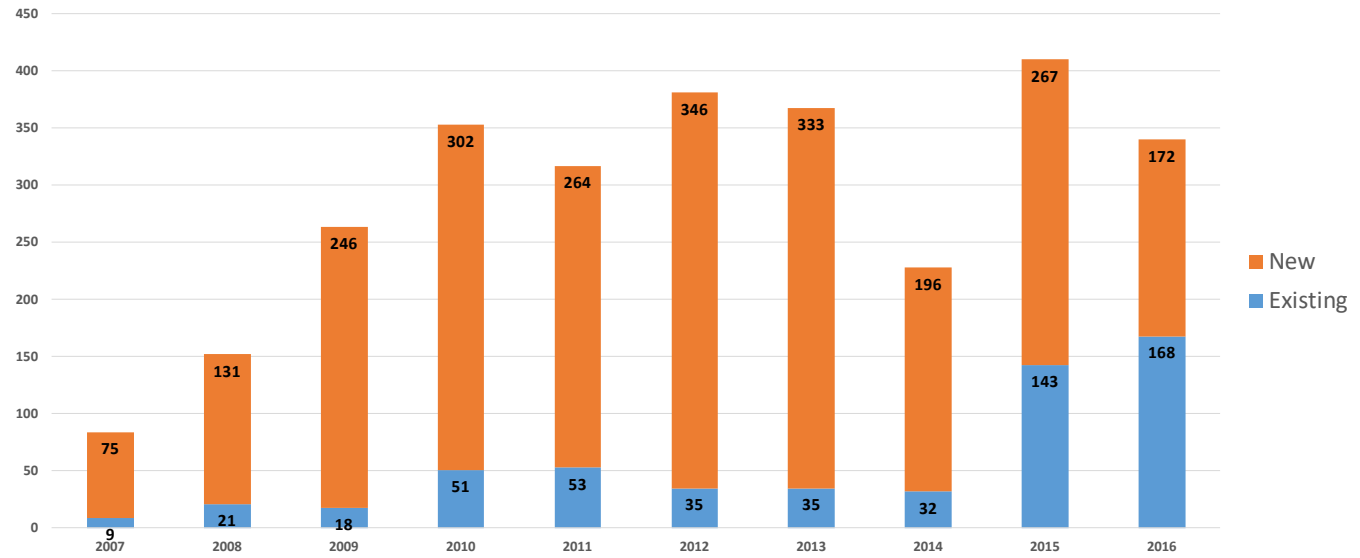
Commercial Energy Efficient, Green and High Performance Buildings by Year and Building Type



2016 continued a trend first seen in 2015 where commercial building retrofits increased significantly as a percentage of all commercial energy efficient, green and high performance buildings. While the total number of buildings decreased in 2016, as did those for new construction, existing buildings increased and the total number of commercial buildings trended with years 2010 – 2013. As shown in Graph 13, 2014 was a down year for commercial buildings but the market rebounded in 2015, the strongest year in the study. The percentage of existing to new buildings has increased from 14% in 2014 to 35% in 2015 and 49% in 2016 while the quantity has increased from 32 in 2014 to 143 in 2015 and 168 in 2016.

GRAPH 13

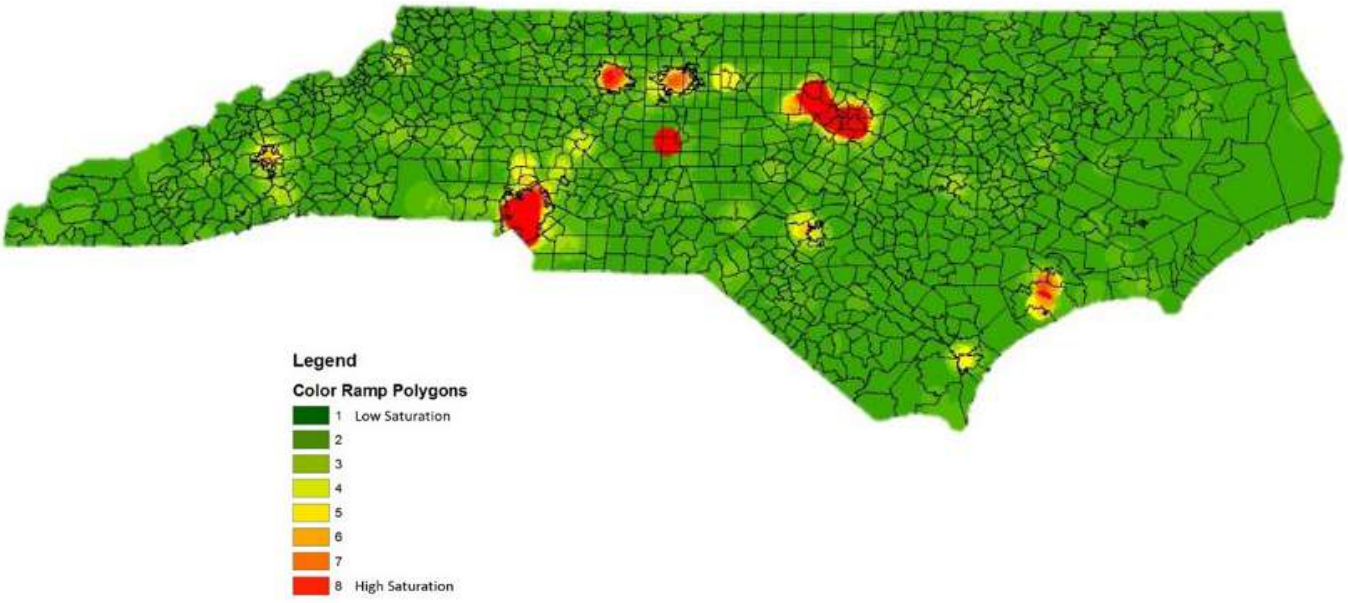
Commercial Energy Efficient, Green and High Performance Buildings by Year and New vs. Existing



The Charlotte market led 2016 reporting with 123 (36.2%) buildings, followed by the Triangle market with 104 (30.6%) and the Triad with 29 (8.6%). Since 2017, Charlotte leads with 945 (32.6%) buildings followed by the Triangle with 685 (23.6%) and the Triad with 302 (10.4%).

GRAPH 14

Geographic Saturation Map of Energy Efficient, Green and High Performance Commercial Buildings in North Carolina



Certification and Rating Programs

NCBPA attempted to collect data from 42 distinct certification and rating programs available for residential and commercial energy efficient, green and high performance construction in the state. The majority of the 42 programs, while available in the state, are not used. Of the active and available programs, NCBPA was able to collect data from 14 general programs. For presentation here in Table 2, new vs. existing and other sub-certification categories or versions of programs are combined. The data contained in the following graphs applies only to these programs.

TABLE 2

Certification and Rating Programs Used in this Study

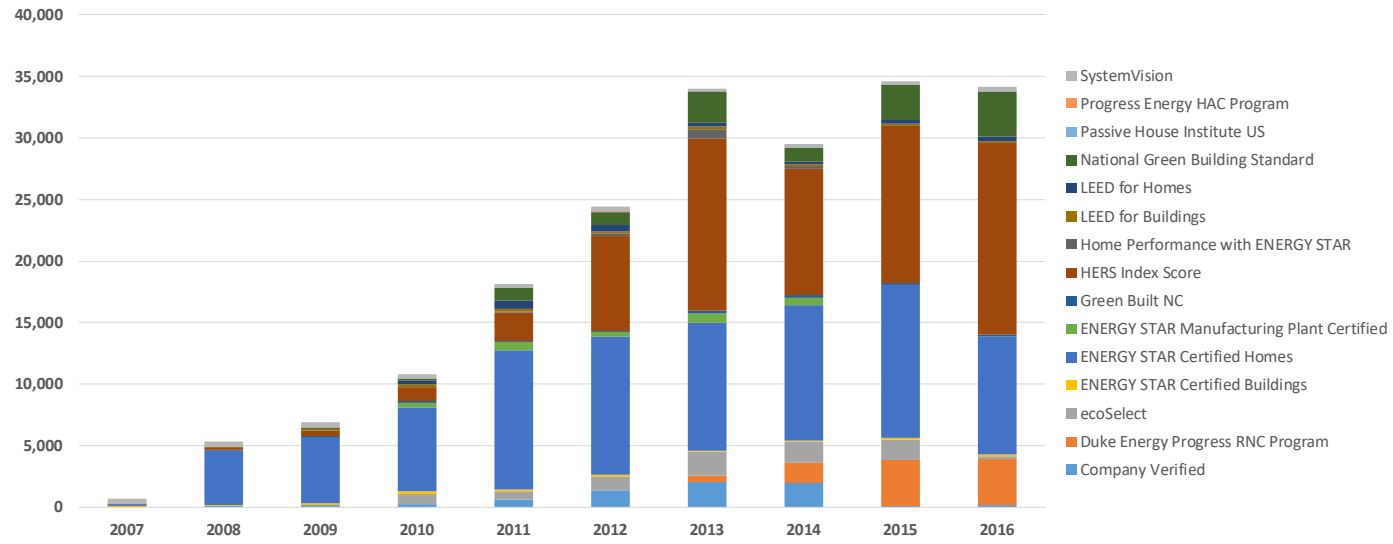
1. Duke Energy Progress Residential New Construction Program
2. ecoSelect™
3. ENERGY STAR® Certified Buildings
4. ENERGY STAR® Certified Homes
5. ENERGY STAR® Manufacturing Plant Certified
6. Green Built NC®
7. HERS®Index Score
8. Home Performance with ENERGY STAR®
9. LEED® for Buildings
10. LEED® for Homes
11. National Green Building Standard™
12. Passive House Institute US
13. Progress Energy Home Advantage Certification Program
14. SystemVision™

Note: *Due to the fact that ENERGY STAR® certifications are based on HERS® Index Scores, the data should reflect a 1 to 1 relationship in the following graphs where both HERS® Index Scores and ENERGY STAR® certifications are present. However, several instances illustrate this is not the case. This discrepancy is caused by a lack of address-level data which leads to greater numbers of ENERGY STAR® certifications than HERS® Index Scores in some of the following graphs.*

Of the data collected in the study, 2016 results show that HERS® Index Scores are the most frequently-used program with 15,568 units (45.6%), followed by 9,581 units (28.1%) for ENERGY STAR® Certified Homes, 3,790 units (11.1%) for Duke Energy Progress' Residential New Construction Program and 3,646 units (10.7%) for the National Green Building Standard™ program. A HERS® Index Score is created in each of these programs.

GRAPH 15

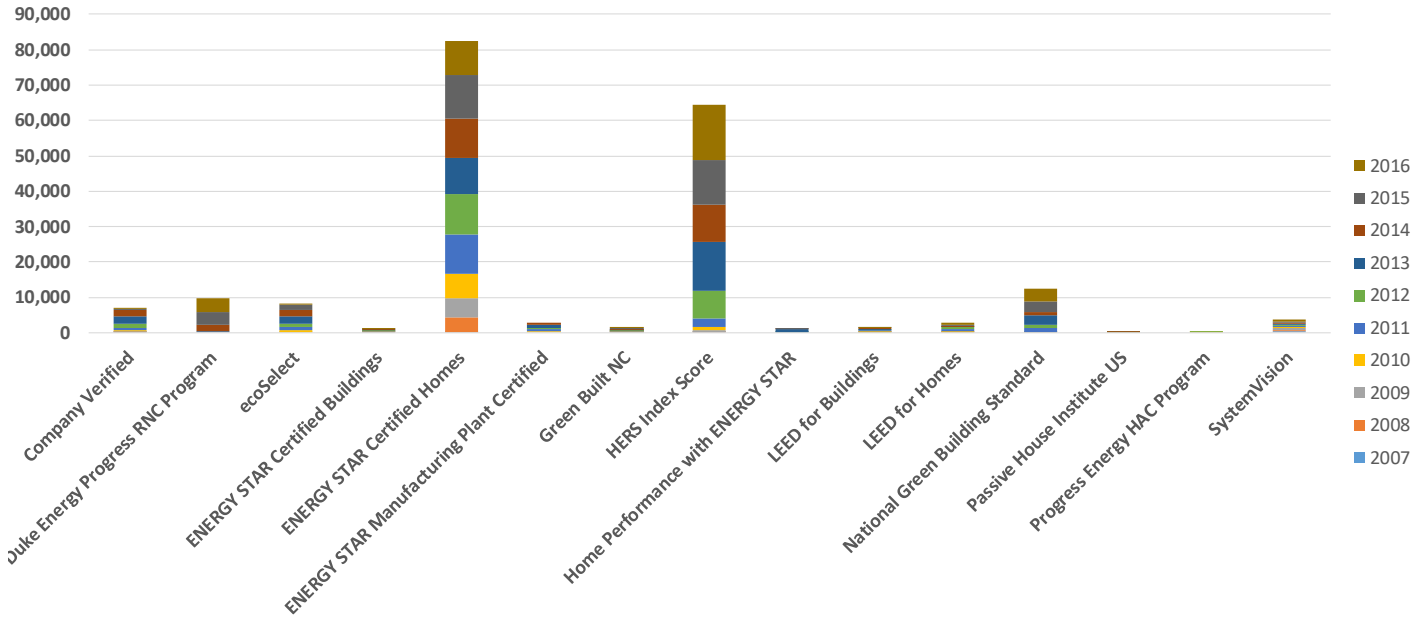
Total Energy Efficient, Green and High Performance Units by Year and Program



Since 2007, the ENERGY STAR® Certified Homes program leads the way with 82,515 units (41.6%) and is followed by HERS® Index Score with 64,435 units (32.5%), National Green Building Standard™ with 12,463 units (6.3%) and Duke Energy Progress' Residential New Construction Program with 9,677 units (4.9%). It is worth noting that North Carolina had the second most HERS® Index Scores of any state in 2016.

GRAPH 16

Total Energy Efficient, Green and High Performance Units by Program and Year



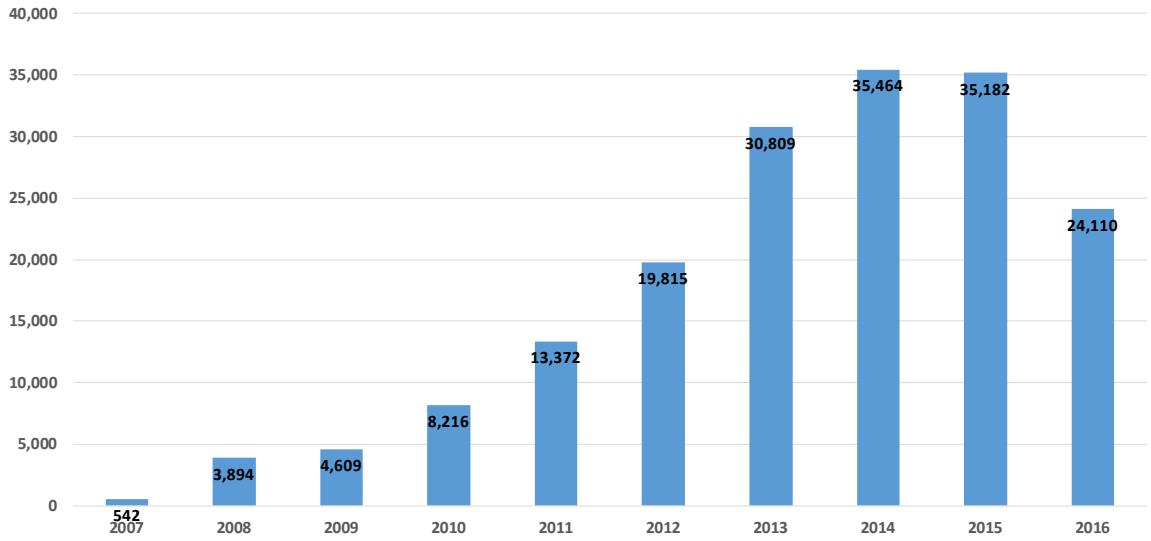
Metro Areas

The following section defines North Carolina's metro areas as cities and counties located in or near Asheville, Charlotte, Triad, Triangle and Wilmington.

Graph 17 shows a clear annual upward trend in the total number of energy efficient, green and high performance units being built or retrofitted in these markets from 2007 to its peak in 2014. 2015 decreased slightly but 2016 saw a dramatic decrease of 11,072 units or 31.5% of the 2015 total. This sharp decline may signal a transition away from volume certifications, verifications and ratings in metro areas to more suburban and rural cities and counties. The decline is more likely the result of a lack of address-level data that was not able to be attributed to metro or non-metro areas. Accordingly, the 2016 data point in particular should be interpreted with some caution. Since 2007, 176,013 (88.7%) of all North Carolina units are attributable to these metro areas.

GRAPH 17

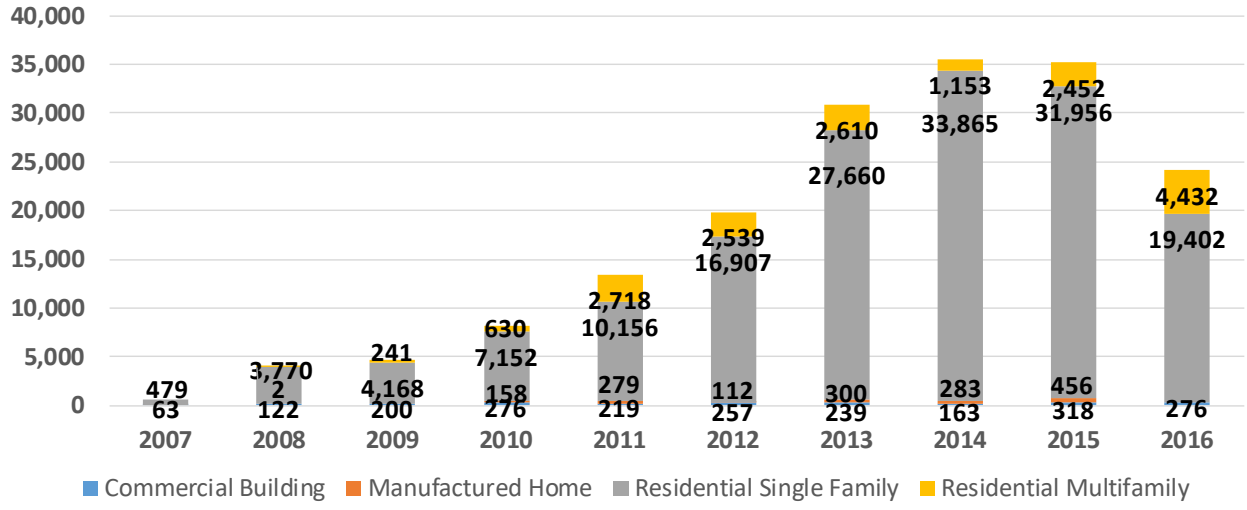
Metro Area Energy Efficient, Green and High Performance Units by Year



Residential single family continues to lead new and retrofitted units in the metro areas. However, 2016 saw an 80% increase in the number of multifamily units reported through the study. Manufactured homes and commercial buildings remain a very low percentage of the total. Since 2007, residential single family homes account for 88.4% of all metro area units while residential multifamily accounts for 9.5% and commercial buildings account for 1.2%.

GRAPH 18

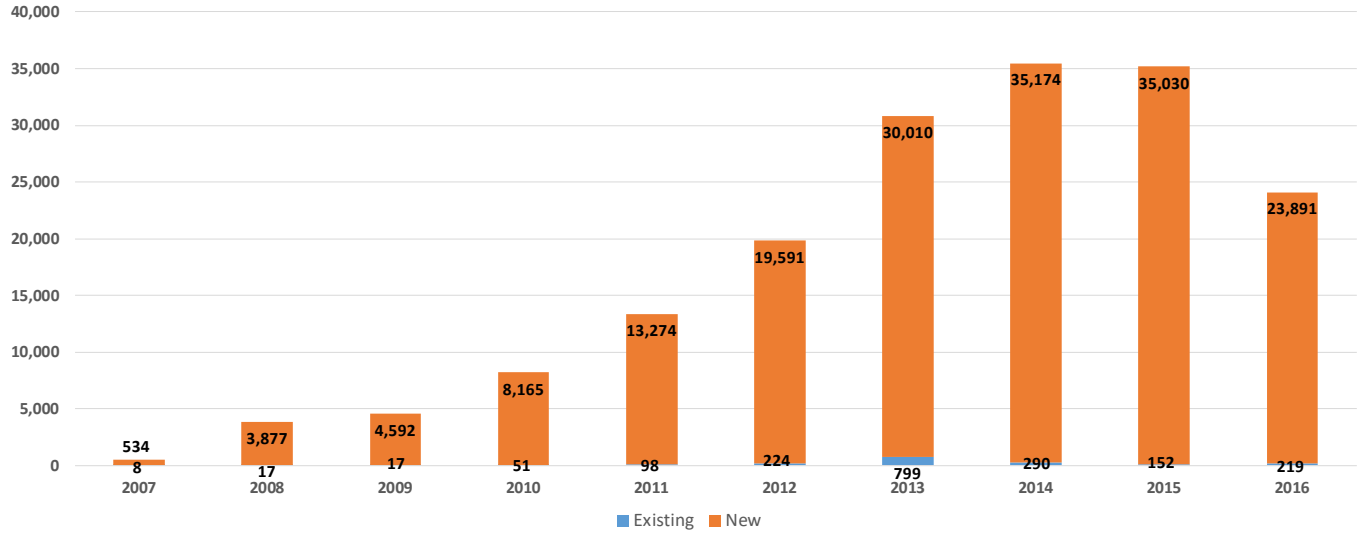
Metro Area Energy Efficient, Green and High Performance Units by Year and Building Type



The number of new construction units continues to outpace existing units year over year. Since 2007, 98.9% of all units reported in the study are new construction.

GRAPH 19

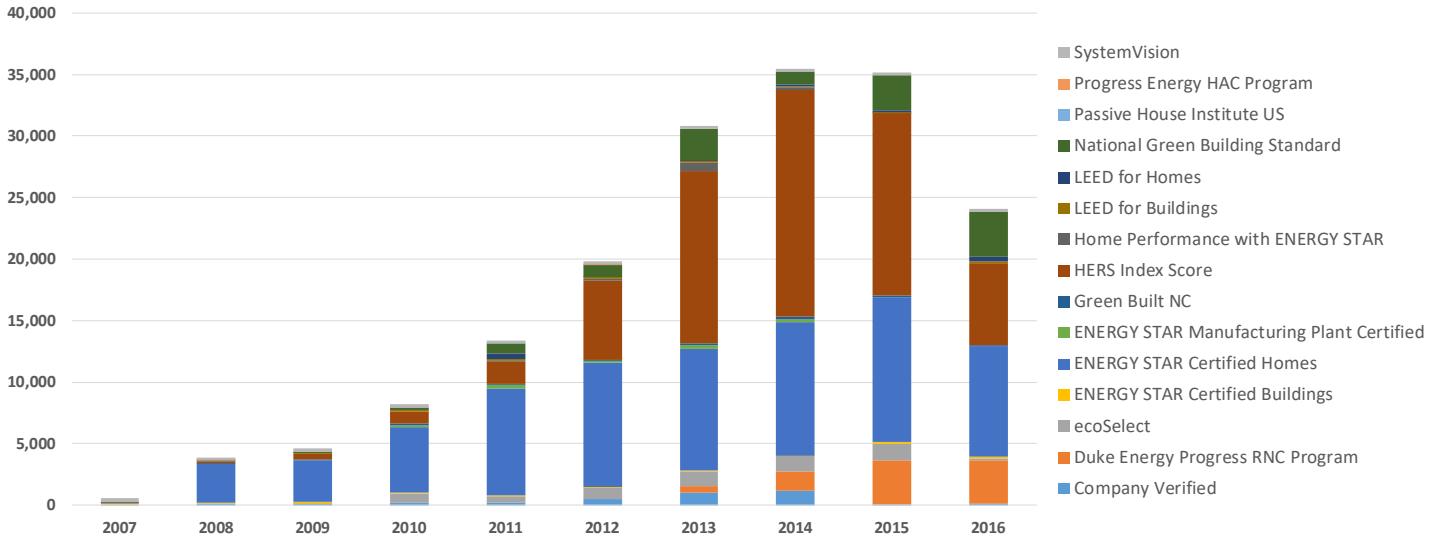
Metro Area Energy Efficient, Green and High Performance Units by Year and New vs. Existing



For these metro areas in 2016, the most widely-used programs include ENERGY STAR® Certified Homes with 8,983 units (37.2%), HERS® Index Scores with 6,684 units (27.7%), National Green Building Standard™ with 3,629 units (15.1%) and Duke Energy Progress' Residential New Construction Program with 3,479 units (14.4%). Since 2007, the most widely-used programs include ENERGY STAR® Certified Homes with 71,991 units (40.1%), HERS® Index Scores with 63,610 units (36.1%), National Green Building Standard™ with 12,058 units (6.9%) and Duke Energy Progress' Residential New Construction Program with 9,031 units (5.1%).

GRAPH 20

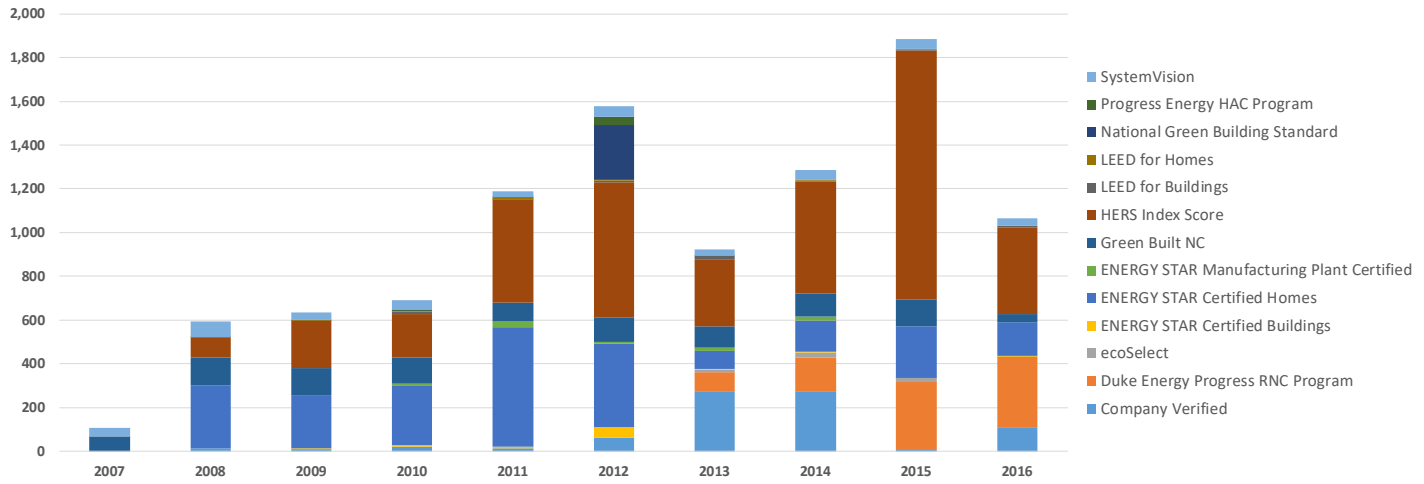
Metro Area Energy Efficient, Green and High Performance Units by Year and Program



Asheville Metro

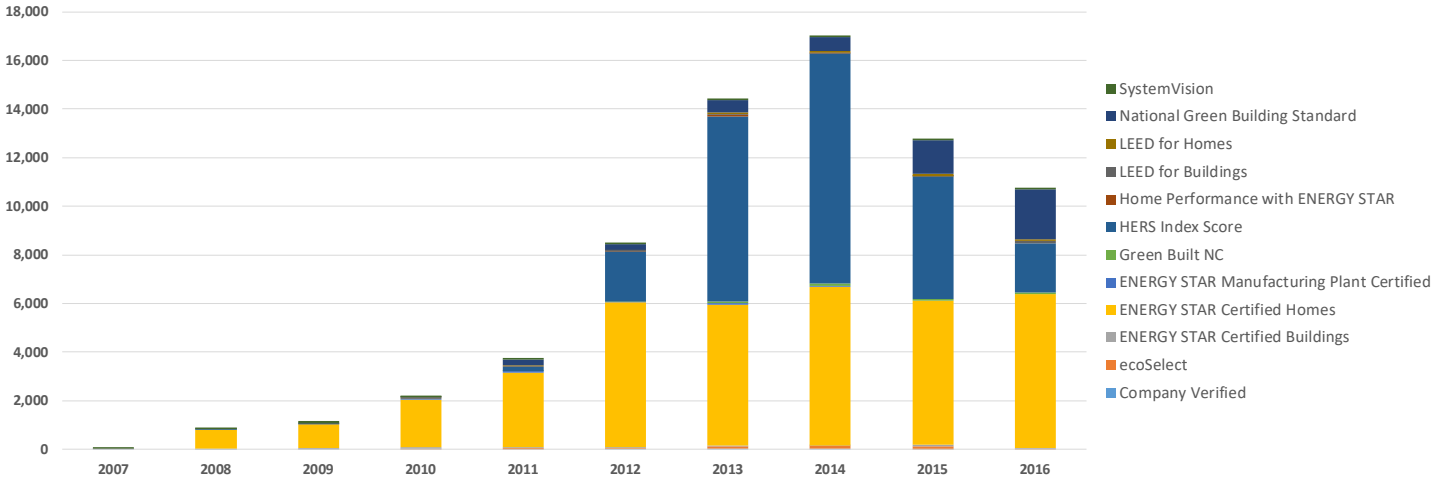
Available data for the Asheville market in 2016 shows that Duke Energy Progress' Residential New Construction Program led the way with 324 units (38.1%) followed by HERS® Index Scores with 182 units (21.4%) and ENERGY STAR® Certified Homes with 154 units (18.1%). Since 2007, HERS® Index Scores lead with 3,700 units (38.2%) followed by ENERGY STAR® Certified Homes with 2,345 units (24.2%), Green Built NC® with 996 units (10.3%) and Duke Energy Progress' Residential New Construction Program with 885 units (9.1%).

GRAPH 21



Charlotte Metro

Available data for the Charlotte market in 2016 shows that ENERGY STAR® Certified Homes led the way with 6,336 units (58.9%) followed by the National Green Building Standard™ with 2,058 units (19.1%) and HERS® Index Scores with 2,044 units (19.0%). Since 2007, ENERGY STAR® Certified Homes leads with 37,236 units (52.0%), followed by HERS® Index Scores with 26,418 units (36.9%) and National Green Building Standard™ with 5,006 units (7.0%).

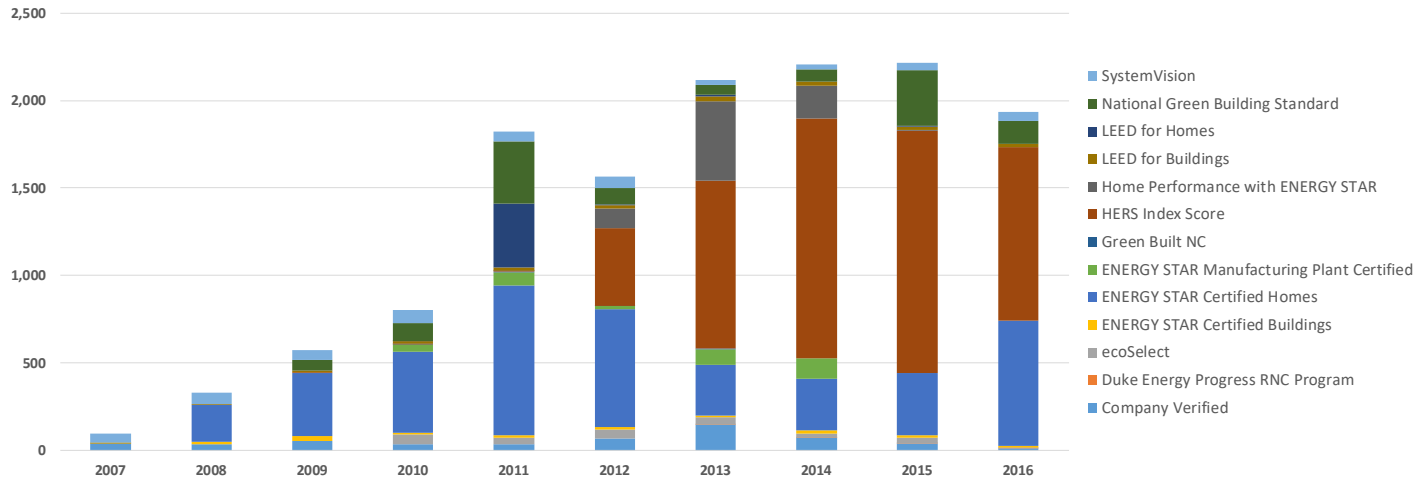


Triad Metro

Available data for the Triad market in 2016 shows that HERS® Index Scores led the way with 991 units (51.2%) followed by the ENERGY STAR® Certified Homes with 717 units (37.1%) and the National Green Building Standard™ with 130 units (6.7%). Since 2007, ENERGY STAR® Certified Homes leads with 4,220 units (30.9%), followed by HERS® Index Scores with 5,157 units (37.7%) and National Green Building Standard™ with 1,191 units (8.7%).

GRAPH 23

Triad Metro Area Energy Efficient, Green and High Performance Units by Year and Program

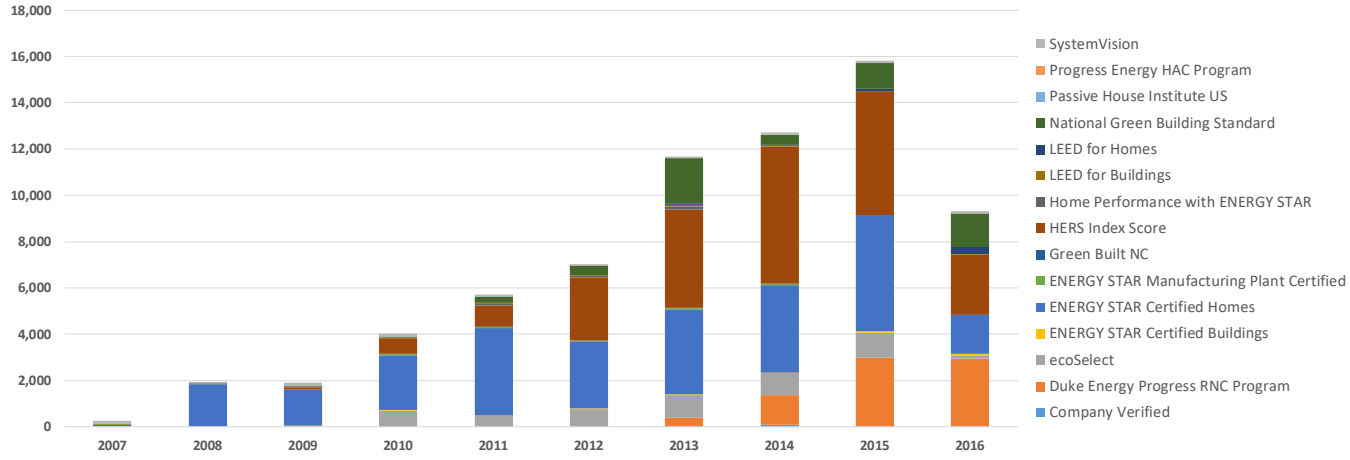


Triangle Metro

Available data for the Triangle market in 2016 shows that Duke Energy Progress' Residential New Construction Program led the way with 2,941 units (31.5%) followed HERS® Index Scores with 2,582 units (32.0%) and ENERGY STAR® Certified Homes with 1,682 units (18.0%). Since 2007, ENERGY STAR® Certified Homes leads with 26,641 units (37.8%) followed by HERS® Indes Scores with 22,496 units (32.0%) and Duke Energy Progress' Residential New Construction Program with 7,554 units (10.7%).

GRAPH 24

Triangle Metro Area Energy Efficient, Green and High Performance Units by Year and Program

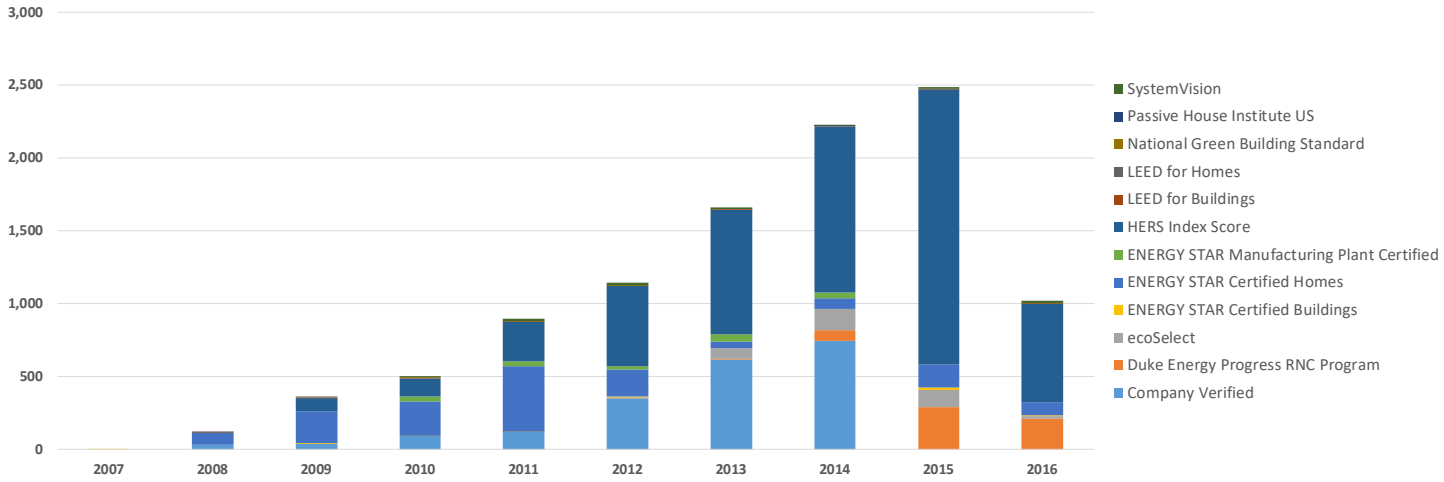


Wilmington Metro

Available data for the Wilmington market in 2016 shows that HERS® Index Scores led the way with 672 units (65.9%) followed by Duke Energy Progress' Residential New Construction Program with 213 units (20.9%) and ENERGY STAR® Certified Homes with 94 units (9.2%). Since 2007, HERS® Index Scores lead with 5,590 units (53.7%) followed by ENERGY STAR® Certified Homes with 1,549 units (14.9%) and Duke Energy Progress' Residential New Construction Program with 587 units (5.6%).

GRAPH 25

Wilmington Metro Area Energy Efficient, Green and High Performance Units by Year and Program

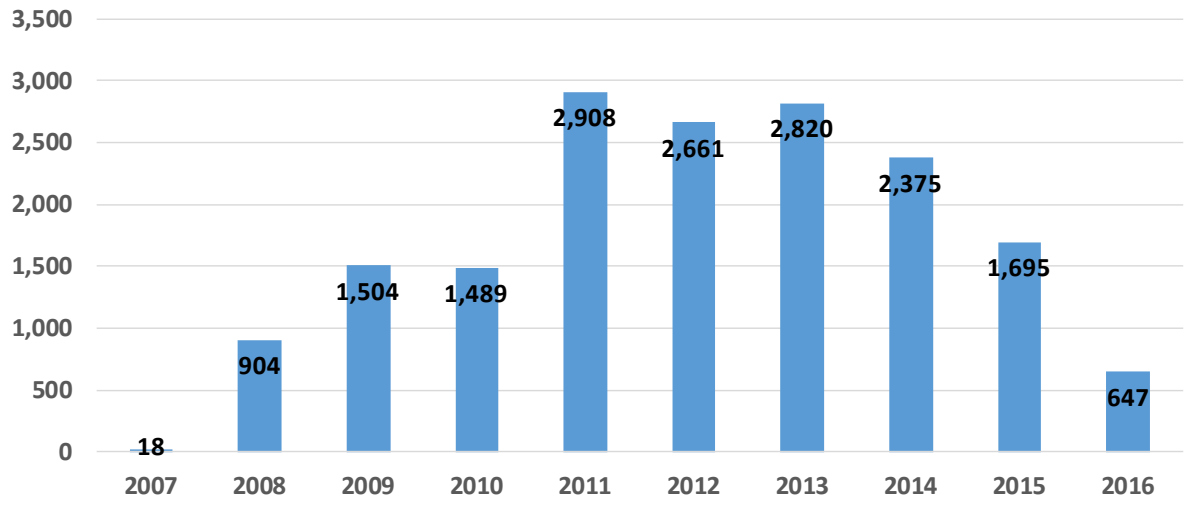


Minor Metro Areas

The following section defines North Carolina's minor metro areas as cities and counties located in or near Greenville, Jacksonville and Fayetteville. Illustrated in Graph 26, the volume of energy efficient, green and high performance units has been decreasing steadily over the past four years with 2016 being the lowest year since 2008. The decline may be the result of a lack of address-level data that was not able to be attributed to metro or non-metro areas. Accordingly, the 2016 data point in particular should be interpreted with some caution. Since 2007, 17,021 of all North Carolina units (8.6%) are attributable to these minor metro areas.

GRAPH 26

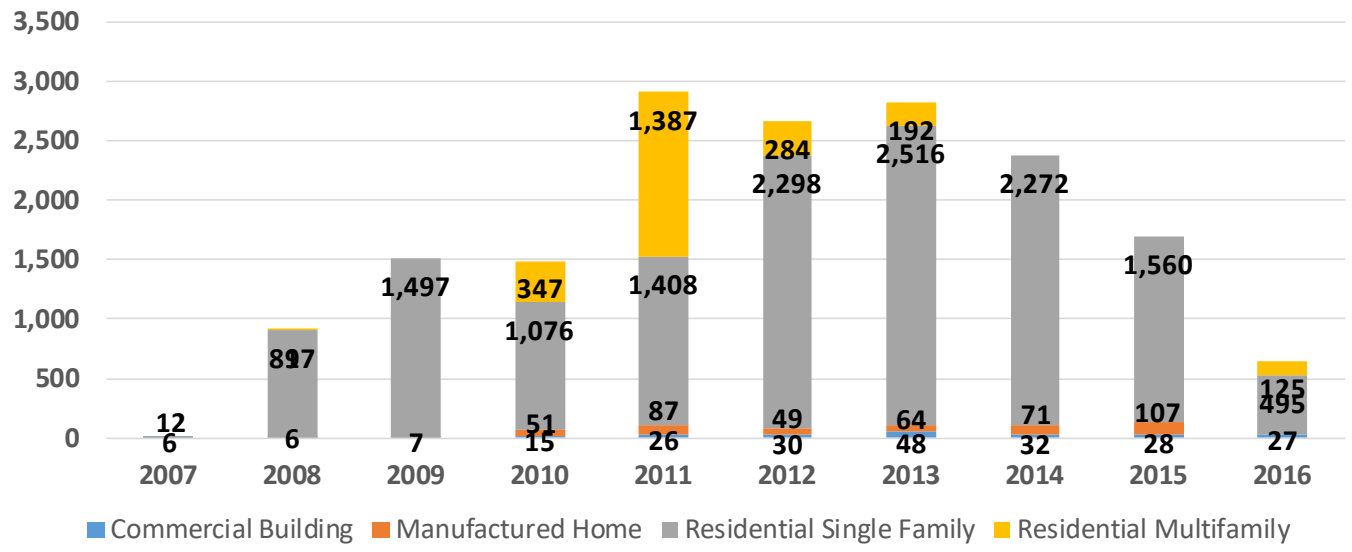
Minor Metro Area Energy Efficient, Green and High Performance Units by Year



According to the data available in the study, residential single family units have continued a decline since 2013, as has residential multifamily units, though they rebounded slightly in 2016.

GRAPH 27

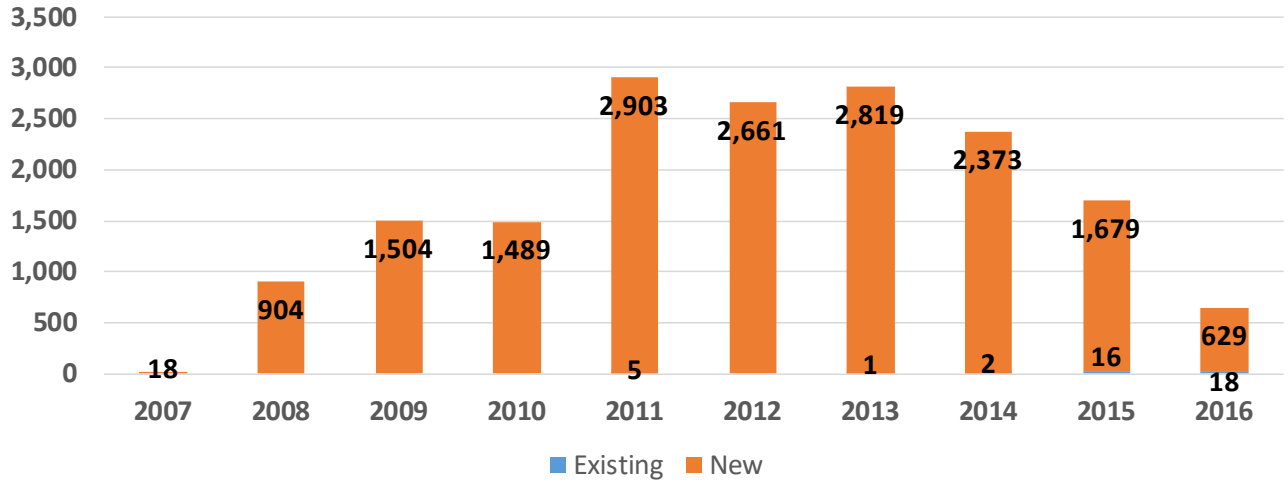
Minor Metro Area Energy Efficient, Green and High Performance Units by Year and Building Type



Very few existing units have been reported in any year, though there is an increase from zero in 2012 to 18 in 2016 in the data set.

GRAPH 28

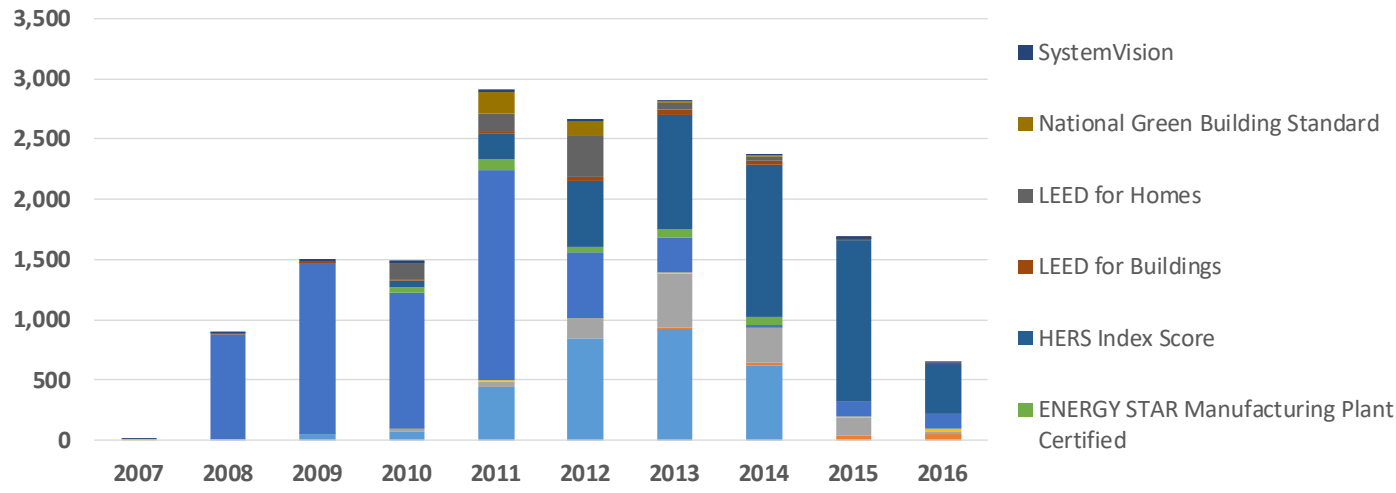
Minor Metro Area Energy Efficient, Green and High Performance Units by Year and New vs. Existing



HERS® Index Score is the leading program in these areas though 2016 saw a sharp decline compared to prior years. ENERGY STAR® remains as the second most frequently-used program.

GRAPH 29

Minor Metro Area Energy Efficient, Green and High Performance Units by Year and Program

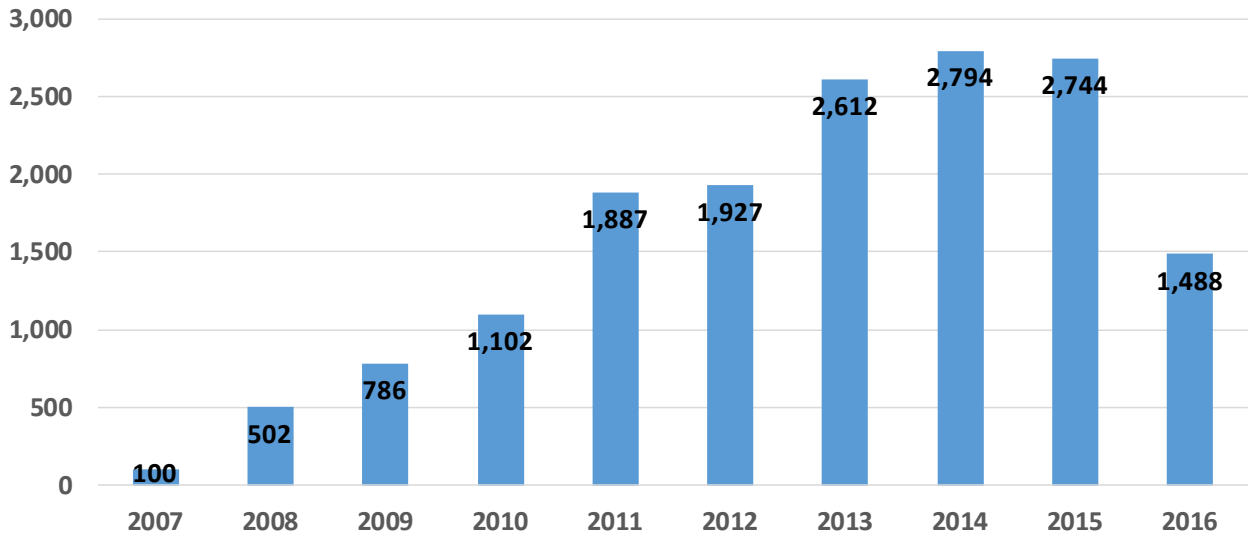


Non-Metro Areas

This section reports on all data collected in the study where a city or county was provided that is not attributable to a metro or minor metro-area. It excludes data points where no city or county was provided ("blanks"). Illustrated in Graph 30, data collected for non-metro areas shows a similar trend found in metro and minor-metro areas of decreasing units in 2015 and 2016.

GRAPH 30

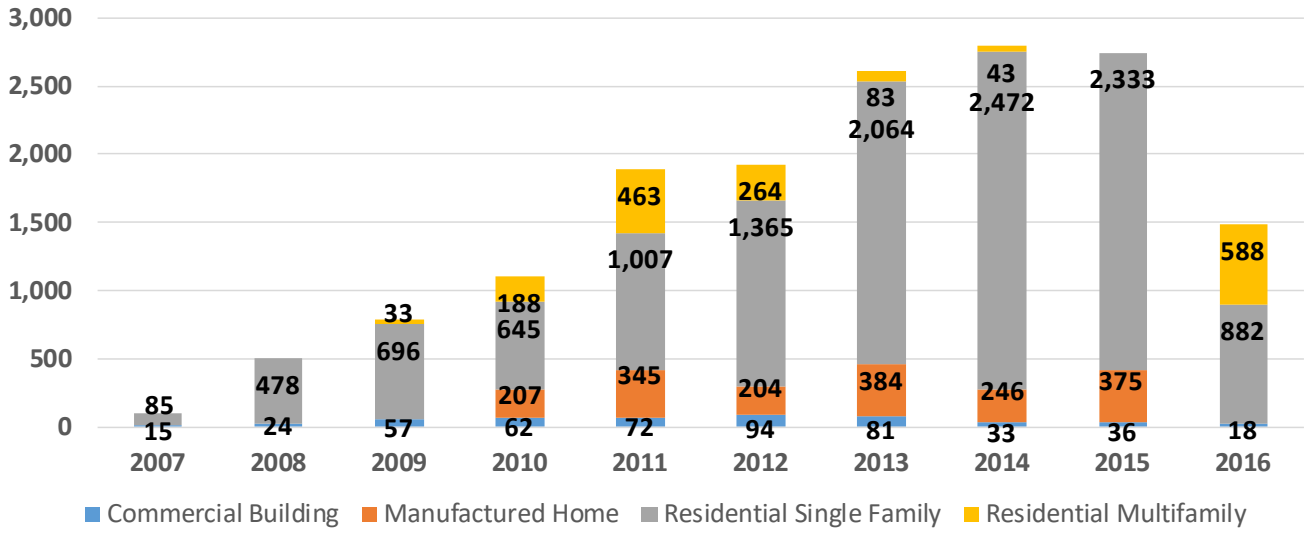
Non-Metro Area Energy Efficient, Green and High Performance Units by Year



Residential single family units experienced a large drop-off in 2016, whereas residential multifamily increased due to one or a few projects in rural areas. Manufactured home data, though not available for 2016, is a higher percentage of the total units reported in non-metro areas than in metro or minor metro areas.

GRAPH 31

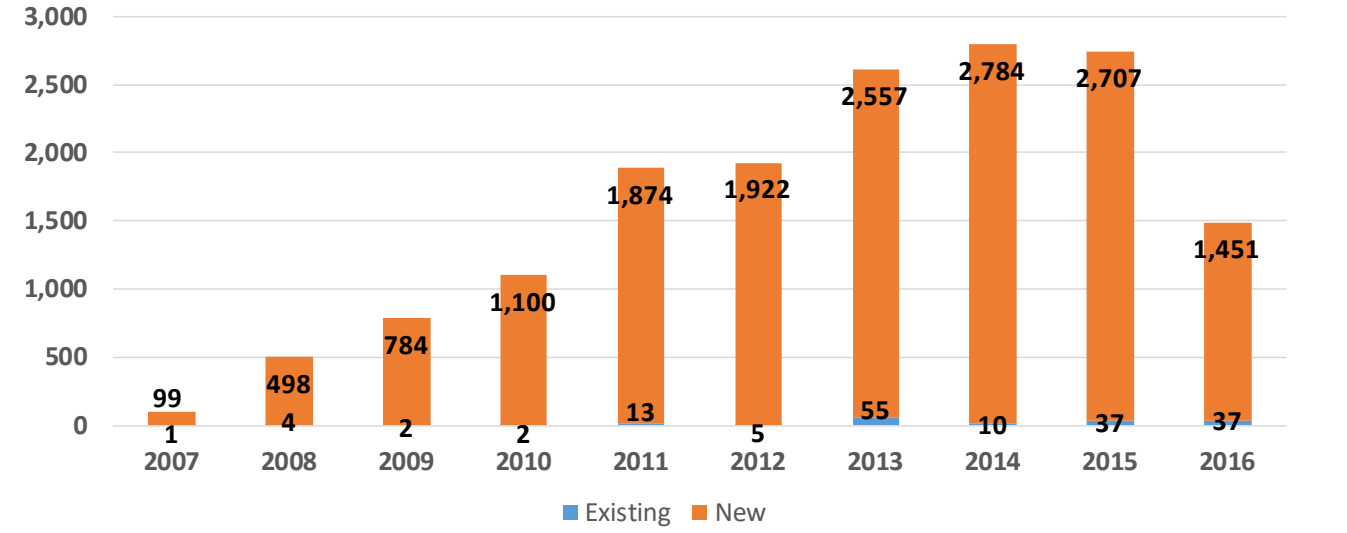
Non-Metro Area Energy Efficient, Green and High Performance Units by Year and Building Type



Similar to the minor metro areas, there are very few existing units reported in the data set.

GRAPH 32

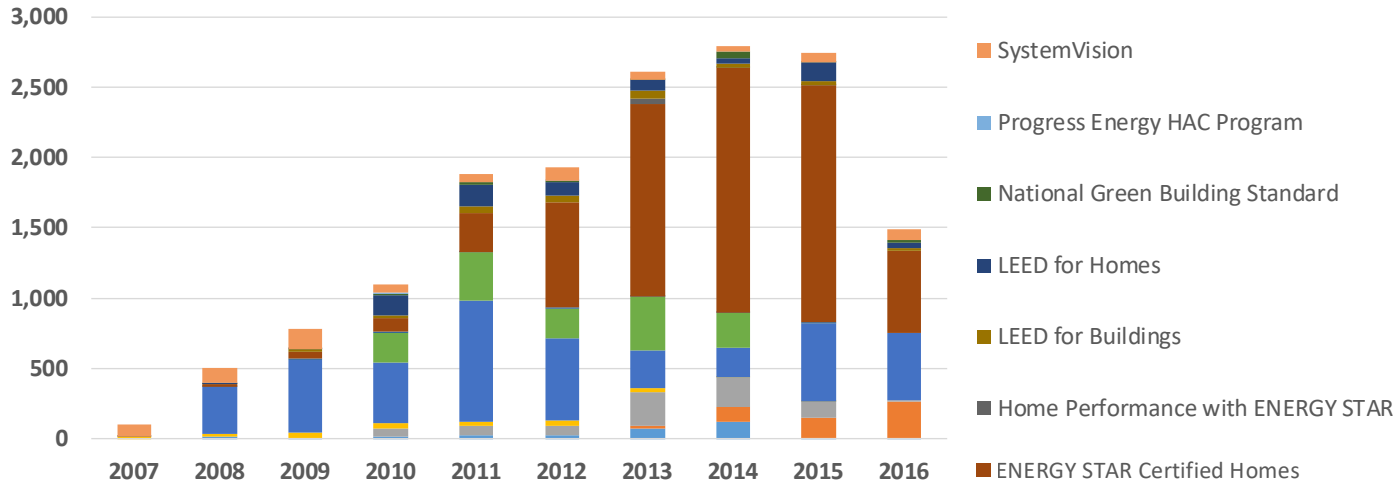
Non-Metro Area Energy Efficient, Green and High Performance Units by Year and New vs. Existing



ENERGY STAR® Certified Homes and Duke Energy Progress' Residential New Construction program lead the way for units in these areas. SystemVision™, an affordable housing energy efficiency program offered through Advanced Energy, ranks fourth in 2016.

GRAPH 33

Non-Metro Area Energy Efficient, Green and High Performance Units by Year and Program



Conclusions and Key Findings

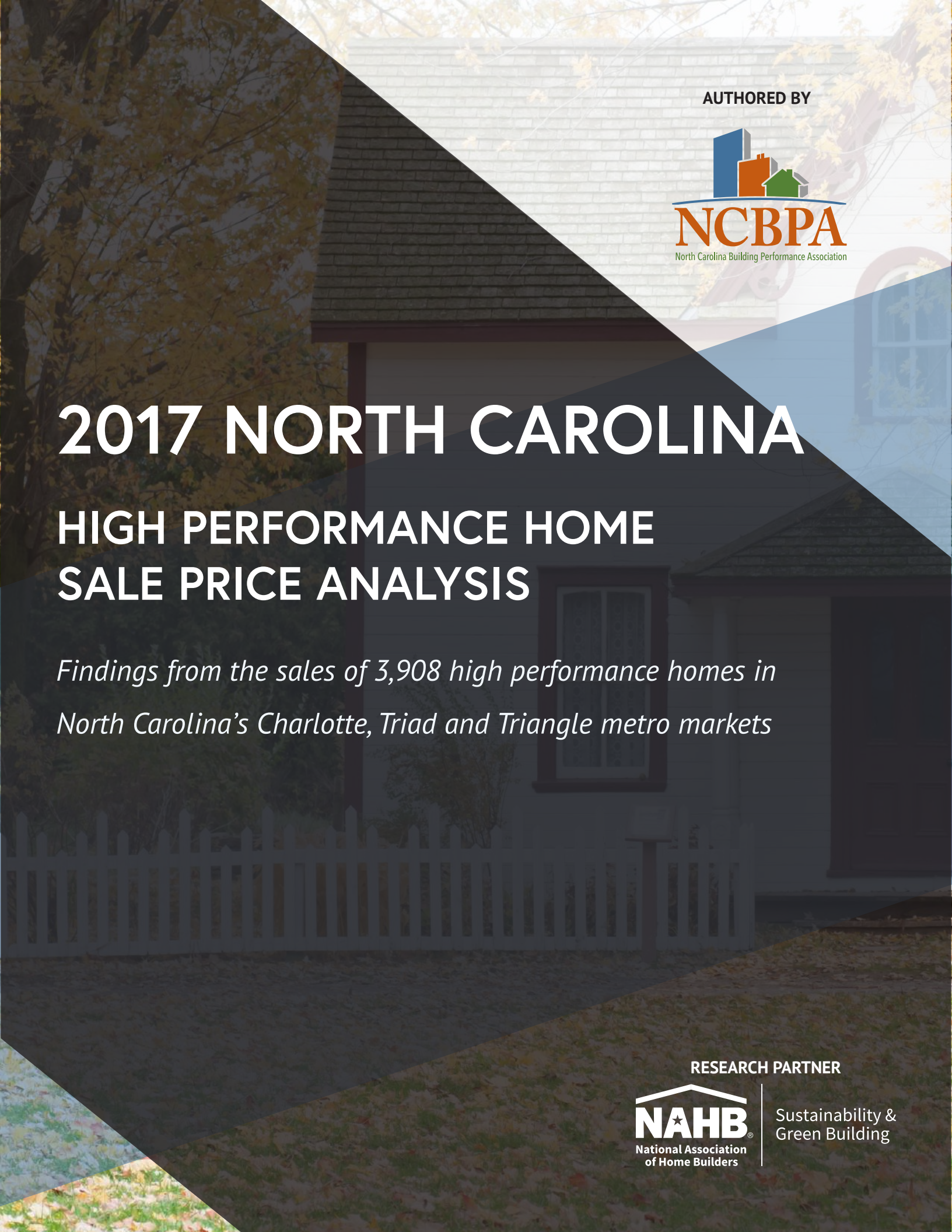
- 2016 results show that HERS® Index Scores are the most frequently-used program in the state with 15,568 units (45.6%), followed by 9,581 units (28.1%) for ENERGY STAR® Certified Homes, 3,790 units (11.1%) for Duke Energy Progress' Residential New Construction Program and 3,646 units (10.7%) for the National Green Building Standard™ program. A HERS® Index Score is created in each of these programs.

- Since 2007, ENERGY STAR® Certified Homes is the most frequently-used program in the state with 82,515 units (41.6%) and is followed by HERS® Index Score with 64,435 units (32.5%), National Green Building Standard™ with 12,463 units (6.3%) and Duke Energy Progress' Residential New Construction Program with 9,677 units (4.9%).

- From 2007 to 2014 there was an upward trend in the number of energy efficient, green and high performance units being built or retrofitted in North Carolina's metro markets. This upward trend ended in 2015 and 2016 saw a dramatic decrease of 11,072 units or 31.5% of the 2015 total. This sharp decline may signal a transition away from volume certifications, verifications and ratings in metro areas to more suburban and rural cities and counties. The decline is more likely the result of a lack of address-level data that was not able to be attributed to metro or non-metro areas. Since 2007, 176,013 of all North Carolina units are attributable to the Asheville, Charlotte, Triad, Triangle and Wilmington metro areas (88.7%).

- The volume of energy efficient, green and high performance units has been decreasing steadily over the past four years in the minor-metro areas of Fayetteville, Greenville and Jacksonville with 2016 being the lowest year since 2008.

- Following several consecutive years of strong growth of units in non-metro areas, 2015 saw a decline and 2016 showed a significant decrease.



AUTHORED BY

NCBPA
North Carolina Building Performance Association

2017 NORTH CAROLINA

HIGH PERFORMANCE HOME SALE PRICE ANALYSIS

Findings from the sales of 3,908 high performance homes in North Carolina's Charlotte, Triad and Triangle metro markets

RESEARCH PARTNER

NAHB
National Association of Home Builders
Sustainability & Green Building

Overview

Over the past several years, industry stakeholders have performed studies across the country that quantify the financial return of energy efficient, green and high performance homes. These studies provide measurable evidence that high performance homes can sell faster, at a higher price and retain value greater than an average home. Studies have found:

- New green certified homes sold for 12.9% more ($13.82 per sq ft more) and 42 days faster than non-certified homes (Argeris, 2012).
- ENERGY STAR® Certified Homes sold at a $5,566 premium ($2.99 per sq ft more) and 89 days faster than homes without an ENERGY STAR® certification (NC Energy Efficiency Alliance, 2011)
- On average, houses that exhibit one or more green elements sell for 5.9% more than a similar house without any green elements (The Appraisal Journal, 2015).
- Attic insulation provides the highest return on investment, 116.9%, of all home improvement projects studied (Remodeling Report, 2016).

In 2017 North Carolina Building Performance Association (NCBPA) performed an analysis of the sale prices of homes that have energy efficiency, green or high performance certifications and ratings in the state's three largest construction markets: Charlotte, Triad and Triangle. To perform the study, NCBPA was provided with sale price data from MetroStudy via deed closing transactions that occured in 2015 and 2016. The transactions include new, custom and existing home sales. NCBPA analyzed the sale prices, cost per square foot and total dollars spent, of 42,458 homes sold during 2015 and 2016.

Homes certified, verified or rated to the following programs were included in this analysis:

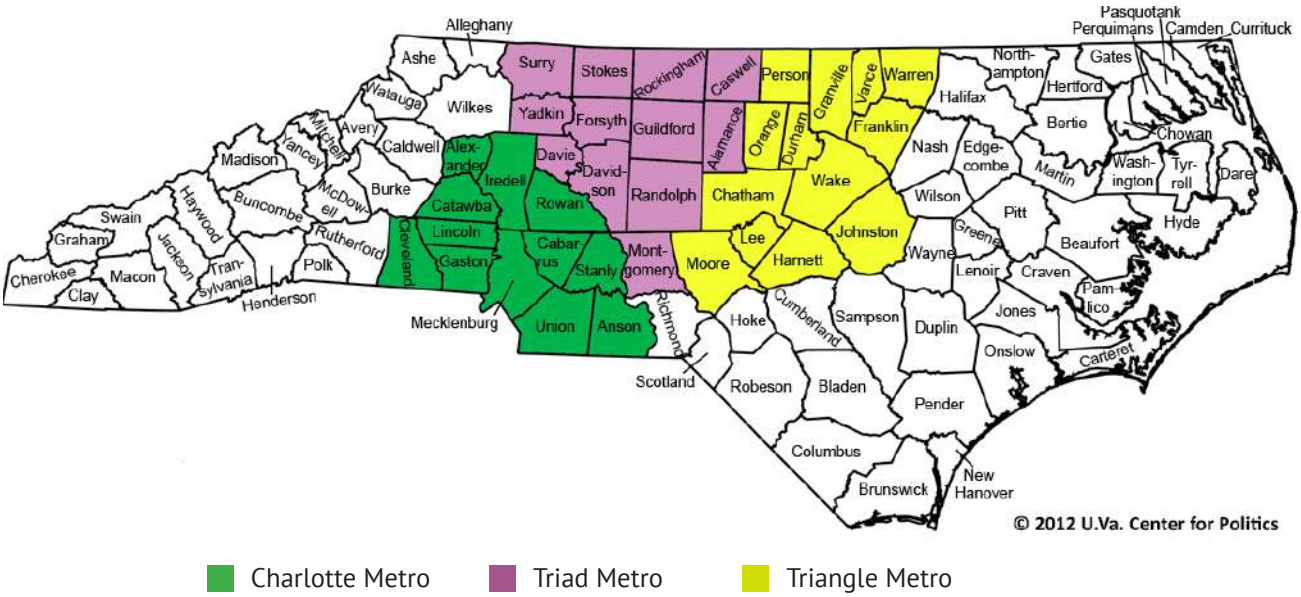
- ENERGY STAR® Certified Homes (ENERGY STAR®)
- Green Built NC®
- Home Energy Rating System (HERS®) Index Score
- Leadership in Energy and Environmental Design (LEED®) for Homes
- National Green Building Standard™ (NGBS)

For a full listing of the 28 residential and 14 commercial energy efficiency, green and high performance building programs available in North Carolina in 2016, refer to Table 1 in the full report.

Download the report at www.BuildingNC.org.

Cities and Counties

Cities and counties attributed to the metro areas in the study follow the Metropolitan Statistical Area (MSA) standards provided by the U.S. Office of Management and Budget. The map shows an approximation of counties included in the three metro areas.



Individual cities where home sales were included in the analysis:

- Charlotte: Belmont, Charlotte, China Grove, Concord, Cornelius, Cramerton, Davidson, Denver, Gastonia, Harrisburg, Huntersville, Indian Trail, Kannapolis, Locust, Marvin, Matthews, McAdenville, Midland, Mint Hill, Monroe, Mooresville, Mount Holly, Pineville, Stallings, Stanley, Statesville, Troutman, Waxhaw, Weddington, Wesley Chapel

- Triad: Advance, Browns Summit, Burlington, Clemmons, Colfax, Elon, Gibsonville, Graham, Greensboro, Haw River, High Point, Jamestown, Kernersville, King, Lewisville, Lexington, McLeansville, Mebane, Oak Ridge, Pfafftown, Reidsville, Rural Hall, Stokesdale, Summerfield, Thomasville, Walkertown, Whitsett, Winston-Salem

- Triangle: Angier, Apex, Benson, Cary, Chapel Hill, Clayton, Durham, Four Oaks, Franklinton, Fuquay-Varina, Garner, Hillsborough, Holly Springs, Knightdale, Louisburg, Morrisville, Pittsboro, Raleigh, Rolesville, Smithfield, Wake Forest, Wendell, Willow Spring, Youngsville, Zebulon

Assumptions and Methodology

- NCBPA attributes the value of energy efficiency, green and high performance certifications and ratings to increased sale prices as correlation only, not causation. A variety of other factors, such as kitchen upgrades and lot size that impact the sale price of a home are not included in this analysis.

- Homes were considered to meet energy efficient, green and/or high performance standards if they were certified or rated to one or more of the 28 residential programs and rating systems available in the state. Of the 42,458 homes studied, 3,908 met the high performance criteria.

- To ensure validity and avoid skewed results, NCBPA recursively removed duplicate and non-address-specific data.

- Homes certified or rated to multiple programs are reported independently. A single home with both a HERS® Index Score and an ENERGY STAR® certification is included in the pricing analysis for each program.

- The linear regression graphs shown in the results section were produced using Microsoft Excel. Linear trendlines were used and displayed on each graph with R^2 values for clarity.

- NCBPA was unable to distinguish between a reported HERS® Index Score of zero and a zero used to indicate that no HERS® Index Score was given; therefore, HERS® Index Scores of zero were not included in this analysis.

- The majority of high performance home certification and rating data used in this study is only available electronically from 2012 forward; therefore, homes sold in 2015 to 2016 with a certification or rating performed prior to 2012 are excluded from this analysis.

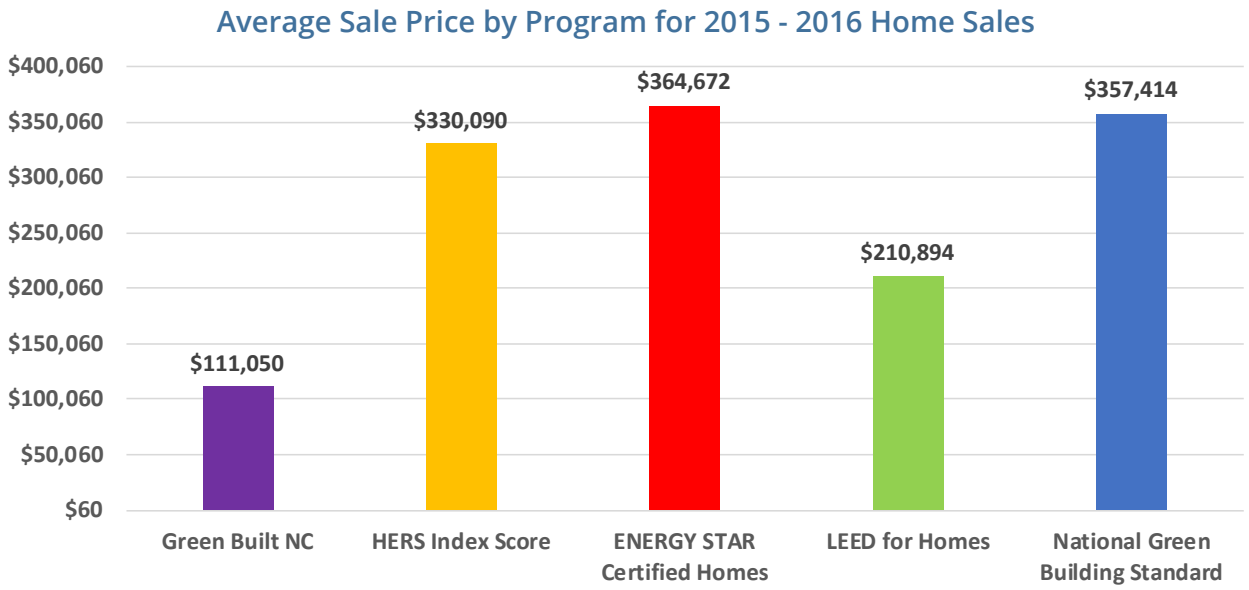
- Green Built NC®, a green home certification program used almost exclusively in the Asheville region, is not active in the Triad or Triangle markets.

Findings

Certification Programs and Rating Systems

Graph 34 illustrates that homes certified to ENERGY STAR® have the highest sale price, $364,672, across the three metro areas combined. Those built to NGBS have the second highest sale price, $357,414, HERS® Index Score is third highest, $330,090, followed by LEED® and Green Built NC®.

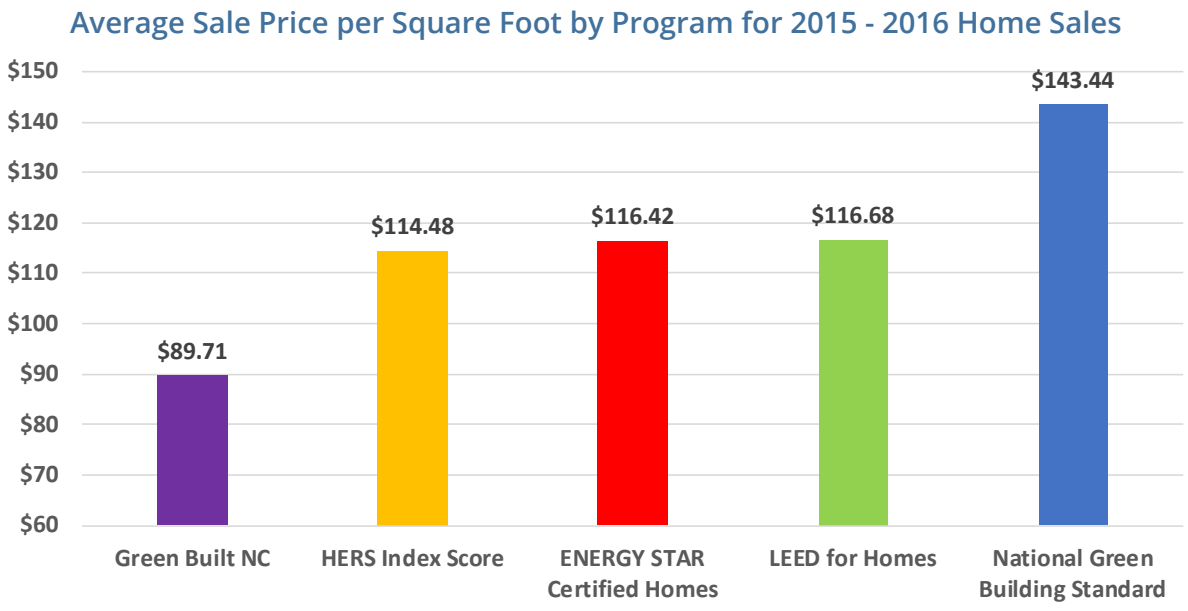
GRAPH 34



Graph 35 illustrates that NGBS has the highest sale price per square foot, $143.44, across the three metro areas combined. LEED® has the second highest sale price per square foot, $116.68, ENERGY STAR® is third highest, $116.42, followed by HERS® Index Score and Green Built NC®.

It is important to note that the price per square foot data for LEED® was likely impacted by the large portion of low-income homes in the sample set from the Charlotte market. Programs like Habitat for Humanity achieve high performance standards but have a much lower sale price to allow for affordable housing. Additionally, Green Built NC® is primarily a regional program in Western North Carolina and only had 12 home sales within the metro regions used in this study.

GRAPH 35



High Performance Home Sale Prices and Square Footage vs. All Home Homes

Table 3 compares the average square footage, sale price and price per square foot of the 3,908 (9.2%) confirmed high performance homes to the average of the total number of all metro home sales, 42,458, in 2015 to 2016. During reviews of this data with local builders and Realtors®, it was determined that the consistent increase in square footage and sale price for high performance homes would likely be even larger if comparing to only non-high performance home sales. The percent increase or decrease of high performance homes versus all homes is shown in blue below each value in the high performance home column.

In summary:

- On average, high performance homes in the Triangle market are 2,962 square feet and 14.4% larger in size than the average home in the market.
- High performance homes in the Charlotte market are the smallest, with square footage increases of 5.6%, compared to homes in the Triangle and Triad markets.
- High performance homes in the Triangle market have the highest average sale price, $400,989, of each of the metro areas, a 22.0% increase over all homes in the metro areas.
- Combined, high performance homes in all metro areas have an average sale price of $339,210, a 9.5% increase over all homes.
- The Triangle market has the largest increase in average price median, 32.0%, of any of the metro areas.

TABLE 3

Average Sale Price and Square Footage for 2015 - 2016 Home Sales by Metro Area

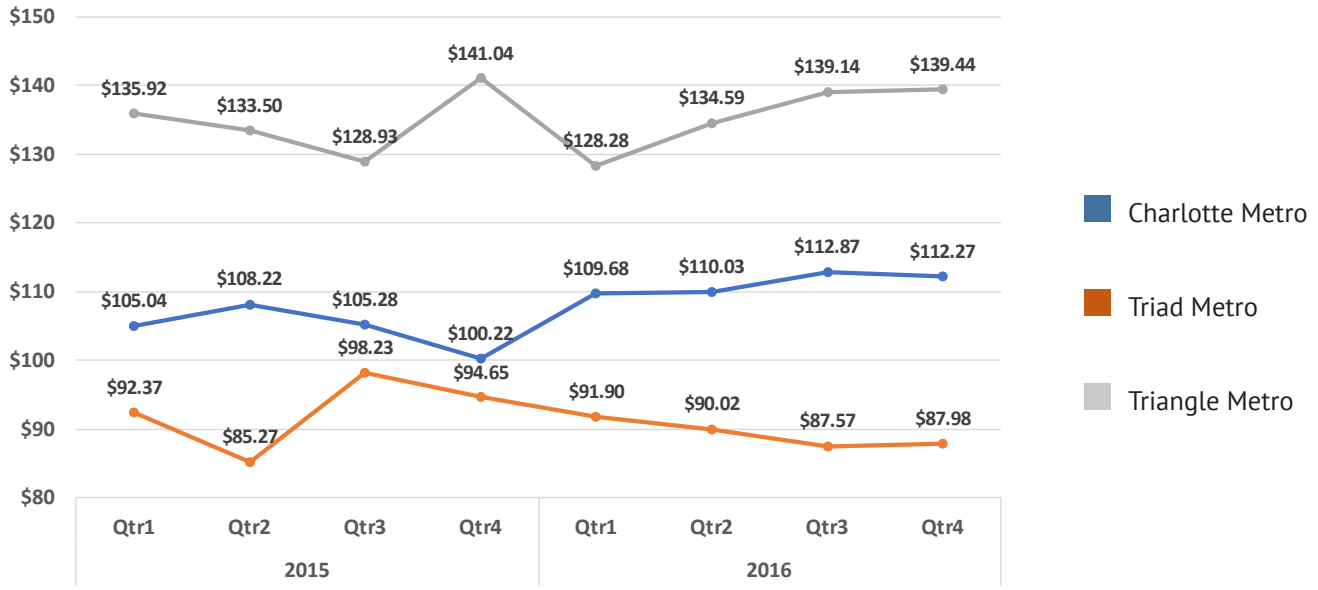
	Charlotte		Triad		Triangle		All Metro Areas	
	High Performance Homes	All Homes	High Performance Homes	All Homes	High Performance Homes	All Homes	High Performance Homes	All Homes
Square Footage Average	2,946 *5.6%*	2,789	2,626 *12.2%*	2,340	2,962 *14.4%*	2,590	2,908 *9.6%*	2,652
Square Footage Range	768 - 6,197	714 – 8,683	1,120 - 5,707	348 – 7,021	1,117 - 6,038	650 – 12,225	768 - 6,197	348 – 12,225
Square Footage Median	2,961 *8.7%*	2,723	2,617 *16.6%*	2,244	2,870 *15.6%*	2,482	2,892 *13.1%*	2,558
Price Average	$325,021 *2.8%*	$316,190	$237,803 *6.1%*	$224,057	$400,989 *22.0%*	$328,723	$339,210 *9.5%*	$309,845
Price Range	$65,000 - $1,539,500	$42,100 - $2,680,600	$82,000 - $731,000	$41,000 - $1,050,000	$110,000 - $1,212,000	$45,000 - $2,148,500	$65,000 - $1,539,500	$41,000 - $2,680,600
Price Median	$315,500 *9.1%*	$289,125	$219,500 *13.0%*	$194,250	$388,000 *32.0%*	$294,000	$322,000 *15.0%*	$280,000
Price per Square Foot Average	$109.22 *-3.4%*	$113.07	$89.68 *- 4.3%*	$93.74	$135.25 *6.7%*	$126.71	$115.43 *- 1.2%*	$116.82
Price per Square Foot Range	$32.83 - $427.91	$15.38 - $1,332.39	$41.06 - $202.42	$13.76 - $334.22	$63.06 - $252.53	$15.23 - $1,342.79	$32.83 - $427.91	$13.76 - $1,342.79
Price per Square Foot Median	$107.98 *1.4%*	$106.47	$83.40 *- 4.6%*	$87.40	$136.01 *12.1%*	$121.31	$110.54 *3.6%*	$106.67

Sale Price and Square Footage by Metro Area and Program Over Time

Graph 36 illustrates average sale price per square foot by metro area for the 3,908 high performance homes. The Triad peaked in 2015 at $98.23 per square foot. The Triangle consistently has the highest average sale price of the three markets and increased in each quarter during 2016. The Charlotte market has remained relatively flat over the two year period with a slight increase in 2016.

GRAPH 36

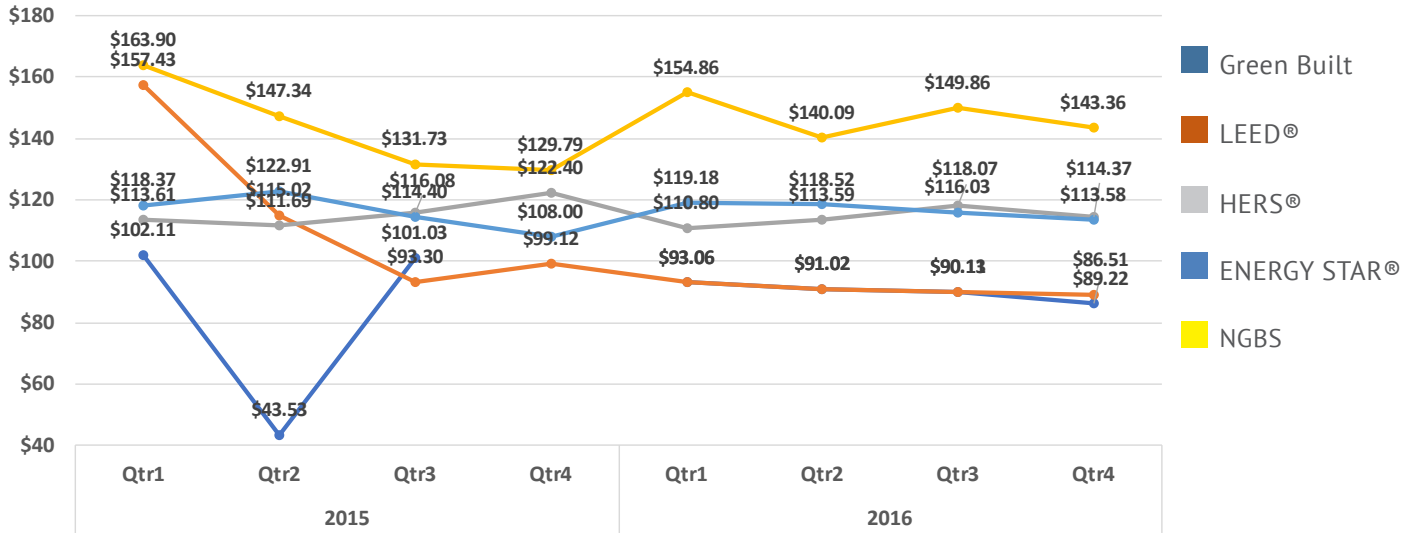
2015 - 2016 Average Sale Price per Square Foot by NC Metro Area



Graph 37 illustrates average sale price per square foot by program for the 3,908 high performance homes. NGBS carries the highest average of all programs over the two year period. ENERGY STAR® and HERS® Index Score show relatively consistent averages across the two year period, indicating consistent market recognition and usage of these programs. LEED® averages decrease sharply at the start of 2015 and decline steadily over 2016. As mentioned earlier, most LEED® homes in this study are from low-income housing programs. Green Built NC® shows sporadic data over time because only 12 home sales are included over the two year period.

GRAPH 37

2015 - 2016 Average Sales Price per Square Foot by Program

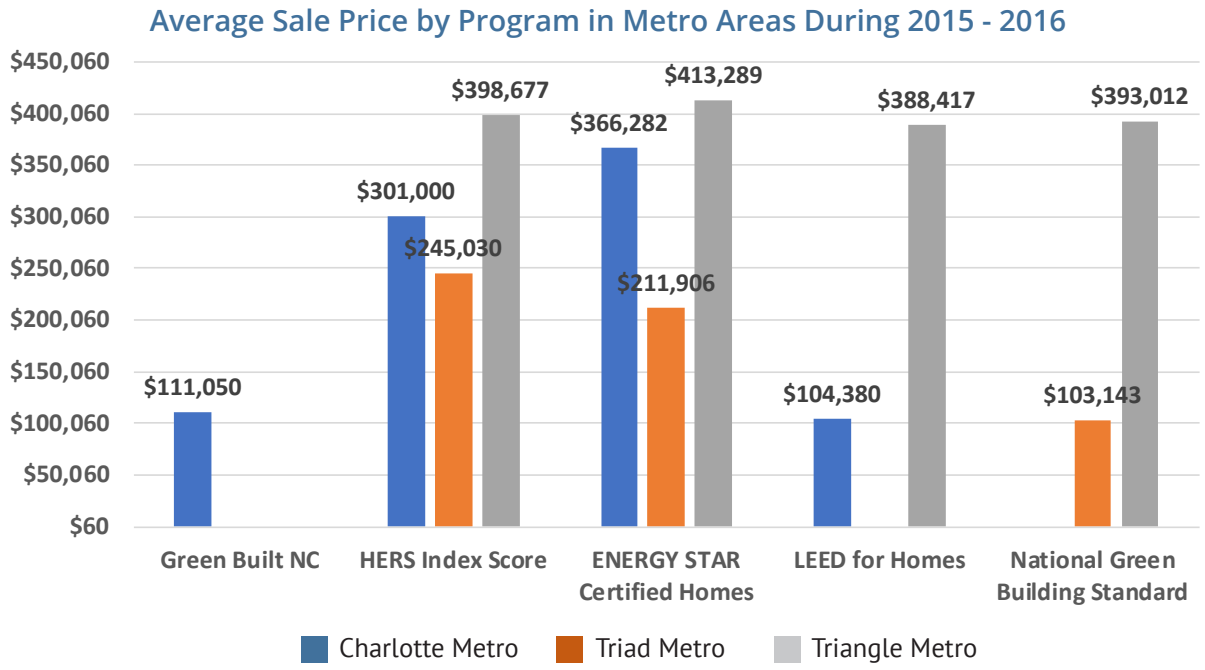


Sale Price and Square Footage by Program by Metro Area

Graphs 38 and 39 provide more detailed information by incorporating program data, where available.

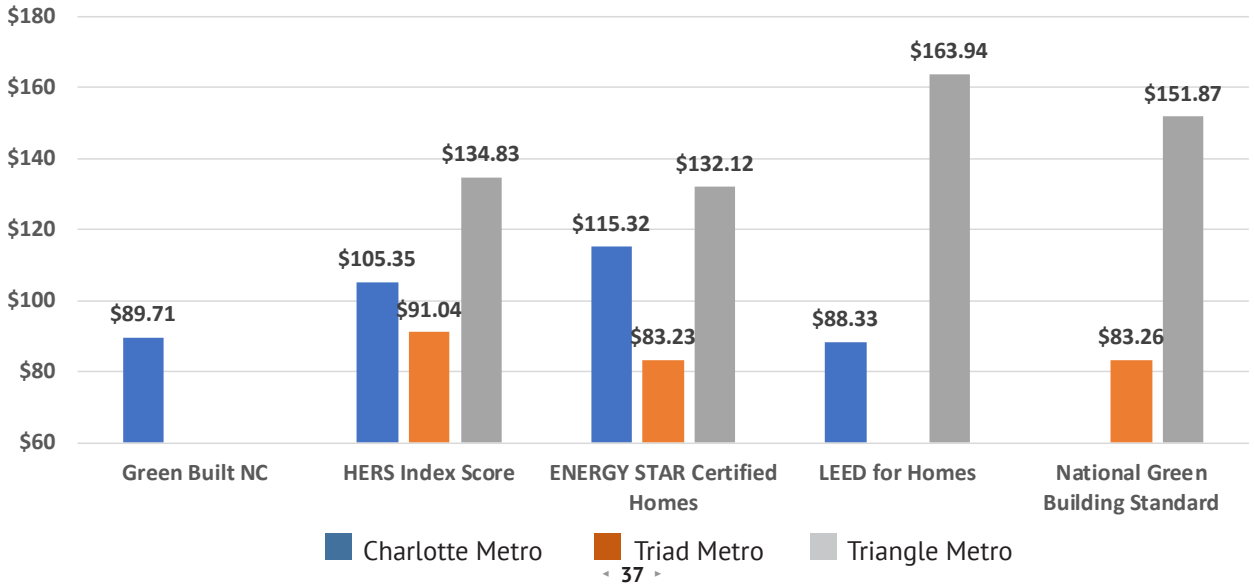
- NGBS and LEED®, well-known, national, green building certification progams, both show dramatic differences in the average sale price of certified homes in the two markets represented.
- NGBS showed no home sales in the Charlotte market data set.
- ENERGY STAR® and HERS® Index Scores, the two most commonly-used programs in the state, achieve higher values in each market.

GRAPH 38



- LEED® certified homes in the Triangle market have the highest average sale price per square foot in the study.
- NGBS certified homes in the Triad and Triangle markets show vast differences in price per square foot, presumably due to local market conditions.
- Both ENERGY STAR® and HERS® Index Scores are popular in all three markets, with the Triangle having the highest average sale price per square foot in all markets.

GRAPH 39



Sale Price and Square Footage by HERS® Index Score Range by Metro Area

Table 4 presents an analysis of HERS® Index Score ranges to average sale prices and average square footage per metro area. HERS® Index Scores are the foundation of many programs used in North Carolina and are used in this analysis to compare sale prices and sqaure footage by a common high performance metric. Only three homes scored below (better) or above (worse) these ranges and were not included in this analysis.

In summary:

- There is strong correlation between lower HERS® Index Scores and higher total sale price and price per square foot.
- The Charlotte market has the highest number of high performance home sales of all the metro areas (2,034 homes).
- Only 22 of the 3,829 home sales analyzed (0.6%) received a HERS® Index Score in the 40 - 49 range, and 40 received a HERS® Index Score in the 80 - 89 range.
- Of the homes analyzed, 2,091 have a HERS® Index Score between 60 - 69. This is the highest number of home sales in a HERS® Index Score range in all of the metro areas combined.

TABLE 4

Sale Price and Square Footage by HERS® Index Score Range by Metro Area

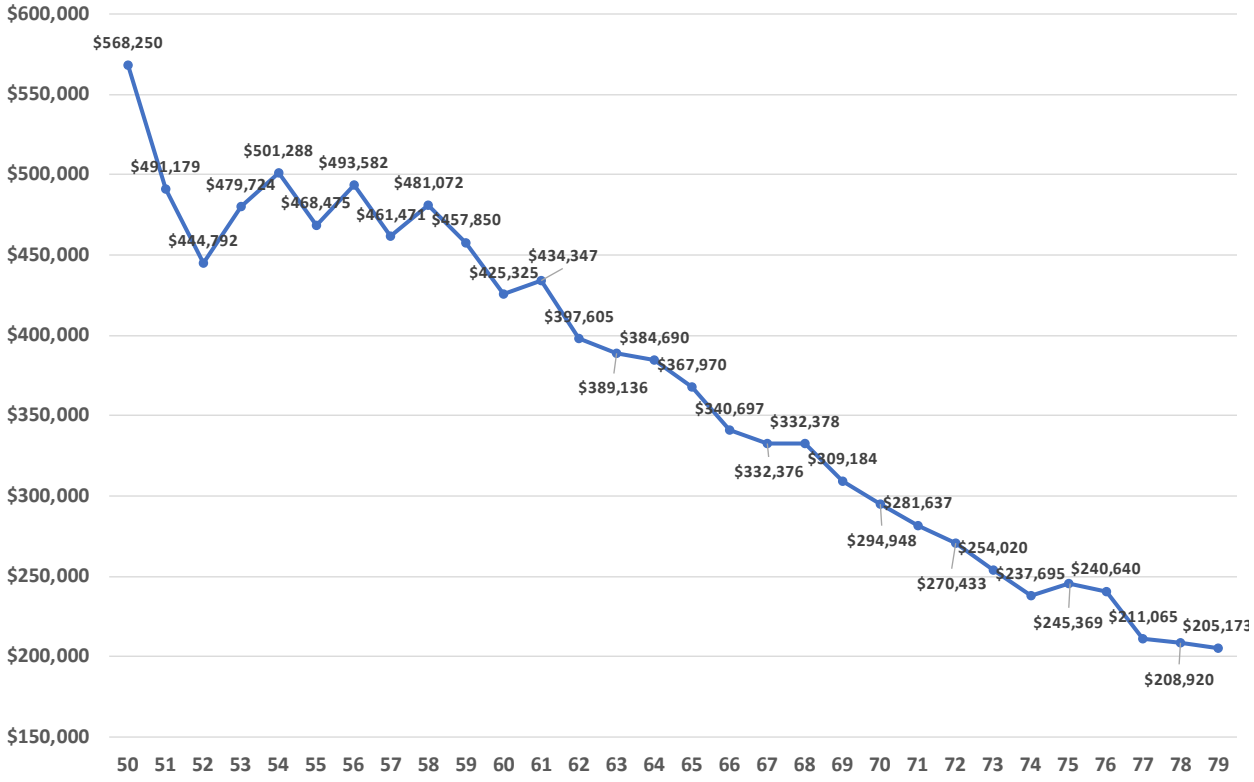
HERS® Index Score Range	40 – 49	50 – 59	60 – 69	70 – 79	80 - 89
Charlotte *2,034 homes*	**$614,873** *3,805 sq ft* ***$153.02 per sq ft*** **2 homes**	**$517,384** *3,775 sq ft* ***$132.98 per sq ft*** **73 homes**	**$349,833** *3,175 sq ft* ***$109.63 per sq ft*** **1,320 homes**	**$255,230** *2,409 sq ft* ***$105.94 per sq ft*** **623 homes**	**$231,063** *2,165 sq ft* ***$105.30 per sq ft*** **16 homes**
Triad *506 homes*	**$731,000** *4,498 sq ft* ***$162.52 per sq ft*** **1 home**	**$450,650** *3,384 sq ft* ***$130.25 per sq ft*** **10 homes**	**$282,864** *2,894 sq ft* ***$96.42 per sq ft*** **120 homes**	**$218,786** *2,558 sq ft* ***$85.89 per sq ft*** **360 homes**	**$177,500** *1,939 sq ft* ***$92.54 per sq ft*** **15 homes**
Triangle *1,289 homes*	**$439,237** *2,811 sq ft* ***$157.96 per sq ft*** **19 homes**	**$465,188** *3,340 sq ft* ***$139.11 per sq ft*** **348 homes**	**$400,544** *3,028sq ft* ***$132.01 per sq ft*** **651 homes**	**$321,915** *2,425 sq ft* ***$133.41 per sq ft*** **262 homes**	**$224,000** *1,613 sq ft* ***$141.72 per sq ft*** **9 homes**
All Metro Areas *3,829 homes*	**$468,466** *2,978 sq ft* ***$157.72 per sq ft*** **22 homes**	**$473,691** *3,415 sq ft* ***$137.86 per sq ft*** **431 homes**	**$361,778** *3,114 sq ft* ***$115.80 per sq ft*** **2,091 homes**	**$258,725** *2,455 sq ft* ***$105.93 per sq ft*** **1,245 homes**	**$209,388** *1,956 sq ft* ***$108.71 per sq ft*** **40 homes**

Average Sale Price per HERS® Index Score in 50 - 79 Range for All Metro Areas

Graphs 40 and 41 highlight the average sale price and price per square foot for homes sold in all metro areas that fall within HERS® Index Score range of 50 to 79. These graphs illustrate how the sale price and price per square foot generally decrease as HERS® Index Scores increase.

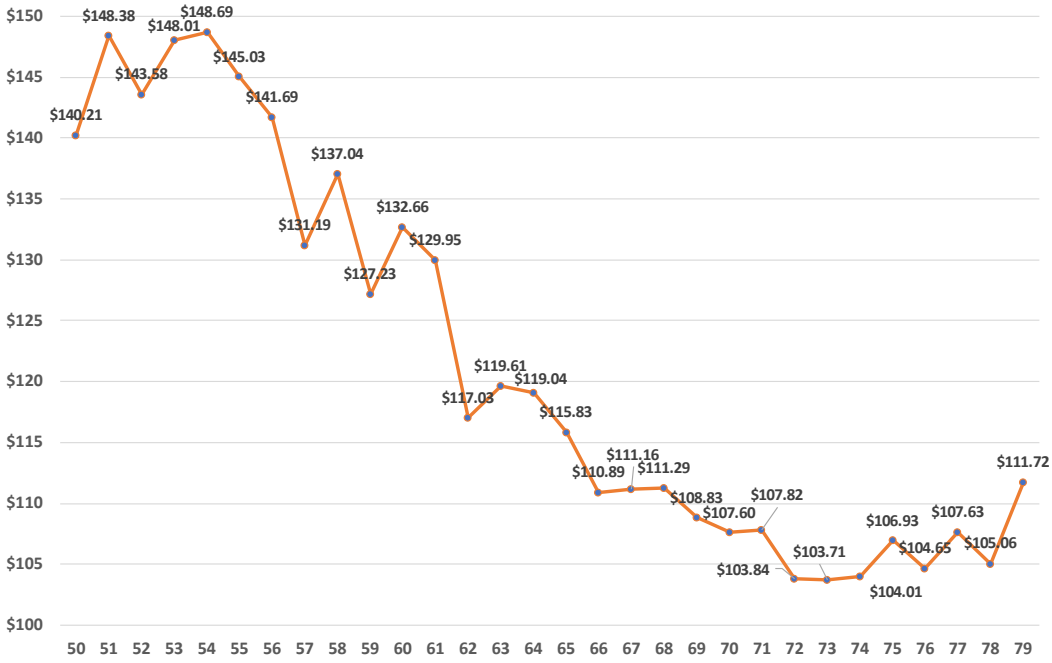
GRAPH 40

Average Sale Price per HERS® Index Score in 50 - 79 Range for All Metro Areas



GRAPH 41

Average Sale Price per Square Foot per HERS® Index Score in 50 - 79 Range for All Metro Areas



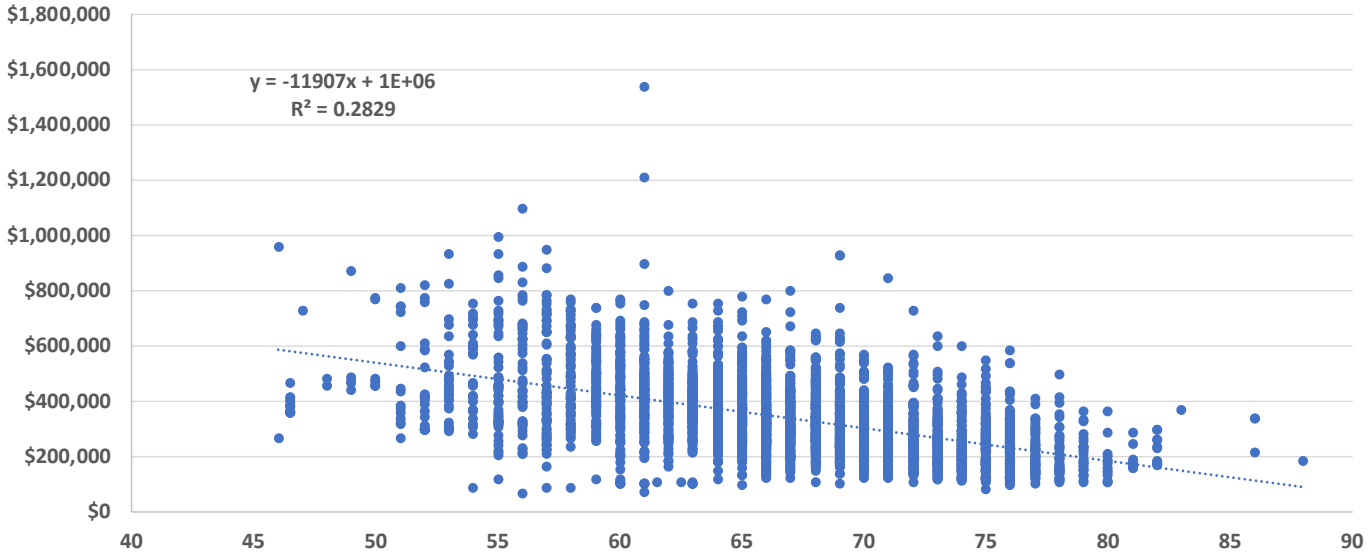
Sale Price and Square Footage by HERS® Index Score Range by Metro Area

Graphs 42 - 49 illustrate the implicit values of HERS® Index Scores by metro market.

Graph 42: Sale Price vs. HERS®Index Score in All Metro Areas (3,829 Homes)

R-squared of ~28% (somewhat reliable)

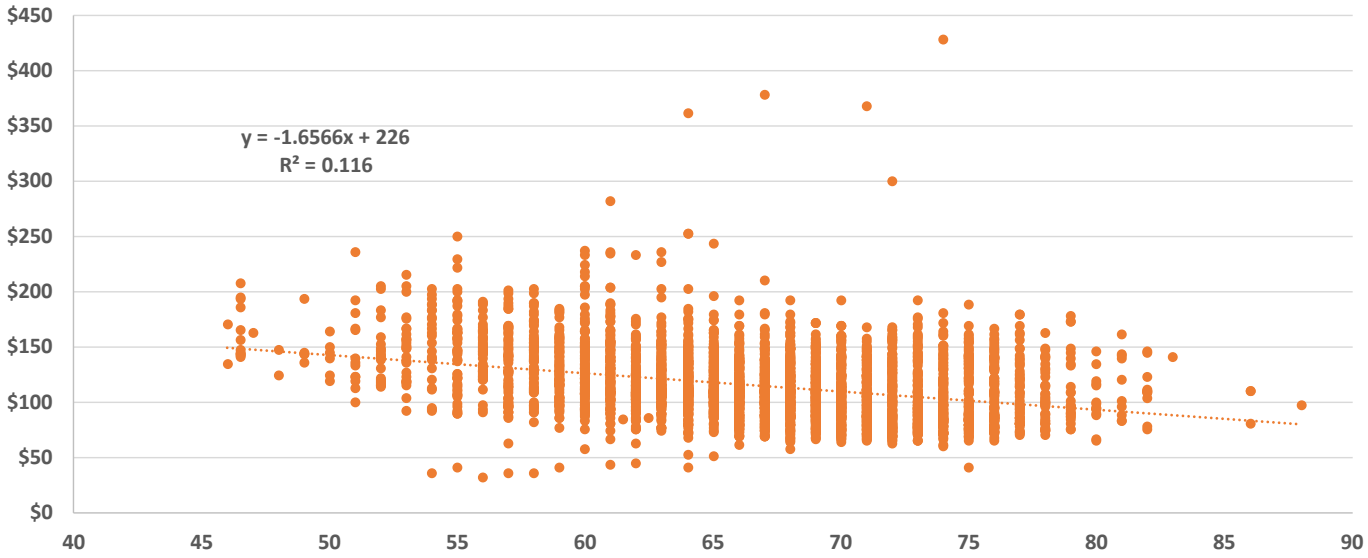
- Average sale price: $339,889
- Median sale price: $321,500
- Average HERS®: 66.85
- Median HERS®: 67



Graph 43: Sale Price per Square Foot vs. HERS® Index Score in All Metro Areas

R-squared of ~12% (not very reliable)

- Average sale price per square foot: $115.21
- Median sale price per square foot: $110.53



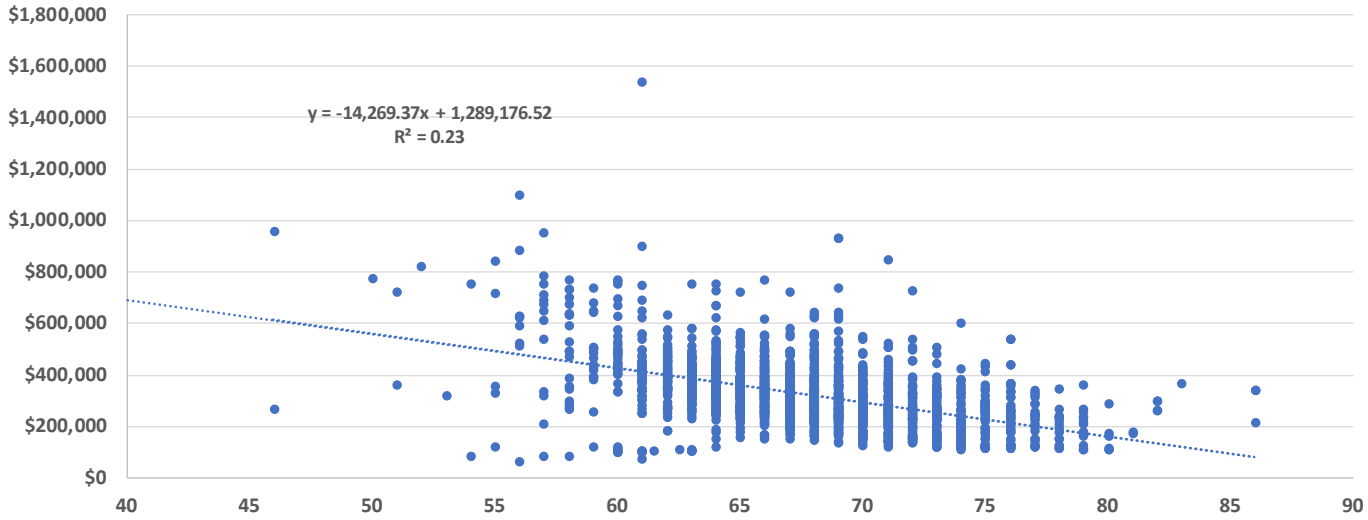
VALUE DEFINITIONS:

- *Y = Formula for "Line of Best Fit". Using this formula, it is possible to calculate an assumed Y value (sale price) of a given X value (HERS® Index Score) even if a data point is not collected or show on the chart.*
- *R-squared = Explained variation / Total variation. 0% (0.00) indicates that the linear regression line explains none of the variability of the data points shown around its mean. 100% (1.00) indicates that the line explains all the variability of the data points shown around its mean. In general, the higher the R-squared, the better the line represents the data.*

Graph 44: Sale Price vs. HERS® Index Score in Charlotte Metro (2,034 Homes)

R-squared of ~23% (somewhat reliable)

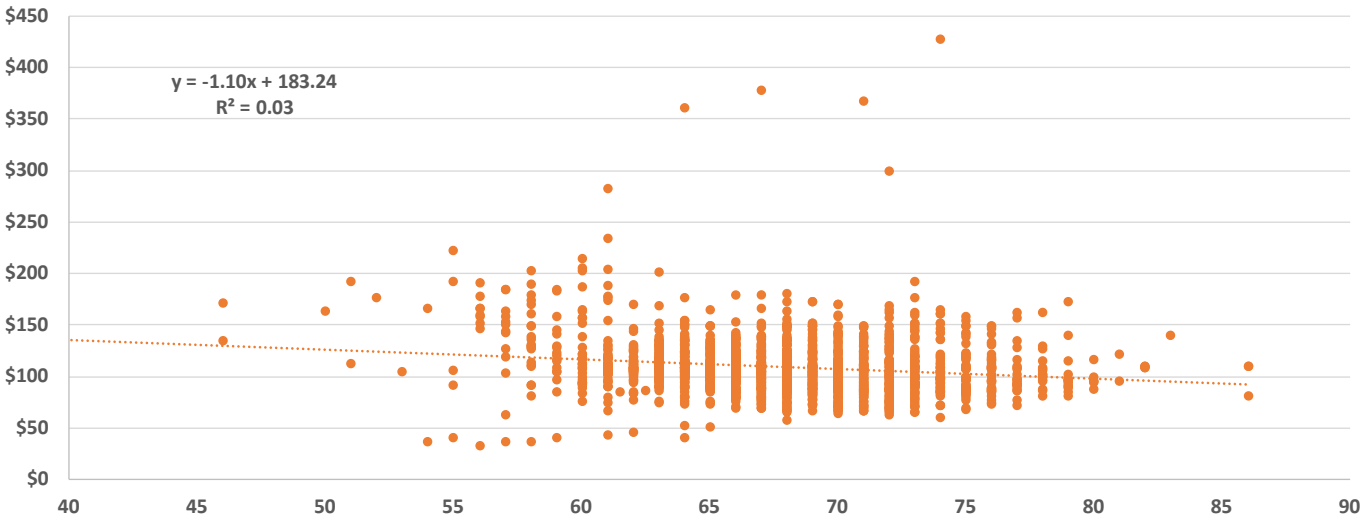
- Average sale price: $326,197
- Median sale price: $316,000
- Average HERS®: 67.61
- Median HERS®: 67



Graph 45: Sale Price per Square Foot vs. HERS® Index Score in Charlotte Metro

R-squared of ~3% (not reliable)

- Average sale price per square foot: $109.35
- Median sale price per square foot: $108.35



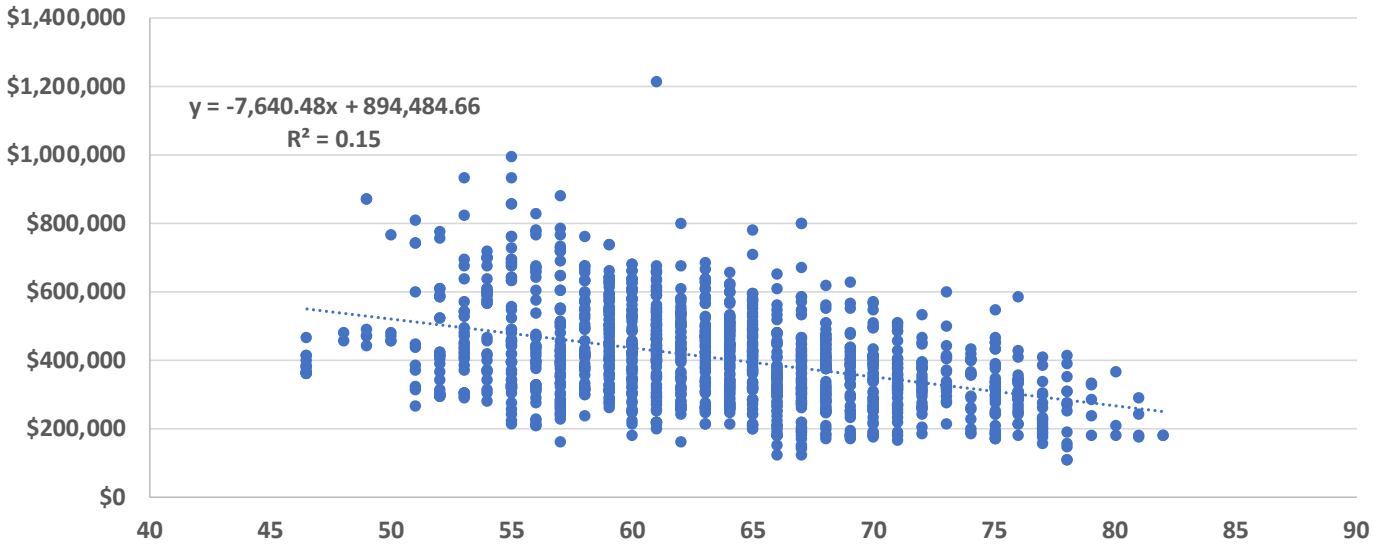
VALUE DEFINITIONS:

- *Y = Formula for "Line of Best Fit". Using this formula, it is possible to calculate an assumed Y value (sale price) of a given X value (HERS® Index Score) even if a data point is not collected or show on the chart.*
- *R-squared = Explained variation / Total variation. 0% (0.00) indicates that the linear regression line explains none of the variability of the data points shown around its mean. 100% (1.00) indicates that the line explains all the variability of the data points shown around its mean. In general, the higher the R-squared, the better the line represents the data.*

Graph 46: Sale Price vs. HERS® Index Score in Triangle Metro (1,289 Homes)

R-squared of ~15% (somewhat reliable)

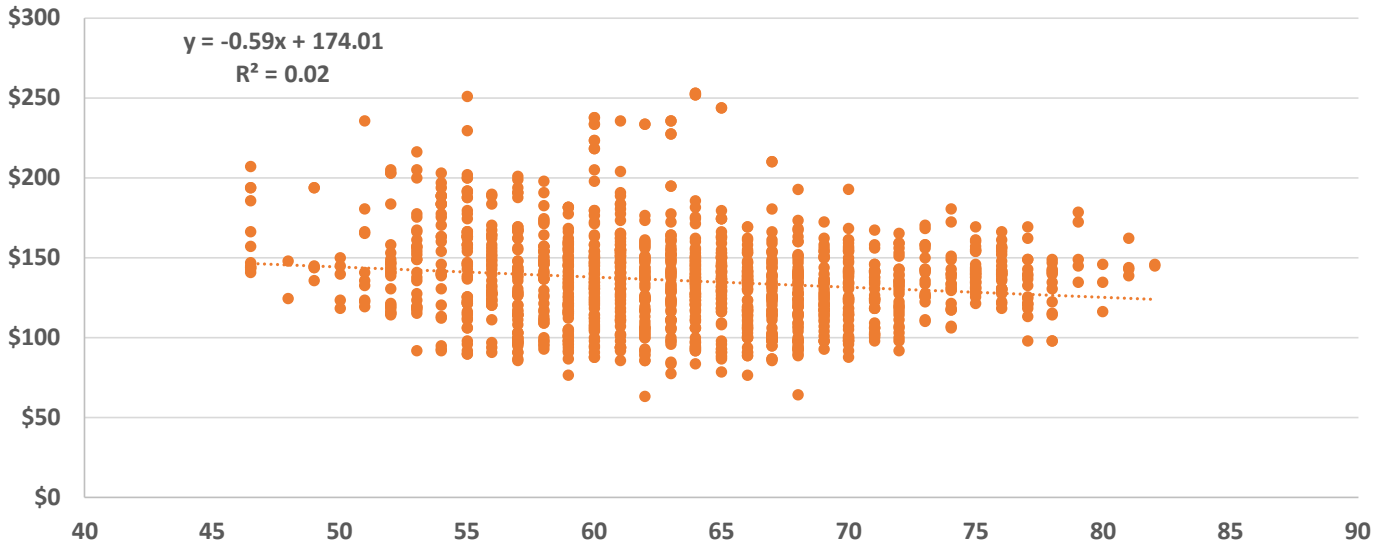
- Average sale price: $407,552
- Median sale price: $395,000
- Average HERS®: 63.51
- Median HERS®: 63



Graph 47: Sale Price per Square Foot vs. HERS® Index Score in Triangle Metro

R-squared of ~2% (not reliable)

- Average sale price per square foot: $152.99
- Median sale price per square foot: $144.36



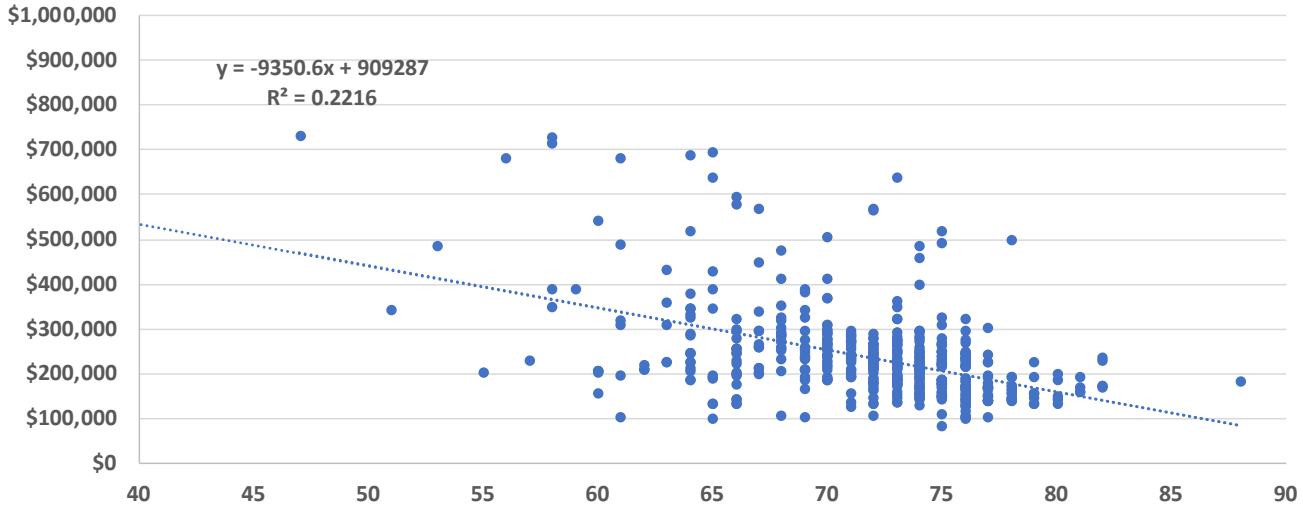
VALUE DEFINITIONS:

- *Y = Formula for "Line of Best Fit". Using this formula, it is possible to calculate an assumed Y value (sale price) of a given X value (HERS® Index Score) even if a data point is not collected or show on the chart.*
- *R-squared = Explained variation / Total variation. 0% (0.00) indicates that the linear regression line explains none of the variability of the data points shown around its mean. 100% (1.00) indicates that the line explains all the variability of the data points shown around its mean. In general, the higher the R-squared, the better the line represents the data.*

Graph 48: Sale Price vs. HERS® Index Score in Triad Metro (506 Homes)

R-squared of ~22% (somewhat reliable)

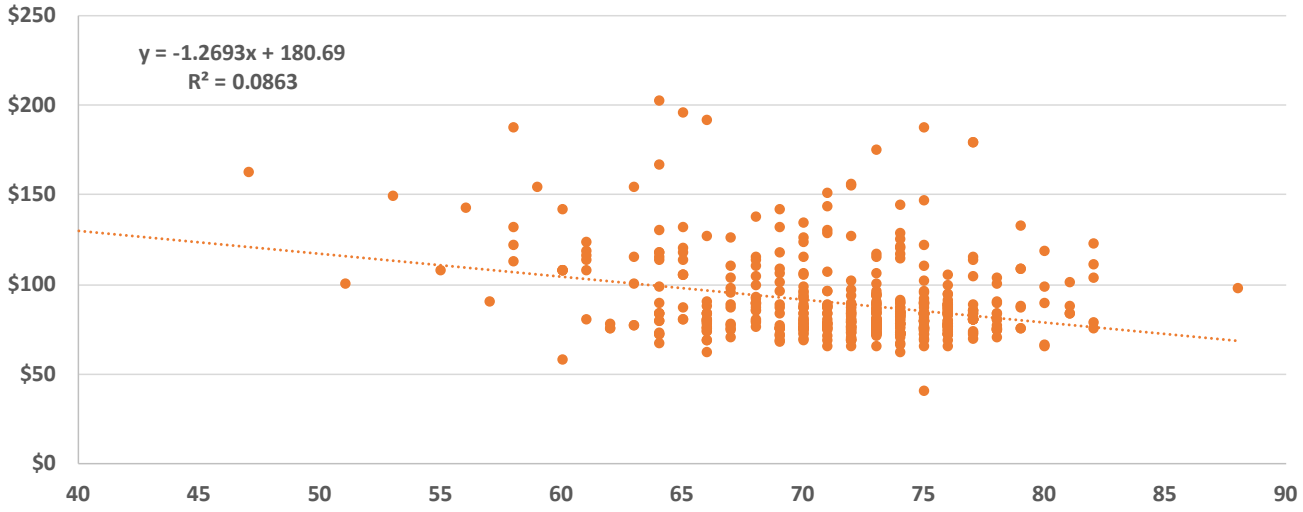
- Average sale price: $238,353
- Average HERS®: 71.53
- Median sale price: $220,500
- Median HERS®: 73



Graph 49: Sale Price per Square Foot vs. HERS® Index Score in Triad Metro

R-squared of ~9% (not very reliable)

- Average sale price per square foot: $89.62
- Median sale price per square foot: $83.70



VALUE DEFINITIONS:

- *Y = Formula for "Line of Best Fit". Using this formula, it is possible to calculate an assumed Y value (sale price) of a given X value (HERS® Index Score) even if a data point is not collected or show on the chart.*
- *R-squared = Explained variation / Total variation. 0% (0.00) indicates that the linear regression line explains none of the variability of the data points shown around its mean. 100% (1.00) indicates that the line explains all the variability of the data points shown around its mean. In general, the higher the R-squared, the better the line represents the data.*

Conclusions and Key Findings

This analysis provides evidence that, on average, builders and owners of energy efficicient, green and high performance homes in North Carolina's Charlotte, Triad and Triangle metro areas receive higher sale prices than other homes. Certification and rating programs including NGBS and the HERS® Index Score can serve as starting points for quantifying this added value.

Key findings from the study include:

- NGBS certification has the highest sale price per square foot at $143.44, followed by LEED® at $116.68.
- Homes with ENERGY STAR® certifications and HERS® Index Scores hold comparable average sale prices in each of the three metro markets, indicating strong market acceptance for each program.
- High performance homes average 4.3% more square footage and sell for 9.5% more across the three metro areas combined.
- High performance homes in the Triangle market have the largest average size of the metro areas at 2,962 square feet, 14.4% larger than the average for all homes.
- High performance homes in the Triangle market have the highest average sale price of the metro areas at $400,989, a 22.0% increase over all homes in all the metro areas at $328,723.
- NGBS homes sold at a higher price in the Triangle market than in the Triad market. LEED® homes sold at a higher price in the Triangle market than in the Charlotte market. The variation in sales illustrate how the value of energy and green certifications differ across local markets and various housing types.
- Most of the energy, green and high performance certification programs included in this study utilize HERS® Index Scores as a compliance path. A HERS® Index Score is a potential starting point to obtaining higher sale prices for high performance homes.
- NCBPA was unable to distinguish between a reported HERS® Index Score of zero and a zero used to indicate that no HERS® Index Score was given; therefore HERS® Index Scores of zero were not included in this analysis. The variation in the input of this MLS feature is an indicator that more education and understanding of the HERS® Index and what a HERS® Index Score of zero means is needed among the residential building industry.
- The average HERS® Index Score for homes included in the study was 67.82 compared to the state average of 66 in 2016 and 67 in 2015 (RESNET®).

MARKET DEVELOPMENT NEEDS & SOLUTIONS

NCBPA's 2016 report concluded with a list of 20 market development needs and solutions that can, and in some cases are, being used to grow North Carolina's market for high performance homes and buildings. This work led to NCBPA's involvement in a variety of "Green MLS" initiatives, primarily in the residential market, that have helped to further define market barriers and opportunities. In the more than 12 months since the prior report was released, NCBPA staff, members and partners have participated in a variety of local, state, regional and national conferences, webinars and meetings on the topics included in this list.

This 2017 report concludes with these same 20 market development needs and solutions with updates on what NCBPA and others have done and are doing to improve the market in North Carolina. While the residential market is the primary focus for this 2017 report, the commercial market will be highlighted in the 2018 report. Steps that industry companies and advocates can take to improve their businesses and local markets are also included.

S1 IMPROVE CONSUMER EDUCATION RESOURCES

Need:

Residential owners and operators need easily accessible, free and trustworthy resources that educate them on how and why to participate in energy efficient, green and high performance construction.

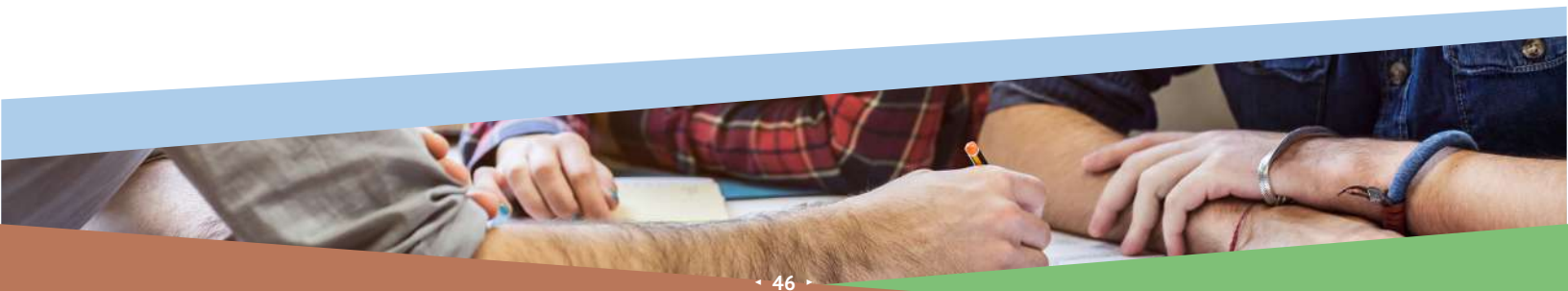
Solution(s):

- NCBPA continues to expand its residential consumer education website www.HomeEnergyNC.org that now includes information on renewable energy, energy storage and green building. A frequently asked questions tab has been added to address consumer questions on crawlspaces, energy audits, HVAC, insulation and more. NCBPA is planning a re-release of the upgraded site in April of 2018 that will include social media and consumer education campaigns across the state.

- NCBPA worked with the Duke Carbon Offsets Initiative at Duke University to establish a home energy efficiency workshop now available to the general public and companies interested in providing home energy efficiency education to their employees as a workplace benefit. The workshop is one to four hours long, led by NCBPA staff and includes hands-on demonstrations and group activities in a classroom environment. More information can be found on www.HomeEnergyNC.org under the Employer section.

- NCBPA has received positive feedback from MLS directories, home builders associations, real estate associations and appraisers on its plans to include a "Click here for more information on green features" link on MLS directories across the state. NCBPA hopes to implement this feature in at least one MLS directory in 2018.

- NCBPA has been developing a consumer education website for owners and operators of commercial and industrial buildings since May of 2017. The website will launch in Q2 of 2018 as a free role-based online resource for restaurants, offices, public buildings and many others to learn about the value of high performance construction.



S2 BUILD SUPPORT AMONGST KEY STAKEHOLDERS

Need:

Local, state, regional and national stakeholders involved in energy efficient, green and high performance construction lack coordination and collaboration in advancing market development efforts particularly between new and existing construction and residential and commercial construction.

Solution(s):

- NCBPA continues to lead efforts in North Carolina to gain support for "Green MLS" efforts from local, regional and state trade associations for home builders, realtors, appraisers and MLS directories. Association staff frequently meet with and present to local members of these groups to gain their support. Beginning in March of 2018, NCBPA staff will present the results of these findings to local groups to educate them about their markets and what steps they can take to move them forward.

- NCBPA has surveyed builders, realtors, appraisers and MLS administrators across the state to learn what barriers they see in the marketplace and develop solutions to overcome them. This work has helped identify key issues that need to be resolved including determining how home builders should list new homes on MLS directories and how green-certified appraisers can advertise their expertise to lenders and builders in their service territories.

- NCBPA has obtained verbal commitments from three of the five metro-area MLS directories in the state to take on the association's recommendations for MLS "greening" and hopes to have this work completed with at least one in 2018.

S3 WORKFORCE DEVELOPMENT

Need:

A shortage of skilled labor for traditional and energy efficient, green and high performance construction exists in local, state, regional and national markets that inhibits continued construction growth. For "Green MLS" efforts, there are just three green-certified appraisers in North Carolina, none of which are actively using their certification in local markets. Realtors and lenders educated in green real estate and lending are similarly not finding opportunities to use these skills and expertise in local markets.

Solution(s):

- NCBPA joined the Health, Safety and Comfort Coalition of North Carolina in early 2017 to work more closely with trade associations and licensing boards serving plumbing, electrical, HVAC and other trades in order to partner on workforce development opportunities.

- NCBPA continues to offer its Job Seekers and Job Board pages on its website to help place industry professionals and staff available positions with industry companies. Additionally, association staff frequently speak to community college and university programs, and offers an internship program of its own throughout the year.

- NCBPA is actively developing certification programs for insulation and crawlspace contractors that should be available in 2018.

- NCBPA is working with partner organizations to offer the right types of training, education and certifications needed by realtors, appraisers and lenders to more actively participate in the market. NCBPA believes that the current five-day training for appraisers should be reviewed and updated to reflect recent market trends that suggest shorter courses with less focus on solar and greater focus on appraisal practices may serve markets better.

S4 RECOGNITION OF TOTAL COST OF OWNERSHIP

Need:

Builders, home buyers and industry stakeholders oftentimes believe the upfront costs of energy efficient, green and high performance construction outweigh the benefits that may be received. A lack of recognition of the total cost of ownership is in place across the market.

Solution(s):

- NCBPA is working with Kerry Langley, a high performance home lender with First Landmark Bank in Atlanta, to pilot a total cost of ownership ("ProjectTCO") software with high performance builders in markets across North Carolina. The software offers visual comparisons of upfront costs vs. long-term and monthly benefits for high performance homes versus others. NCBPA board members and staff have been actively reviewing the software for several months and are seeking out builder participants.

- NCBPA is also targeting municipal efforts to incorporate total cost of ownership, energy efficient construction and rating systems into sustainability and housing plans, as the City of Raleigh has done in its 2030 Comprehensive Plan (Environmental Protection section).

S5 IMPROVE AVAILABILITY OF HOME AND BUILDING CERTIFICATION DATA

Need:

With 42 unique certification and rating programs available in North Carolina alone, improved accessibility, transparency and standardization of program data is needed to grow its use and value in the marketplace.

Solution(s):

- NCBPA continues to advocate for RESNET's implementation of an open data access policy that would allow industry stakeholders and third parties to access rating data for use in MLS integrations.

- NCBPA partner organization Home Innovation Research Labs signed a data sharing agreement with NCBPA partner Pivotal Energy Solutions in late 2016 that provides all NGBS certification data to the cloud-based software for use in MLS integrations.

- Through its annual inventory project, NCBPA educates data sources on the need for greater accessibility, transparency and standardization of program data that encourages policy and data changes that offer improved availability through their programs.

S6 LOCAL REBATE AND INCENTIVE PROGRAMS

Need:

Improved consumer education on available local rebate and incentive programs for energy efficient, green and high performance construction would encourage program participation and the development of new programs across the state.

Solution(s):

- NCBPA's "The Business Case for Energy Efficiency: How Investing in Less Creates More for North Carolina" policy report highlights available programs and provides recommendations to utilities, regulators and policy makers to encourage improvements to existing programs and new programs in local areas. Visit www.BuildingNC.org to download a copy of the report.

- NCBPA is leading advocacy efforts in 2018 to establish more and better local programs with cities and counties across the state.

- The NC Clean Energy Technology Center continues to make improvements to the DSIRE database that houses local, state and netional energy efficiency and renewable energy rebate and incentive programs.

- NCBPA continues to offer support on an as-needed basis to utilities looking to expand or offer rebate and incentive programs in local markets across the state.

S7 INVEST IN NEW TECHNOLOGIES

Need:

Greater industry efforts are needed to bring together certification and rating program data in order to integrate them into the real estate market. Three metro-area MLS directories in North Carolina have explicitly stated that they are not interested in establishing system integrations with individual programs and instead will only work with software providers that aggregate data from multiple programs.

Solution(s):

- NCBPA invested $5,000 in the funding of a cloud-based software program that integrates industry data into MLS directories. A prototype of the software is in final development.

- NCBPA staff and board members have performed several reviews of the ProjectTCO software referred to in S4 and are assisting in the establishment of pilot usage with builders across the state.

- NCBPA continues to advocate for improvements to Green MLS technologies that support market needs defined in this report. One example is RESNET's development of an Appraiser Portal that provides members of the Appraisal Institute with access to rating data for use in appraisal reports.

- NCBPA's nonprofit RESNET Rating Providership program continues to invest in its software platform Axis in order to improve accessibility, transparency and standardization of program data.

S8 INCREASE CONSUMER AND VENDOR ACCESS TO UTILITY USAGE DATA

Need:

In order to improve the transparency and visibility of energy and water usage of North Carolina homes and buildings, greater consumer and third party access to the data is needed.

Solution(s):

- NCBPA is actively participating in efforts to work with North Carolina utilities to establish policies and procedures that provide increased consumer and third party access to utility usage data.

S9 IMPROVE BUILDING AND ENERGY CODE REQUIREMENTS AND OPTIONS

Need:

North Carolina's current residential and commercial building and energy code requirements lack a variety of measures that would offer property owners and managers energy efficient, green and high performance benefits. The state's next 2018 code, going into effect on January 1st of 2019, has been in development since the summer of 2016.

Solution(s):

- NCBPA attended all North Carolina Building Code Council quarterly meetings in 2016 and 2017, has proposed supportive code changes in several meetings and has advocated against roll-backs of energy saving requirements proposed by industry trade groups.

- NCBPA has also advocated for industry supporters to be appointed by the Governor to the Building Code Council.

- NCBPA's "The Business Case for Energy Efficiency" policy report details a variety of code improvement opportunities that the association believes North Carolina regulators, utilities and policy makers should support.

- NCBPA offers energy code workshops to builders, architects, contractors and other stakeholders to assist in their understanding and implementation of the new code requirements.

- NCBPA continues to advocate for code improvements in 2018 that offer North Carolina builders, contractors and consumers cost-effective energy and performance benefits.

S10 CREATE INNOVATIVE FINANCING PROGRAMS

Need:

North Carolina's market for energy efficient, green and high performance homes and buildings could benefit from innovative financing programs that afford builders and developers, home and building owners, contractors and others with improved financing terms and capabilities.

Solution(s):

- NCBPA was nearly successful in passing its Commercial Property Assessed Capital Expenditures (C-PACE) bill into law during the 2017 session. The association is currently working through its 2018 legislative plan to pass the bill into law, which would allow for municipalities to establish local C-PACE ordinances that would result in this innovative financing program being made available to commercial building and property owners.

- NCBPA continues to monitor Residential PACE financing activity at the federal level that currently prevents the program from moving forward in any new states.

- NCBPA continues to support partner organizations in advocating for the implementation of on-bill financing programs through investor-owned, municipal and electric cooperative utilities.

- NCBPA held a federal lobby day in Washington, DC in September of 2017 to support federal tax incentives and financing programs that support consumers and builders in North Carolina. The association will hold its 2018 lobby day on April 26th.

S11 IMPROVING MARKET VALUATION

Need:

Improving the market valuation of energy efficient, green and high performance homes and buildings in the state is seen as the second greatest need in the marketplace, behind consumer education. If home and building owners, along with builders and contractors, receive a greater financial return for the oftentimes higher upfront costs of these homes and buildings, it is widely believed that market demand would increase significantly.

Solution(s):

- NCBPA invested ten months of work into this report in order to provide hard data and document market solutions to improving market valuation in North Carolina.

- NCBPA is also working with MLS directories and other trade groups to implement the recommendations detailed in this report.

S12 DOCUMENT AND COMMUNICATE FEATURES USING CONSISTENT, DATA-DRIVEN AND STANDARDIZED METHODS

Need:

In part due to the more than 42 certification and rating programs available in North Carolina, it is important to ensure that the builders, contractors, program administrators and other stakeholders involved in the data collection process are following consistent communication methods related to the data used in each of their programs. Doing so minimizes the potential challenges faced by MLS directories to accept and manage the industry data provided to their systems.

Solution(s):

- NCBPA's RESNET Providership software partner Pivotal Energy Solutions achieved RESO compliance for its Axis software in 2017, an industry standard for real estate software systems. The software has also been built to comply with the residential retrofit industry's HPXML data standardization protocol.

- NCBPA plans to pilot its recommended data and communication procedures with local green and high performance building councils across the state in 2018 to learn how local markets can best implement Green MLS best practices whether or not data integrations are available. A variety of steps including usage of the Appraisal Addendum, requesting a certified green appraiser and many others can be piloted to identify and work through local market barriers.

S13 PROVIDE VISIBILITY AND TRACKING OF INVENTORIES

Need:

Greater visibility and tracking of the quantity, locations and characteristics of energy efficient, green and high performance homes and buildings are needed to properly assess their value in the marketplace.

Solution(s):

- NCBPA believes that this study is a good starting point to promote discussion on how and why increased visibility and tracking of inventories supports market development. The association has used this study to promote improvement opportunities in local, state, regional and national markets that offer immediate and long-term solutions for continued market development. As a result, partner organizations are interested in replicating the study in other markets, bringing more attention to North Carolina's market for high performance homes and buildings.

S14 OFFER FOCUSED CONTINUING EDUCATION OPPORTUNITIES

Need:

Continuing education opportunities are needed for builders, realtors, appraisers and lenders to support the topics included in this report. Because North Carolina builders have no continuing education requirements, offering classroom workshops is a challenging approach to accomplishing these goals. Current educational courses on these topics available to realtors, appraisers and lenders are lengthy and offered inconsistently.

Solution(s):

- NCBPA presented on the Green MLS topic many times in 2017 via webinar, conferences and in-person meetings to key stakeholder groups. The association continues this work in 2018.

- NCBPA is currently working with local and state trade organizations to outline continuing education workshops that provide the right level of education on these topics to stakeholder groups.

- NCBPA believes that the current five-day training for appraisers should be reviewed and updated to reflect recent market trends that suggest shorter courses with less focus on solar and greater focus on appraisal practices may serve markets better.

S15 GREEN NORTH CAROLINA'S MLS DIRECTORIES

Need:

Roughly 35 MLS directories exist in North Carolina, most of which use proprietary software systems. In order to "green" them, MLS directory staff must understand the opportunities these efforts offer them and convey them effectively to their boards in order to gain approval to implement the enhancements (more green fields, auto-population, etc.). If one local MLS chooses to implement the green enhancements, other local MLS directories in the state that use the same software program will have the ability to enable those same features.

Solution(s):

- NCBPA staff have been actively meeting with MLS directories in each of the state's five metro markets and have obtained verbal approval from staff at three of the systems that they would request approval of their boards to move these initiatives forward. As of March of 2018, these efforts are still underway and board approval has not been provided by any MLS directories.

- A scope of work is provided in the Appendix of this report that can be used to "green" individual MLS directories.

S16 INCORPORATE DATA INTO SALES AND APPRAISAL PROCESS

Need:

North Carolina appraisers are only able to attribute additional appraised value to energy efficient, green and high performance homes and buildings if valid comparables are available in local markets. For sales and purchase transactions, this same data is needed in order to support increased sales and purchase prices for these homes and buildings as well. Unfortunately, North Carolina as a whole lacks many of the necessary policies, procedures, resources and infrastructure that would provide this data. However, solutions are available for each of these needs.

Solution(s):

- NCBPA is working with partner organizations to auto-populate industry data dating back to 2007 into MLS directories that would automatically populate certification, verification, rating and feature data for homes listed in MLS directories. Doing so eliminates the need for realtors to post this information in listings manually, which is a known obstacle for both new and existing home listings.

- Listing new construction homes in the MLS overnight is a procedure that can be used to ensure that the sales of energy efficient, green and high performance homes are recorded in the MLS (in many cases this does not happen) if only for the reason of being used as comparables for similar homes built and sold in the future. Over time, these historical listings will establish a comparables market that can be used by realtors and appraisers.

During our research on this topic, NCBPA received feedback from a Durham, NC-based high performance builder that sees an issue with this procedure that warrants consideration. Randy Lanou of BuildSense states that:

"BuildSense builds well-crafted and sustainable design-build projects in the Triangle that exceed National Green Building Standard™, ENERGY STAR® and other certification program requirements. While our future clients would benefit from greater visibility of the added financial value of these high performance homes – through more accurate and higher appraised values – the individuals contracting with us to design and build their homes often prefer to keep the details of the agreements to buy land and to build their homes private. Most of our clients would not agree to briefly listing their homes on the MLS for this reason."

S17 DEVELOP AUTOMATED SYSTEMS INTEGRATIONS

Need:

Most of North Carolina's 35 or more MLS directories operate independent software systems that will take years to integrate on a case-by-case basis. Accordingly, a focus on the common systems – those that use national MLS software platforms – would yield the best results.

Solution(s):

- NCBPA's ongoing MLS integration efforts focus on local MLS directories that each use a different national software platform. By focusing on these software programs, it may be possible to "green" 80% of North Carolina's MLS market through these systems alone. Doing so would make these same enhancements available to all other users of these national MLS software systems across the country, effectively "greening" 40% of the national market.

- NCBPA continues to support efforts by Pivotal Energy Solutions to build-out the company's cloud-based software program that is capable of integrating with each of the national software programs used by North Carolina's metro-area MLS directories.

S18 ENSURE SELECTION OF QUALIFIED APPRAISERS

Need:

There are only three certified green appraisers in the state of North Carolina that have taken and passed the Appraisal Institute's five-day certification workshop. While builders, realtors, owners and lenders should request a green-certified appraiser on qualified homes and buildings, the limited number of certified appraisers prevents any tangible market impact from these appraisals from happening. One green appraiser serving the Asheville market, North Carolina's most densely saturated market for green construction, has not been asked for a green appraisal in their first six months with the certification.

Solution(s):

- Realtors, builders, owners and lenders need to be educated on the opportunity to formally request a certified green appraiser and dismiss appraisers that demonstrate a lack of expertise in properly valuing green features. NCBPA is working with partner organizations to offer training and communications to address this need.

- The current five-day certification workshop offered by the Appraisal Institute is seen as a barrier to establishing more certified appraisers in the state. NCBPA and many of its members believe that a less time consuming and costly training would better serve the market.

- NCBPA is working with local partners to implement pilot programs that would increase the usage of the Appraisal Institute's "Green Addendum" and promote requests of certified appraisers while also dismissing unqualified appraisers.

NORTH CAROLINA'S THREE GREEN-CERTIFIED APPRAISERS

https://www.appraisalinstitute.org/education/education-resources/green-building-resources/

Miles Hamrick Appraisal Services, Inc.	Fidelity Valuation Partners	JW Appraisal Services
Miles Hamrick 188 Double Oaks Road Gastonia NC 28056 *miles@mileshamrick.com*	**Charles H. Henderson, MAI** 401 Hawthorne Ln Suite 110-141 Charlotte NC 28204 *chenderson@fidelityvaluations.com*	**Janice E. Whitson Waycaster** 3724 A Sugar Hill Rd Marion NC 28752 *jwappraisalservices@gmail.com*

S19 ENGAGE LENDING COMMUNITY

Need:

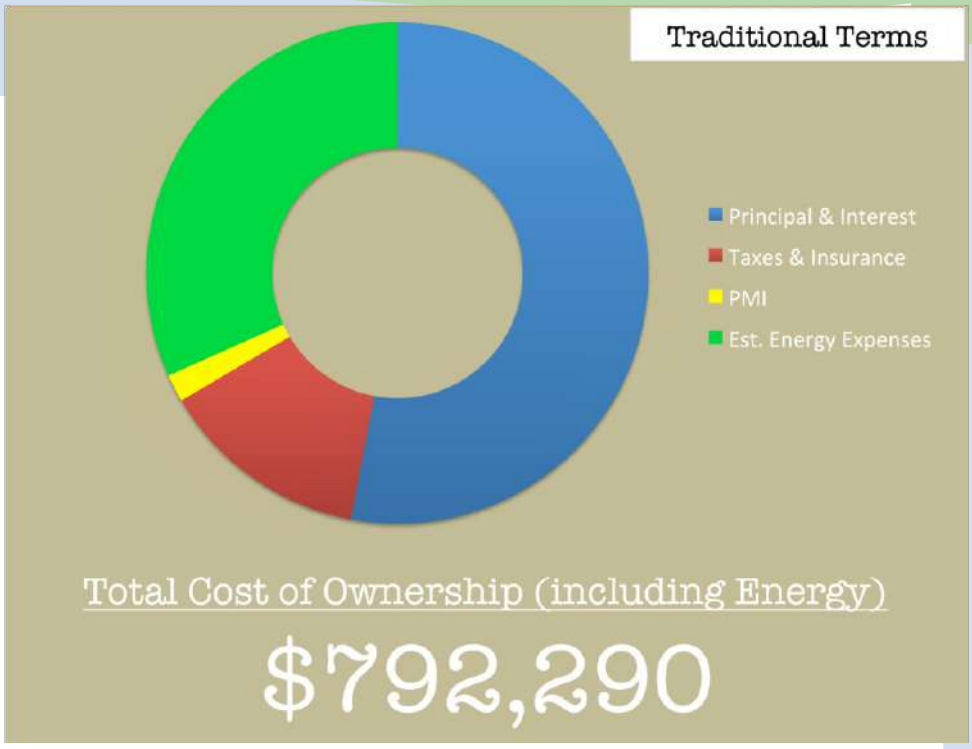
Many residential lenders are unwilling and unable to incorporate the added financial benefits of high performance homes in the lending terms of their buyers. For builders seeking to build and sell high performance homes, having favorable financing terms for their prospective buyers and accurate appraisals can result in tens of thousands of dollars in additional profit or cost savings. For home buyers, optimized financing strategies can be made available due to the mortgagee's improved ability to afford and pay the monthly mortgage because the homes have lower operating expenses (utility bills) and reduced maintenance expenses.

Solution(s):

Kerry Langley, Founder of TCO Consulting, LLC in Atlanta, is a mortgage lender dedicated to helping builders and home buyers obtain financing developed specifically for high performance homes. Over the last few years, Kerry, leaning on his successful thirty-year lending career, has developed a proprietary set of software tools specifically to address the afore mentioned financial obstacles. These tools, collectively referred to as **ProjectTCO™**, have been developed as enhancements to "off the shelf" mortgage solutions and are readily available to homeowners today exclusively from Kerry's team of "high performance lenders" at First Landmark Bank (headquartered in Atlanta, expanding nationwide).

PROJECT TCO

Project TCO is a national initiative that has been developed to help every American family reduce the total cost of owning their homes. We focus the majority of our work on the two largest expenses associated with home ownership ... the monthly mortgage payment and the monthly utility expenses.



Here, Kerry answers NCBPA's questions on how **ProjectTCO™** addresses three major critical challenges faced by new home builders and their potential clients:

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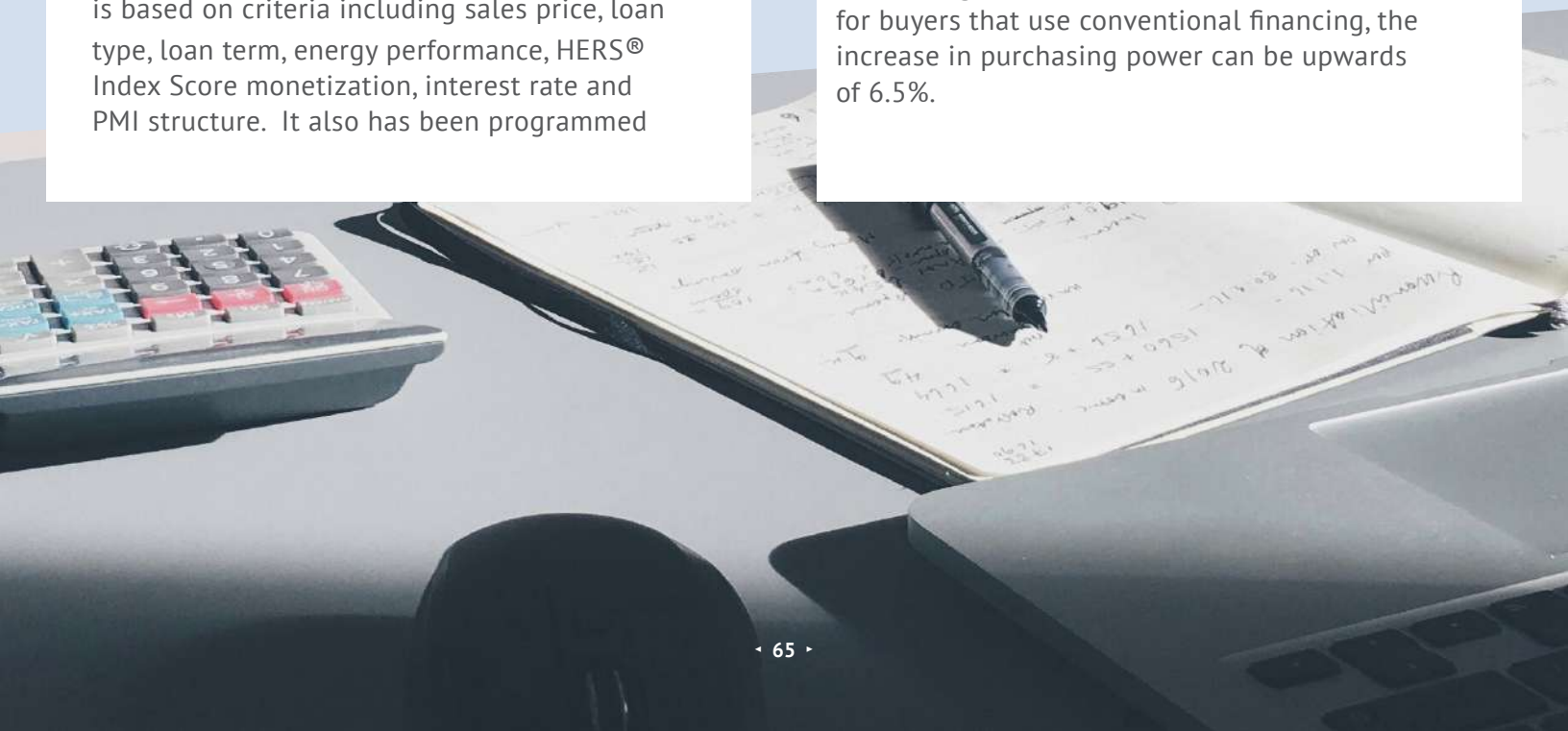
NCBPA: *How does your software help a builder or home buyer determine, and hopefully receive in their financing package, the added financial benefits of, for example, a $400,000 high performance home with a HERS® Index Score of 50 versus a comparable home costing $380,000 with a worse HERS Rating of 75?*

Kerry: ProjectTCO™ was built to accurately model the true value proposition of a high performance home and help builders and home buyers obtain financing that reflects it. Using the High Performance Lending™ software, we develop house by house and project by project financing models and marketing templates. This tool incorporates data from HERS® Index Scores and other certification/verification programs, and using them, we develop customized financial illustrations that compare the "total cost of ownership" (TCO) of a specifically identified high performance home to a non-high performance comparable, either resale or new construction. The software effectively compares and contrasts the total cost of owning up to four homes simultaneously and is based on criteria including sales price, loan type, loan term, energy performance, HERS® Index Score monetization, interest rate and PMI structure. It also has been programmed to include the impact on TCO of added features/criteria like solar PV, high speed EV chargers, water conservation strategies, loan prepayment strategies and commuting expenses. At the end of the day, the software details how the better built home will save the homeowner money and be more valuable in the long-run. The critical piece, that sets apart of teams, is that as a lender, we build financing packages that actually account for those savings and benefits … most lenders don't do.

NCBPA: *Acknowledging that high performance homes can often cost more to build than code-built homes, how can the long-term financial value of a high performance home be shown to offset the higher up-front costs?*

Kerry: The tools utilized included in the ProjectTCO™ program accounts for the added affordability and lasting market value of high performance homes. By combining the data published in the annual NAHB "Priced Out Report" with the "Expand Your Reach" software module of the ProjectTCO™ program, we work with builders on both a macro and micro level (drilled down to house by house) to help them capitalize on the power of innovative financing strategies to reach more buyers and sell more homes. For home buyers that use FHA financing, this can potentially expand purchasing power by approximately 5%. And for buyers that use conventional financing, the increase in purchasing power can be upwards of 6.5%.



NCBPA: *Lenders have the power to request qualified "Green" Appraisers to perform an accurate appraisal of high performance homes. How does ProjectTCO™ help you ensure that an accurate value is provided?*

Kerry: Utilizing the proprietary "Support the Value" contract templates and appraisal support business strategies contained in the ProjectTCO™ program, we help builders and home buyers resolve this challenge. Many folks have focused on training appraisers to understand the science behind a high performance home. Our approach is to focus on working with qualified appraisers and provide them with market-based sales data to justify the incremental value. Just over two years ago, we started working with a local Atlanta area builder of EarthCraft Certified homes. By using the innovative strategies contained in our "Support the Value" program - each of the appraisals we have obtained for this builder's buyers have reflected a $10,000 across the board adjustment for the certification alone, and none of these appraisals were challenged by underwriters. We believe that we can replicate this success for high performance homes in markets across the country.

Visit **www.teeceeo.com** for more information on this innovative financing software.

Screenshots from ProjectTCO™ estimating the Monthly Total Cost of Ownership of the same home with different HERS® Index

S20 PILOT IMPROVEMENT PROJECTS WITH LOCAL STAKEHOLDERS

Need:

Local stakeholder organizations including green and high performance building councils, MLS directories and realtor associations can take on local pilots to implement most of the recommendations included in this report. Doing so will help educate local stakeholders on the value of energy efficient, green and high performance homes and buildings while also identifying, and hopefully resolving, local market barriers.

Solution(s):

- The HERS® Index Score, a fundamental program for Green MLS activities, should be used on all homes.
- The Appraisal Institute's "Green Addendum" should be used on all homes.
- "Green" features and certifications should be advertised and marketed in all MLS listings and at all homes.
- Green-certified appraisers should be requested on all appraisals. If an unqualified appraiser is assigned to the appraisal, the requesting party (builder, realtor or homeowner) should dismiss the appraiser and request another of the lender. A form letter from the Appraisal Institute is available for this purpose.
- New construction homes should be listed in the MLS for at least one day to make them available for use in comparables going forward.

APPENDIX

BEST PRACTICES FOR "GREENING" OF MLS DIRECTORIES

To support efforts to "green" MLS directories individually or in groups, NCBPA has developed the following best practices to follow. Additional information and resources are listed in the "Supportive Resources" section below.

STEP 1: Gain necessary buy-in, support and approval to move forward with MLS "Greening" efforts.

- Form a small committee of interested MLS users to work with local realtors, lenders, appraisers and builders to outline the business case and gain support and approval for these efforts.
  - *Perform studies listed below to obtain valuable data to help create the business case.*
  - *Make sure to include a technology/MLS administrator on the committee.*

- Outline the benefits to your MLS and its customers. Benefits may include:
  - *Improving accuracy of MLS data being sourced from credible local, state, regional and national programs.*
    - Auto-population solves known issues of homes with ENERGY STAR® appliances being listed as ENERGY STAR® Certified or homes with no HERS® Index Score being listed with a HERS® Index Score of zero.
  - *Saving realtors time entering data that can be automatically populated.*
    - Square footage, number of bedrooms and other pertinent non-green data can be auto-populated through credible green program sources that collect and record this data.
  - *Improving realtor and consumer education by auto-populating educational information on green features.*
    - Links to more information on what HERS® Index Scores are, the benefits of geothermal systems and other technical information can be provided.
  - *Opportunities to list new construction homes for use in comparables analysis that normally are not listed in MLS directories.*
    - Doing so opens a new revenue stream for MLS directories to list more new homes for comparables purposes only. This should be established at a reduced MLS usage fee and expedited process if only listing partial data overnight for use in future comparables.

- » *Improving your MLS' competitiveness vs. other MLS directories that do not offer green feature or systems integrations capabilities.*
- » *Outline risks and liabilities as part of this assessment.*

- ► Outline resources needed to make the changes and create a scope of work.
  - » *What changes are needed and who will make them? If the MLS directory is a vendor-managed software, what experience do they have in greening efforts with other local MLS providers?*
  - » *How much time, money and system downtime will it cost?*
  - » *Are there other non-green changes or enhancements that could be made at the same time?*
  - » *How will MLS users be notified of the changes?*

- ► Present scope of work to MLS Board of Directors (if needed) and obtain approval to move forward.
- ► Once approved, begin to educate MLS users and key stakeholders about the upcoming changes.
- ► As needed, reach out to state, regional or national stakeholders for support.

STEP2: Add green fields and consumer education information to MLS directory.

- ► Work with the committee to identify specific fields that are wanted or needed in the local market.
- ► Work with MLS software vendor or in-house resources to assess the impacts of specific changes.
- ► Consider adding timestamp fields for rating and program fields that detail when the certification or rating occurred.
  - » *Doing so provides important information on whether or not a HERS® Index Score, certification or other feature is still effective or valid. Some green features may degrade overtime and ratings change based on improvements or degradation of homes.*

- ► Connect MLS directories to webpages with information on "more green features" for further education.
  - » *Many rating systems and programs have educational information – including infographics and videos - listed on their websites*.

- ► Ensure that data fields match standards needed for RESO and HPXML.
- ► Deploy and test new green fields.

STEP 3: Auto-populate green feature data via systems integrations with local, state, regional and national programs and rating systems as sources.

- If you have a software vendor for your MLS system, leverage their existing relationships with data sources (RESNET®, Home Innovation Research Labs, etc.) to begin auto-populating data.
- If needed, establish a relationship with a third party data aggregator (Pivotal Energy Solutions is an example) that can provide aggregate program data to your system.
- Focus on national rating and program systems as well as popular local programs.
- If possible, include advanced features such as the auto-population of the Green Addendum or certification documents.
- Auto-populate timestamp fields for rating and program data.
- Include timestamps for rating and program dates to reflect old ratings or certifications.
- Ensure that data fields and procedures meet RESO and HPXML compliance requirements to mitigate liability for listing transparency and source attribution.
- Provide an override feature for MLS users that do not want to auto-populate green feature data.
- Deploy and test new green auto-population capabilities.

STEP 4: Educate stakeholders on new information and procedures.

- Communicate changes to stakeholder groups and provide training on how to use them.
- Educate realtors and consumers on the value of green ratings and programs and how they can increase the value of their sales or purchase transaction.
  - » *If needed, shift the focus of recommended education from needing realtors, appraisers and lenders to be "green" experts themselves to needing to know how to best use the new information and resources available to them.*
- Encourage realtors and appraisers to become green certified to better use and promote the value of the new resources.
  - » *Hold local workshops to bring required certification training to local parties.*
- Educate stakeholders on a critical step in the valuation process whereby lenders can and should select qualified green appraisers based on ability, competency and expertise to meet the requirements of green homes. A key step in the process is communicating to the lender this need for a specific home.

- Support education of lenders, realtors and consumers on available financing programs for green home buyers such as HomeStyle® Energy Mortgage Loans and FHA's "stretch" policy.
- Encourage buyers and realtors to value green features in their purchasing decisions.
- Work with Lenders that recognize the added value of high performance homes in interest rate calculation and available incentives.

STEP 5: Perform studies and research to analyze green feature impacts in local markets.

- Perform market studies to analyze the impacts of new green features and listing procedures.
  - *How many new homes are being built and/or listed with green features?*
  - *What percentage of existing homes have green features listed?*
  - *What is the added market financial value of green features (sale price and appraised value)?*
  - *What are the top local, state, regional and national programs being used to certify, verify and rate new and existing homes for high performance features?*
  - *What is the impact of local building and energy codes on these efforts?*
  - *What are the predominant building methods and features in homes carrying more value in the marketplace?*

- Study usage of the new green features and listing procedures to assess their impact and what changes may be needed to support proper usage and improved impact.
  - *Track their usage, effectiveness and impact on realtor efficiencies, valuation, consumer and realtor education, the use of qualified appraisers and other key metrics.*

BEST PRACTICES FOR HOMEBUILDERS TO IMPACT "GREEN" MLS EFFORTS

To support homebuilder efforts to participate in MLS "greening" efforts, NCBPA has developed the following best practices to follow. Additional information and resources are listed in the "Supportive Resources" section below.

STEP 1: Establish internal business procedures and vendor/partner relationships that support improved valuation.

- Obtain a HERS® Index Score on all homes to establish a baseline of available electronic data on green features.
  - *Additional benefits include streamlined participation in certification and verification programs, marketing benefits of third party verification and more.*
- Hire a green-certified realtor on all home sales.
  - *Seek out green-certified realtors with national designations such as EcoBroker or NAR's Green Designation. If not available, encourage your realtor to become certified.*
- Request a green-certified appraiser on all home sales.
  - *Lenders cannot choose an appraiser by name due to federal regulations but can select one by ability, competency, or expertise.*
  - *The builder's role in this process is to communicate to the lender (either directly or through the homebuyer and/or their realtor) that a qualified or green-certified appraiser is needed for the appraisal. Doing so will help ensure that only qualified appraisers accept the job request. This will also encourage non-qualified appraisers to learn more about high performance homes and perhaps become certified to earn this business in the future.*
  - *Do not be overly concerned about the lack of a green-certified appraiser in your market. It is acceptable for lenders to cast a wide geographic net for an appraiser due to the limited quantity of professional appraisers who specialize in green construction.*
  - *If the appraiser selected is unqualified, the builder or consumer can raise this issue with the lender and request another appraiser be selected. Consult with state and federal appraisal guidelines for more information on when and how to pursue this activity.*
- Use nationally and locally-recognized certification and verification programs and rating systems on all homes.
- Establish a process whereby all new homes are listed in the MLS at least overnight in order to make them available for future comparables searches by realtors and appraisers.

- Request homeowner permission to obtain and share utility data as evidence of the energy and water saving features of the home.

STEP 2: Document and market green features to promote their value.

- List green features including certification and verification programs, rating systems and detailed measures (attic insulation, high-efficiency HVAC, etc.) to promote the home's added benefits and reduce the liability of the appraiser and the lender in assigning a higher value.
- Use sample letter templates in the Green Real Estate Toolkit that any homebuyer, seller, builder, or realtor can use to communicate the green features of your home.
  - » *Prepare the buyer to notify their lender that a qualified green appraiser is needed for the home.*
- Ensure that your realtor makes available in the sales process hard and soft copies of rating and program data, as well as specific green feature data such as invoices for high performance and green products or specialty services.
  - » *Appraisers can incorporate builder cost data in their valuation but must have the proper documentation to account for their value.*
- Fill out the Green Appraisal Addendum on all homes and provide it to prospective buyers and their realtors, appraisers and lenders.
  - » *The Addendum should be completed in part by a HERS® Rater who has much of the needed data on energy efficiency, renewable energy and green features.*
  - » *In some cases, "greened" MLS directories can receive an auto-populated Addendum using data from HERS® Index Scores and other sources.*
- Attach program and rating labels to homes – physically – and make sure that verification documentation is provided in the homeowner's guide for use in future sales and appraisals of the home.

STEP 3: Local homebuilders associations should support pilot programs to gain local support and growth.

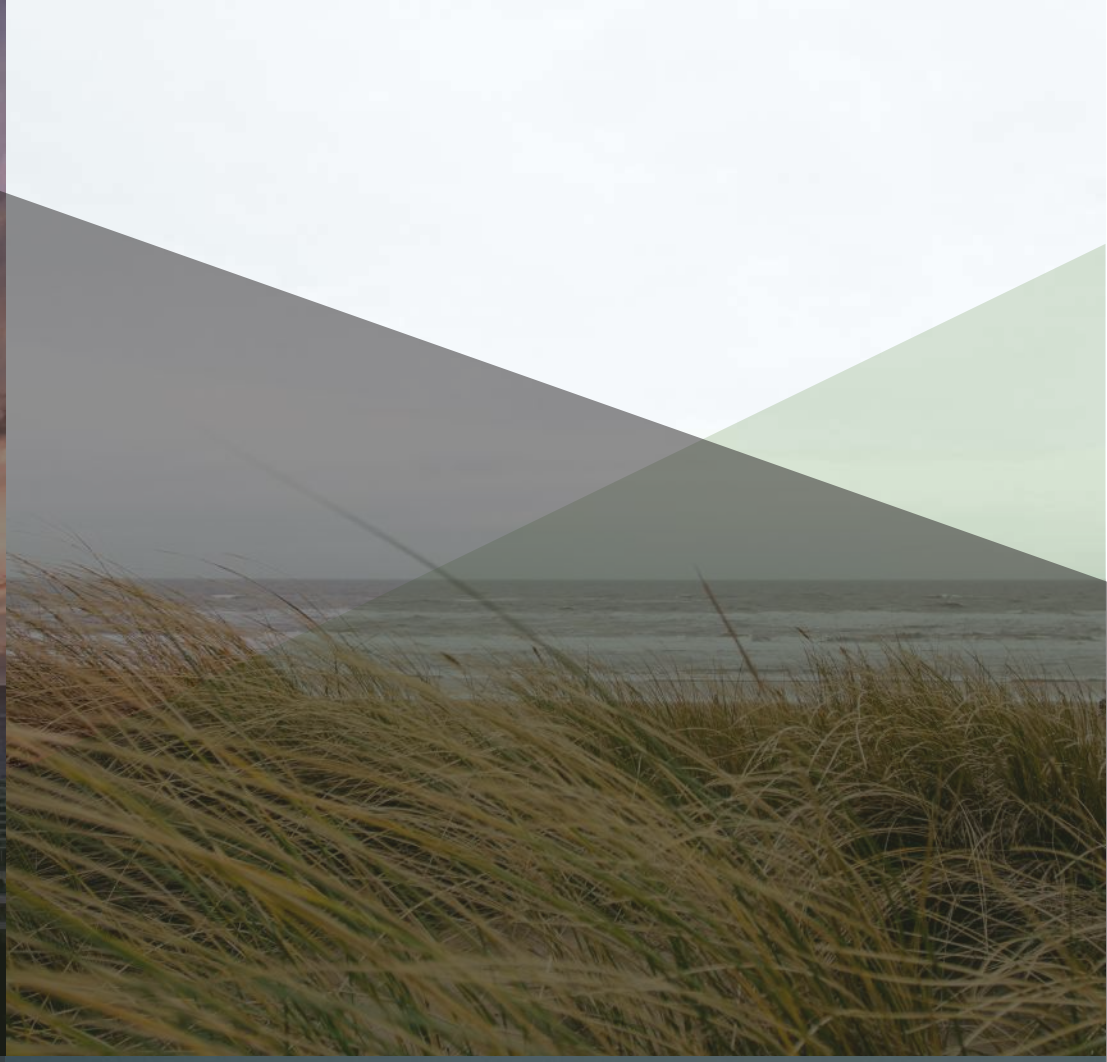
- Local homebuilders associations and green/high performance building councils should undertake local pilot program efforts to test out the recommendations provided in this report.
  - » *Local builders that are already committed to energy efficient, green and high performance construction can further promote their own homes while encouraging other builders, realtors, appraisers, lenders and consumers in the local market to participate.*

- Local associations and councils can fund, support and/or perform needed market studies to obtain valuable data to support MLS "greening" efforts.
- These organizations can also sponsor educational workshops for realtors, appraisers, lenders and other builders as well.
- Green/high performance home tours are excellent, albeit resource intensive, opportunities to make a large push for improved market transparency and value of better homes.
- Test out locally whether or not using a private market appraisal – one ordered and paid for by the builder directly – from a green-certified appraiser that is provided to the appraiser hired by the lender helps educate the non-certified appraiser and results in a higher appraised value.
- Where needed, local associations and councils can use their expertise to address local market barriers to MLS "greening" efforts that may arise, such as how best to list new construction homes in MLS directories.
- Request that member builders commit to 100% participation in these efforts to help grow their use in the local market. Examples include:
  - *100% HERS® Index Scores.*
  - *100% appraisal addendums.*
  - *100% lender request of a green-certified appraiser.*

SUPPORTIVE RESOURCES

Provided below are links to websites that contain helpful information on the "Green" MLS topic:

- NAR's Green Designation: GreenResourceCouncil.org
- NAR's Sustainability Website: nar.realtor/topics/sustainability
- Appraisal Institute's Green Building Resources: AppraisalInstitute.org – *"green building resources"*
- NAHB's Green Buildings Program: NAHBgreen.org
- EcoBroker: EcoBroker.com
- Elevate Energy: ElevateEnergy.org
- Green the MLS Tool Kit: GreenTheMLS.org
- Green Real Estate Toolkit: ecoachievers.com/resources/green-real-estate-toolkit/



NCBPA
North Carolina Building Performance Association