

PEARL CERTIFICATION'S

Home Sale Price Premiums

Valuing High-Performing Homes:

*The Impact of Pearl Certification on Home Sales Prices in
Boston, MA; Grand Rapids, MI; Charlottesville, VA; and
Phoenix, AZ*

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4-State White Paper

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DISCLAIMER

This white paper explores how the market reacts to sales prices of homes certified by Pearl Certification, compared to sales prices of homes without a Pearl Certification. The report was researched, written, and reviewed by independent professional real estate appraisers. This study does not form or imply value of a specific property or market area. The work was funded by Pearl Certification, but the researchers and authors retained full editorial control over the research, the analysis, and the conclusions of this paper.

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Charlottesville, VA Study

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Executive Summary

High-performing homes contain advanced features that improve the residents' comfort, safety and air quality. These homes maintain appropriate temperature and humidity, keep indoor air clean, and offer features that protect against extreme weather and natural disasters. High-performing homes also use energy and water efficiently, keeping operating costs low, and offer peace of mind by providing the homeowner with monitoring systems.

While it could be easily assumed that high-performing homes are very attractive to buyers, the features may not be visible to potential buyers unless they are specifically called out during the sale process. Although high-performing homes are not new to the market, neither consumers nor real estate professionals understand them well. Consumers attempting to buy or sell high-performing homes may be met with a complete lack of comprehension of the nature of these homes.

From a commonsense perspective, the use of technologies that create a safer, more energy-efficient, and more comfortable home should increase the perceived value of these homes. But this only happens if appraisers understand and attribute the appropriate additional value and if sales professionals appropriately market the characteristics of high-performing homes.

Where this does not occur, it may discourage builders and home-remodeling contractors from adopting the technology that creates a high-performing home, subsequently reducing the supply of such homes.

Pearl Certification (Pearl) was founded to address this issue. Originating in Charlottesville, VA, Pearl created a certification to clarify the value of high-performing homes for consumers, real estate agents, and mortgage bankers. In the past five years, Pearl Certification has certified over 88,000 homes, developing a growing voice on high-performing homes in the national real estate market.

This white paper addresses the question of whether Pearl Certifications are an accepted signal of additional market value. It focuses on four specific markets where Pearl has a market presence:

- **Charlottesville, VA**
- **Boston, MA**
- **Grand Rapids, MI**
- **Phoenix, AZ**

Key Findings

In the markets where Pearl Certification is highlighted as part of the home sales process, there is indeed a sales premium for certified homes. This averages about 5% in three of the four markets and 3% in the remaining market (Table 1).

	MEAN	MEDIAN
Charlottesville	5.15%	5.50%
Boston	5.00%	4.18%
Grand Rapids	5.50%	7.00%
Phoenix	3.24%	2.20%
Average	4.72%	4.72%

Table 1: Average Sales Premium for Pearl Certified High-Performing Homes vs Other Homes.

Looking at data for 62 Pearl Certified houses in all four markets using a paired-data analysis, we found the average premium for houses with Pearl Certifications that were assertively marketed was 4.72%. This is a significant premium; at the average price of a home sold in Charlottesville in January 2022, for example, this equates to a \$17,000 premium.

The term “assertively marketed” is important. A number of Pearl Certified homes were initially included in the study but were removed because their listings were not assertively marketed with Pearl. The value of Pearl Certification accrues from making the value of a high-performing home visible at time of sale: If the Pearl Certification brand and report isn’t visible, it is reasonable to expect that the home will not be valued more highly than comparable, non-certified homes. As a result, all Pearl Certified homes that were not marketed as Pearl Certified were removed from the study.

4.72%



Relevance to Stakeholder Groups

THERE ARE SIX GROUPS OF STAKEHOLDERS FOR THE FINDINGS ABOVE:

1.

Real Estate Sales Professionals: It is in the interest of real estate agents marketing Pearl Certified homes to maximize the positioning of the certification in their marketing, as increases in sales value will be reflected in their own bottom line. Listings in the MLS, as well as social and print media, should highlight health and safety, efficiency, low operating costs, and peace of mind. They should state at the top that the house is Pearl Certified as a high-performing home, with a link provided to a further discussion of Pearl Certification where possible. In addition, listing agents should provide specific language to use in the sales contract to ensure that the buyer and their lender use an appraiser with the special competence to value the unique characteristics of the property.

2.

Real Estate Appraisers: Homes are usually appraised by an independent fee appraiser hired by the mortgage lender. Even with cash purchases, sometimes the buyer will hire an appraiser as part of their assessment of a property. Appraisers should be aware that this type of valuation is a specialization in a specific property type, and an appraiser retained by a lender using FHA-, FNMA-, USDA- or FMLC-backed mortgages must already be competent in the property type or recuse themselves from the assignment. They should not accept an assignment to appraise a high-performance home without understanding the category fully. Some appraisers have simply asserted that there is no data available on a premium for high-performance homes. If an appraiser accepts an assignment to value a high-performing home, they must fully research the potential premium associated with this type of home in the given market, rather than asserting that there is a lack of available data on high-performing homes. While this may be true, due diligence is required. The methodology is a standard one and is described in the Introduction.

3.

Mortgage Lenders: Lenders must understand the uniqueness of the high-performance property type and retain competent appraisers as required by regulation. The borrower and the sales professional can assist in communicating the uniqueness of the Pearl Certified home to the lender. Once introduced to the category, the lender should identify a pool of appraisers they can use who are competent in the valuation of high-performance homes, as failure to do so may endanger loans with the various secondary market investors, government-sponsored enterprises (GSEs) and agencies that monitor, regulate, and invest in these loans.

Relevance to Stakeholder Groups

THERE ARE SIX GROUPS OF STAKEHOLDERS FOR THE FINDINGS ABOVE:

4.

Multiple Listing Services (MLS): There are nearly 600 MLS in the U.S. with a wide range of green data fields available for listing agents to enter information about high-performance features. If the MLS offers a data field for “Green Certification” Pearl Certification could be added, as the certification is experiencing rapid growth and is the only green energy certification that specifically targets improvements made to existing homes.

5.

Home Builders and Remodeling Contractors: Builders and contractors should become familiar with the features that make a house a high-performing and comprehend the sales premiums that high-performing homes can achieve. Once they understand the likely sales premium, they may be willing to make the additional investment required to build high-performance homes. It is important that builders, like sales professionals, understand that they have input into the home sale process. Being educated about the process and affiliated with the other professionals involved in the process can help the consumer.

6.

End Consumers: Consumers who are interested in high-performing homes and safety features may know more about high-performance homes than some of the other actors in the market. Other consumers may learn more from real estate listings, or from the vast amount of information available via the web, social media, and written publications. Most consumers enter the home buying process with a good understanding of what they are looking for, what their budget will be, and what features mean the most to them. However, they may not be aware of the advantages of high-performing homes, and many consumers may not realize that this specialty property class requires uniquely knowledgeable sales professionals, mortgage lenders, and appraisers who are competent to properly handle the sale or purchase of high-performance homes.

This paper focuses on the individual markets and collectively on the markets in aggregate, through the lens of real estate appraisers. Each market is reacting positively to a home with a Pearl Certification. While this does not mean that this occurs or will occur in every market where Pearl is certifying homes, it does support the premise that these homes are likely to have a sales premium, and it is incumbent upon the stakeholders involved to perform the necessary due diligence required for promoting a home’s high-performance.

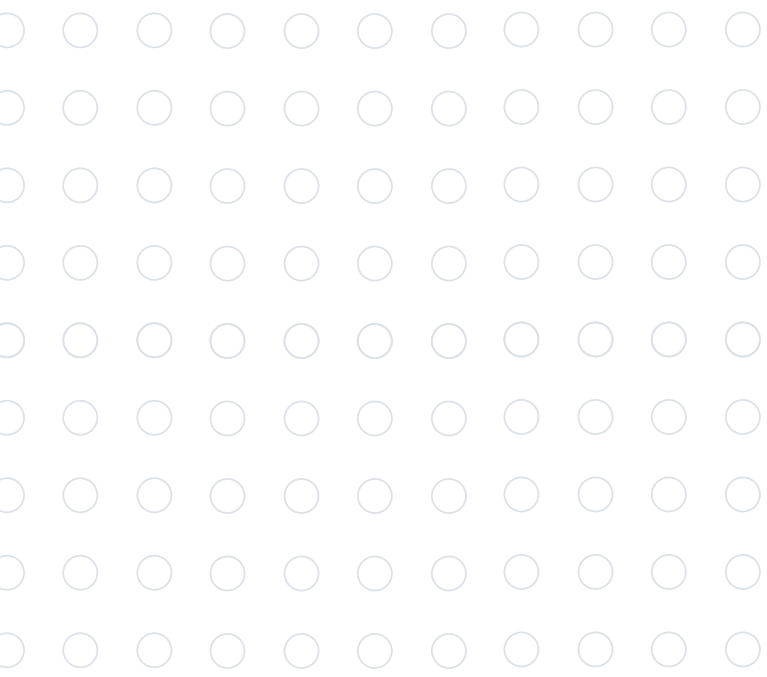
Guest Introduction

SANDRA ADOMATIS, SRA, LEED GREEN ASSOCIATE

Do homebuyers and the real estate ecosystem understand the benefits of high-performing features in homes? If they truly understand the benefits, not only as they apply to the overall cost of the home but also to the health of the occupant, would they be willing to pay more for the purchase of the higher-performing home?

Market transformation will only take place when homeowners and the entire real estate ecosystem are knowledgeable about high-performance features, understand the benefits, and believe the benefits will be realized. Only when this occurs will the market be willing to pay premiums for high-performing homes. Certification programs that document the high-performance features and certify their existence will play an important role in market transformation.

Appraisers are tasked with the challenge of supporting the market's reaction to features of a home. Does the local market accept the value of high-performing features? How many homes have these features? How prevalent are they in the market? Is the market willing to pay for these features, and if so, how much? The answers to these questions require the features to be visible to the market.



THE PROCESS OF MAKING HIGH-PERFORMING FEATURES VISIBLE INCLUDES:

- **The builder or renovation contractor documents the features.**
- **The sales agent and/or builder promotes the high-performance features in the multiple list service or other advertising.**
- **The buyers understand the benefits and are willing to pay more for the home with high-performance features compared to a similar home without the features.**
- **Only then can an appraiser quantify the value of high-performing features.**

Guest Introduction

SANDRA ADOMATIS, SRA, LEED GREEN ASSOCIATE

Appraiser-led studies use a comparison technique that requires a robust dataset of similar homes within the same real estate market area. Sales prices of homes with the identified variable are compared to sales prices of homes without the identified variable. This valuation process has long been taught in appraisal classes and is considered the more reliable method for identifying how the market reacts in pricing to the identified variable.

Previous studies around the country show the contributory value of high-performing homes ranges from 2.2% to 5.8% of the home's total sale price. (This range removes the extremes.) The studies are also helpful in identifying marketing trends and weak spots that might solve the valuation and marketing concerns.

2.2% to 5.8%

It is extremely important to gain support from the local real estate community in increasing accurate data collection, developing databases that have searchable fields correctly populated, and educating realtors and agents on the benefits of high-performing features. Education must also include the public because they are the buyers and sellers of the properties. The education often occurs through the real estate agent. If the agent is not familiar enough with the high-performing features, buyers are often not convinced the purchase price should be more than other similar homes without those features.

Real estate agents can learn more about how to work effectively with buyers, sellers, lenders, and appraisers through appraiser-led studies. The studies provide a good basis for setting list prices for homes with high-performance features. The range of approximately 2% to 6% rounded is a solid range that is supported by most published studies. Homes with solar systems and/or geothermal systems may find premiums slightly above the high end. However, markets do not all react in the same way, and agents must be aware of the market's view and knowledge of high-performing homes. It is exciting to see yet another study of data in multiple markets to promote a better understanding of high-performing homes.

Introduction

The purpose of this white paper is to provide a resource for stakeholders to understand the value of the high-performing home, and more specifically, high-performing homes that have received a Pearl Certification. This type of construction is still relatively new to the residential real estate market, but the past two decades have seen a strong increase in high-performance building aimed at consumers that want homes that are more efficient, comfortable, and healthy with lower operating costs.

What Is a High-Performing Home?

High-performing homes contain advanced features that improve comfort, safety, air quality, and energy efficiency. Benefits of high-performing homes may include:

- **Maintaining comfort — appropriate warmth in winter and cooling in summer without excessive dryness or humidity**
- **Keeping the home environment healthy, preventing indoor air pollution, and maintaining fresh air**
- **Protecting against extreme weather, fires, and earthquakes**
- **Keeping down water and energy bills and providing and storing inexpensive power**
- **Giving peace of mind through consistent monitoring of housing systems, such as piping, HVAC, and security**

Table 2: Potential Features of High-Performance Homes

Feature/Asset	Benefit	DESCRIPTION
Air Sealing	Comfort/Energy Savings	Caulking or applying spray foam prevents air leaks and improves heating and cooling efficiency.
ENERGY STAR® Appliances	Energy Savings	ENERGY STAR® dishwashers, refrigerators, washers, and dryers use less energy and produce fewer emissions than standard appliances.
HVAC	Air Quality/Safety	Quality HVAC systems improve indoor air quality and protect against pollutants and airborne chemicals.
Insulation	Comfort/Energy Savings	Proper insulation reduces energy costs and enables the HVAC to run more efficiently.
Lighting	Energy Savings	Occupancy sensors and scheduling capabilities reduce needless energy expenditure.
Smart Home Devices	Safety/Energy Savings	Automated systems, such as programmable thermostats, lighting, window and door control, etc., improve operating efficiency.
Solar System	Energy Savings	Solar power fuels homes with a renewable energy source, while saving the homeowner on electric costs over time.
Water Heater	Energy Savings	Tankless, high-efficiency and solar water heaters result in lower water heating bills.
Windows & Doors	Energy Savings	Windows and doors featuring double or triple panes, argon insulation, and solar protection boost energy efficiency.

High-Performing Home

Unlike a renovated kitchen or updated bathroom, many improvements designed to improve a home’s performance lack visibility. Therefore, Pearl certifies home features to make the value visible to homeowners, contractors, real estate agents, and appraisers.

Pearl is one of several organizations across the United States that offers third-party certification of a home’s high performance. The U.S. Green Building Council, which offers Leadership in Energy and Environmental Design (LEED) certification, and Home Innovation Research Labs’ National Green Building Standard (NGBS) have single-family residential programs but are not included below since most adoption has been on commercial buildings (LEED) or on larger multifamily buildings. Table 3, below, compares Pearl with some of the organizations that certify single-family homes.

Table 3: Pearl and Other “Green Home” Rating Systems for Single Family Houses

Residential Certification Systems	Pearl	HERS	Energy Star	Indoor airPLUS	Zero Energy Ready	Home Energy Score (HES)
Building stage (pre-dominant)	New Construction and existing (upgrades)	New Construction	New Construction	New Construction	New Construction	Existing (upgrades)
Primary Partners / Channels to Market	Contractors, Builders, Agents, Manufacturers, Homeowners	Builders, Raters	Builders, Raters	Builders, Raters	Builders, Raters	HES Assessors, Agents
Direct Homeowner support	Yes, during homeownership and when selling	No	No	No	No	No
Living Certification	Yes, easily upgradable when improvements made	No	No	No	No	No
“Green” features	Energy efficiency, indoor air quality, comfort, renewables, batteries, EV readiness, water efficiency	Energy efficiency, renewables, Note: WERS available for water efficiency	Energy efficiency	Indoor air quality	Energy efficiency, indoor air quality, water efficiency, durability, renewables	Energy efficiency
Certification Includes Energy Model Results	Yes, when available, but not required	Yes	Yes	Yes	Yes	Yes

Pearl is the only one of these third-party certifying organizations with tiers and point systems that are designed from the ground up to work with both new and existing construction. Virtually every other system targets only one of these. Pearl's certification was designed to be relevant throughout homeownership and easily upgradeable, compared with other certifications, which are "one-and-done." Pearl also offers significant support for its channel partners (contractors, realtors, builders). Even more importantly, it offers support directly to homeowners, for example, helping them find appropriate contractors, real estate agents that are knowledgeable about Pearl Certification, self-service resources during refinance or home sale, and technical assistance during transactions if required.

Part of the impetus of this white paper is to provide practicing real estate appraisers with a guide to the sales performance of high-performing homes. This paper uses a standard methodology that can be applied by any appraiser when faced with appraising a high-performing home in a market with no immediately available data on sales premiums for such homes. The techniques and application discussed in this paper are applicable to any U.S. market, while the actual premium or contributory value of a high-performing certification will vary market to market. In some markets, there may not yet be a premium value because not many market participants are aware of or have sought high-performing homes.

Pearl published a similar white paper in 2017. This paper updates and builds upon its predecessor, based on data from additional homes that have been certified since that time in new geographic markets. As in 2017, this white paper asks the following questions:

- **Does the market pay a sales premium for homes with a Pearl Certification?**
- **Are homes with a certification sold more quickly?**
- **Are Pearl Certified homes being marketed to maximize the benefits of the certification?**
- **How can marketing of homes with the certification be improved to achieve the highest sales price and appraised values?**

A key point to understand about the markets studied thus far is that some of these markets are showing emerging trends. In theory, some markets will show premiums while others will not. In some markets, when a new product is coming into the market it does require in-depth research. In other words, understanding and valuing high-performance property is considered leading-edge market analytics in many markets.

Who Are the Stakeholders?

Pearl Certification sought to understand the impact that their certifications have on home sales and home values. They did not constrain the findings in this paper in any way; the author required complete autonomy to complete the analysis and write the paper. Compensation to the research team was not contingent on predetermined results.

There are six external audiences:

- Real Estate Sales Professionals
- Real Estate Appraisers
- Mortgage Lenders
- Multiple Listing Service (MLS)
- Home Builders and Remodeling Contractors
- End Consumers



As high-performing homes become a more significant part of each real estate market, it is essential that real estate brokers and agents, as well as appraisers, have a full understanding of both the concept of what makes a home high-performing and some understanding of the specific features. This competency is essential to assure the home is marketed and appraised effectively to maximize any premium that may exist in each market.

In analysis of terminology, the appraisal profession is showing a bias against high-performance homes exhibiting a market premium.



Appraisers on social media, in appraiser organization meetings, and in continuing education classrooms frequently discuss the lack of supporting data on high-performing homes; in many cases, however, these concerns are anecdotal and are not based on actual research. In analysis of terminology, the appraisal profession is showing a bias against high-performance homes exhibiting a market premium.

Pearl aims to address these concerns by publishing this paper and a projected future series of papers for other markets. Appraisers led each of the market study teams for this paper and will continue to do so as Pearl publishes additional studies for other markets where they certify homes. It is hoped that eventually a well-supported and accurate study of the impact of certification on sales premiums will be available in all major markets in which Pearl is actively certifying homes.

Stakeholders (continued)

With most homeowners requiring a mortgage to purchase, it is important that mortgage lenders understand how to appraise the property type. When engaging the appraiser who will value the high-performing home, a lender is required by regulation to retain a competent appraiser. The borrower and sales professional must inform the lender that the home is a high-performing home, and the lender must then find and hire an appraiser who can competently value the home. Failure to do so could endanger the loan with the various secondary market investors, GSEs, and agencies that monitor, regulate, and invest in these loans.

Contractors and other professionals within residential construction should pay attention to papers such as this one. The additional theory and science incorporated into developing and building new homes and retrofitting existing homes adds some cost to the process. This additional cost is for naught if it cannot be recouped in the purchase price of the home. Studies like this provide the documentation to support market premiums when they actually exist.

Consumers who buy and sell real estate are an important part of the audience intended for this paper. Discussions with real estate agents indicate that consumers are often consciously searching for homes with high-performing features, and in some cases, referencing Pearl, HERs, and “green” homes by name.



Prior Work

This white paper is the third commissioned by Pearl. The first study, conducted in 2017, was led by Sandra Adomatis, SRA, LEED, and looked at Pearl Certified sales premiums in Virginia and Maryland. That study established the methodology and approach that was also used in this study. The 2017 study found that a 5% premium existed overall in the various sub-markets that were studied in that paper. The results of the second study, on the Charlottesville MSA, are incorporated in this paper, as the study of the Charlottesville MSA. That study concluded in 2021 and indicated a 5% premium as well.

The previous study is important to note as it establishes the methodology and approach implemented for this study. Like this study, the 2017 study was well-vetted with knowledgeable, actively practicing valuation professionals. There have been academic studies done on valuing high-performing homes (see Appendix B, Bibliography), but these are of limited value to appraisers and other stakeholders, as they are not based on the approach used by professional appraisers, as this study is.

About Pearl Certification

Pearl was launched in 2015 and evolved into a full-scale certification system by 2017. As of July 2022, the company has certified over 88,000 homes in 41 states.

Pearl's certification system assigns points for individual high-performing assets in the home. Assets that receive points include (1) the building shell, (2) heating and cooling systems, (3) features, such as appliances that contribute to the home's energy "baseload," and (4) home management technology. Pearl also certifies, but does not assign point values, to renewable energy and energy storage.

88K HOMES

Table 4: Levels of Pearl Certification

LEVELS	POINT THRESHOLDS	DESCRIPTION
PEARL PLATINUM	975	A Pearl Platinum home's energy-efficient systems are far better than those found in an average home. Pearl Platinum homes will typically have high-performing features in all four categories.
PEARL GOLD	825	A Pearl Gold home has both a building shell and a heating and cooling system that are much higher quality than those found in an average home.
PEARL SILVER	700	A Pearl Silver home typically has a building shell or a heating and cooling system that is much higher quality than those found in an average home.
PEARL ASSET	0	A home that doesn't reach Pearl Silver can qualify for Pearl Asset Certification. This provides useful information about one or more high-performing features in the home and enables the owner to communicate the value of these features to future buyers.

About Pearl Certification (continued)

Each of the four categories that are assessed are assigned a point value; the sum of the categories dictates which certification level is appropriate¹. Pearl also certifies solar systems within a solar asset report².

In addition, Pearl issues other individual asset reports, none of which were included in this analysis. This study only included Pearl Certified homes that reached Silver or above. The certification report provides a detailed analysis of the home under review, including many pages of information that describes and rates the various components of the home. These reports are invaluable aids in communicating the uniqueness of the home from an analysis of individual features and the perspective of the whole home as a system. The information contained is useful to the sales professional, the consumers, and the appraiser.

Lenders should view the Pearl Certification as evidence that the home is a specialty design and build, or high-quality upgrade, that should be vetted and valued by an appraiser with the appropriate competencies.

The certification may even open access to some lending products, such as energy efficiency-related mortgage benefits that can range from lower rates to qualifying for a higher budget due to the lower operating costs of the home. Appraisers will also appreciate the Appraisal Institute Residential Green and Energy Efficient Addendum, which is part of the certification report. This part of the report is designed for the appraiser and should be provided to them at the onset of the assignment by the lender or lender's agent.



¹- An example of a Pearl Home Certification Report can be found at this [link](#).

²- An example of a solar certification from Pearl can be found at this [link](#).

White Paper Methodology

Paired-data analysis was used to determine the value Pearl Certification contributed to the sales price. This is a quantitative technique used to identify and measure adjustments to the sale prices or rents of comparable properties. To apply this technique, sales or rental data on identical properties, or similar properties with price adjustments, is compared to isolate and estimate the effect of single characteristics on value or rent.

The ideal for this methodology is to find two of the same model of homes that have only one difference. This is considered “simple paired sales analysis.” Consider the following sample pairing.

Chart: Paired Data Adjustment Example

	SALE-1	SALE-2
PRICE	\$310,000	\$300,000
GARAGE BAYS	2	1
DIFFERENCE	\$10,000	

In this example, the only difference between the two homes is the garage size. Sale-1 has a two-bay garage and Sale-2 has a single-bay garage. With everything else being equal, the difference in sales price is \$10,000. Determining the premium for the two-bay garage is as simple as looking at the two properties and isolating the differences between the two sales.

Simple paired analysis can be difficult to apply as there are few situations where “everything else is equal” outside of units within the same new subdivision. In most situations, the appraiser must analyze differences in multiple characteristics. This is often referred to as complex paired data analysis.

When compensating for multiple differences, it is important that the appraiser has developed other adjustment techniques that are reliable indications of differences. In this white paper, one of the differences that presented itself repeatedly was the difference in market conditions, or date of sale. In an appreciating market (like that which most of the country has been in for the past few years), a difference of even three months in sales date often requires an adjustment to account for market appreciation. In this study, trend analysis was used to account for the date differences. For differences in gross living area, depreciated cost was used and tempered with sensitivity analysis.

Methodology (continued)

Paired data analysis is the preferred methodology among valuation practitioners and secondary mortgage participants, such as Fannie Mae and Freddie Mac. It is an easy-to-understand technique, but as mentioned earlier in this report, difficult to implement well. In the case of this white paper, the application of the methodology was conducted carefully and with four levels of review:

- **A appraisal staff data analyst performed the initial test.**
- **A certified appraiser reviewed the results.**
- **The white paper author reviewed the appraiser's results.**
- **The third-party reviewers reviewed the author's results.**

If at any juncture in the testing, a sale or application of the methodology was questionable or ambiguous in returning a reliable indication of premium, it was removed from the analysis.

See Appendix A for a detailed example of paired data analysis.

Sales must only be excluded from a paired data analysis after careful research and thought, in order to assure that the sales used in the final analysis are free of any explicit or implicit bias from the research team. Obviously, the more data points used, or the larger the sample size, the better supported the results will be. There is a fine line that an appraiser must walk to determine what is meaningful data and what is just noise within the data.

IN THE ANALYSIS PROCESS, THERE WERE SEVERAL FACTORS THAT PLAYED INTO THE DECISION TO EXCLUDE A SALE FOR THIS WHITE PAPER:

- **Nothing to indicate that the Pearl Certification was incorporated into the marketing in any way.**
- **Excessive complexity in extracting an indication of contributory value:**
 - The property included an Accessory Dwelling Unit (additional apartment), unless a true pair was available.
 - The property included agricultural-related business, such as horse boarding, fruit, or crop growth.
 - Property that included a large acreage with development potential.
 - An excessive number of adjustments needed to develop the contributory value.
- **Homes with solar systems were excluded due to the difficulty of separating the contributory value of the solar system and the Pearl Certification.**

The final properties used in the analysis were those where adjustments were straightforward and that yielded verifiable data on sales premiums or lack thereof.

Findings

Each market area is presented individually, with the data for all markets combined at the end.

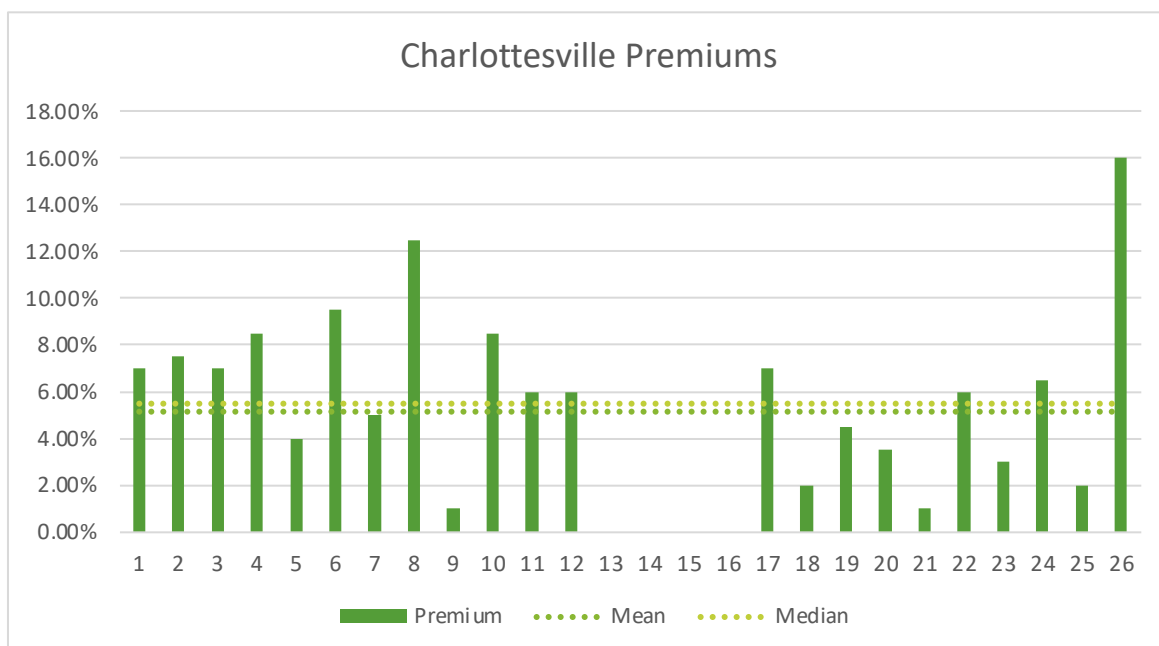
CHARLOTTESVILLE

Pearl provided the research team with data on a total of 71 home sales in the Charlottesville MSA that were Pearl Certified at the time of the sale. This raw data was vetted, reviewed, and analyzed. Of the 71 sales, 20 did not mention the Pearl Certification at all in their listings. As a result, those sales, accounting for 28% of the listings, had no potential to show a premium, since the consumer did not know about the certification. These listings were omitted from the analysis. Of the remaining 51 sales of Pearl Certified homes, 35 sales were excluded for one of the aforementioned reasons. The most common reason for removing these sales from the analysis was that they required an excessively complex paired data analysis. While complex paired data analysis is possible, if the facets of complexity get excessive, then the results of the analysis will become ambiguous at best.

The analysis in this paper is based on the paired sales analyses of the remaining 26 homes. Buyers in the Charlottesville market paid a range of premiums from 0% to 16% for high-performing homes. See Appendix C for an overview of the Charlottesville market.

0-16% PREMIUM

Graph 1: Distribution of Premiums, Charlottesville Market



Findings (continued)

Each market area is presented individually, with the data for all markets combined at the end.

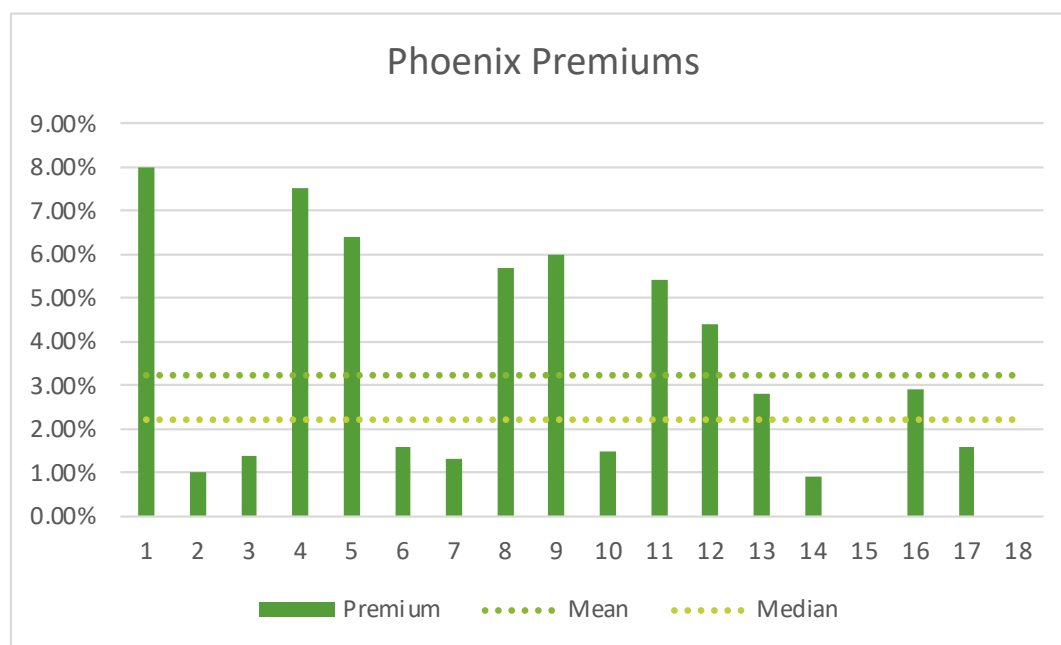
PHOENIX

Pearl provided the research team with data on a total of 58 home sales in the Phoenix MSA that were Pearl Certified at the time of the sale. This raw data was vetted, reviewed, and analyzed. Of these 58 sales, 18 did not mention the Pearl Certification at all in their listings and had no potential to show a premium, since the consumer did not know about the certification. These listings were omitted from the analysis. Twelve other sales were excluded for one of the reasons above; in particular to avoid excessive convolution in the complex paired data analysis, leaving a total of 18 sales.

Buyers in the market paid a range of premiums from 0% to 8%. See Appendix C for an overview of the Phoenix market.

0-8%
PREMIUM

Graph 2: Distribution of Premiums, Phoenix Market



Findings (continued)

Each market area is presented individually, with the data for all markets combined at the end.

GRAND RAPIDS

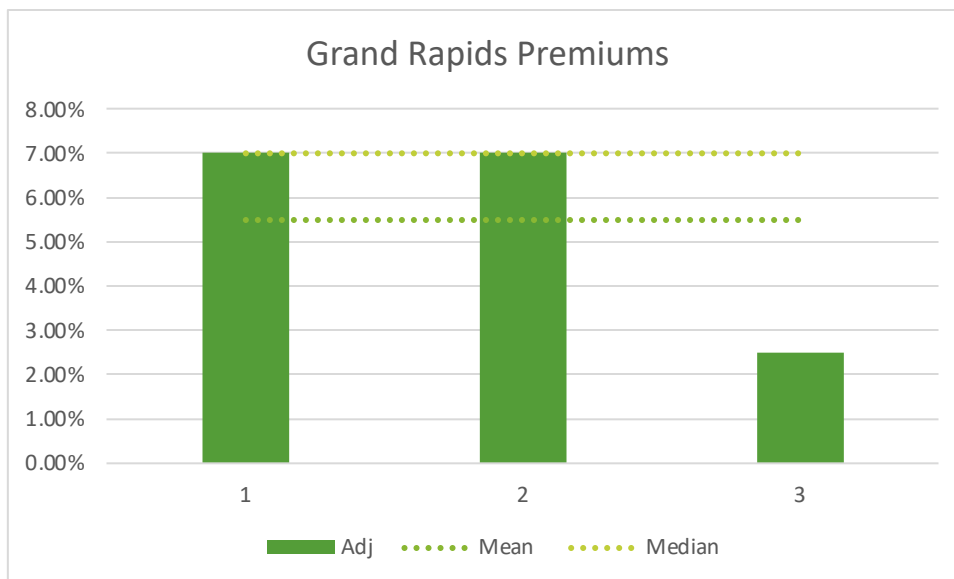
Grand Rapids is only mentioned in passing as part of this study as only three of the 22 possible Pearl Certified properties that could be studied were assessed. The data for these three was included in the overall study results. Pearl's presence is growing in this market.

Buyers in the market paid a range of premiums from 2.5% to 7.0%. See Appendix C for an overview of the Grand Rapids market.

2.5-7%

PREMIUM

Graph 3: Distribution of Premiums, Grand Rapids Market



Findings (continued)

Each market area is presented individually, with the data for all markets combined at the end.

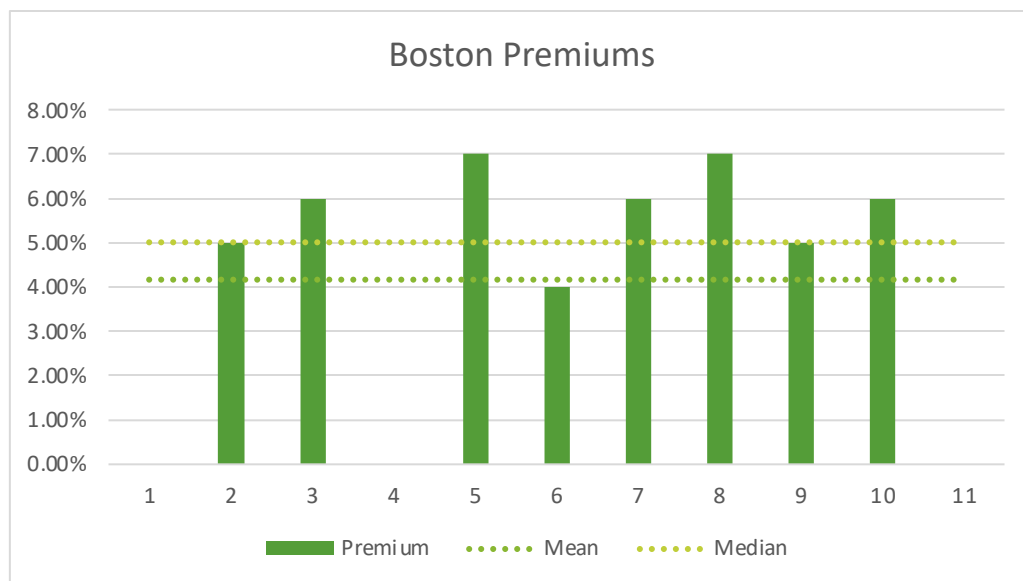
BOSTON

Pearl provided the research team with data on 17 home sales in Greater Boston that were Pearl Certified at the time of the sale. This raw data was vetted, reviewed, and analyzed. Of these 17 sales, six sales were excluded for one of the above reasons, and to avoid excessive convolution in the complex paired data analysis, 11 sales remained in the analysis.

Buyers in the market paid a range of premiums from 0% to 7%.

0-7%
PREMIUM

Graph 4: Distribution of Premiums, Boston Market



Of the 17 sales provided, 10 made no mention of the Pearl Certification in any manner. This means that 59% of the sales had to be excluded from the analysis as no marketing existed that would inform the consumer of anything that might merit paying a premium.

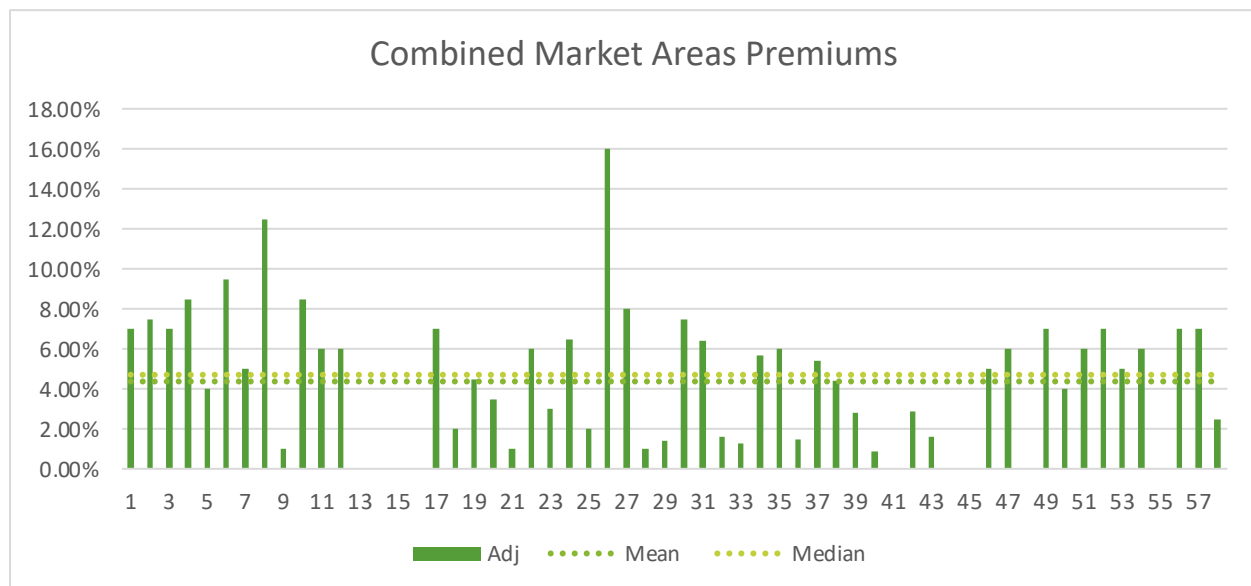
See Appendix C for an overview of the Greater Boston market.

Combined Data

The combined data from all four markets provided the research team with 149 home sales for analysis. After removing sales using the criteria identified in the methodology, 58 sales in the combined markets remained for analysis.

Buyers in the combined markets paid a range of premiums from 0% to 16%.

58	TOTAL
Percent Premium	
16.00%	Highest Premium Paid
0.00%	Lowest Premium Paid
4.75%	Median Premium
4.39%	Mean Premium
3.36%	Standard Deviation

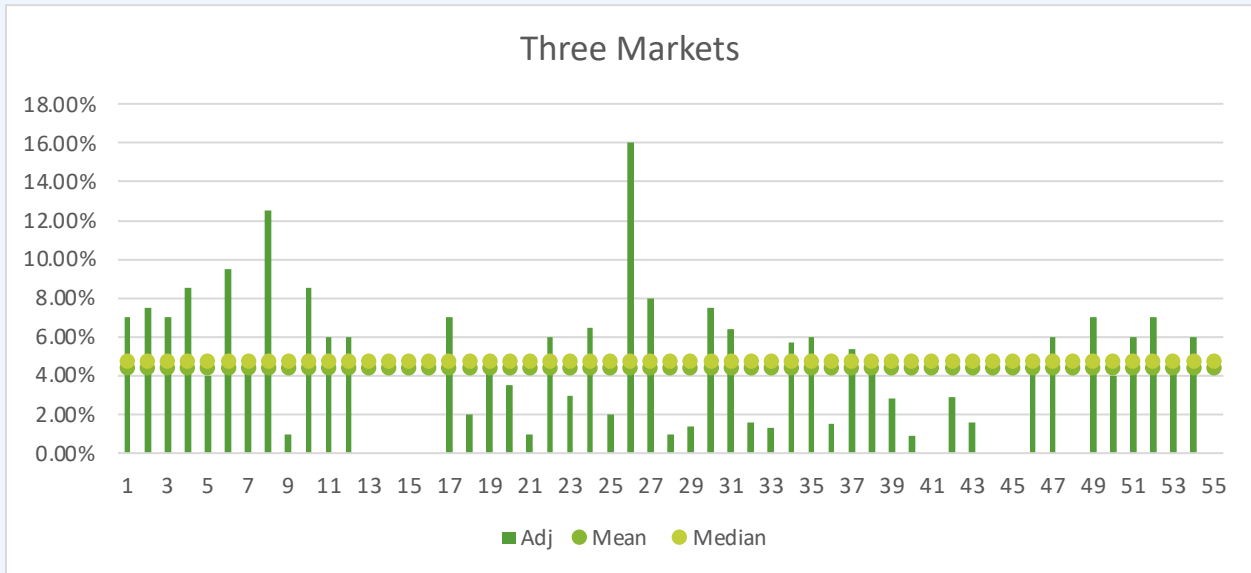


55	TOTAL
Percent Premium	
16.00%	Highest Premium Paid
0.00%	Lowest Premium Paid
4.45%	Median Premium
4.28%	Mean Premium
3.44%	Standard Deviation

Since there were only three data pairs included in the analysis for Grand Rapids, the combined data was re-analyzed excluding that data. When data from the three remaining markets was combined, there were 146 home sales provided to the research team. After removing sales using the criteria identified in the methodology, 55 sales in the combined markets remained for analysis.

Buyers in the combined markets paid a range of premiums from 0% to 16%.

The second section is the most reliable set of data as all available sales were reviewed and analyzed. The data did decrease in average and median premiums once the Grand Rapids data was removed.



Sales Impacted by Lack of Proper Marketing

In the three main market areas, almost 33% of the sales potentially available for analysis had to be removed, simply because sales professionals did not market the homes as Pearl Certified. Failing to market the home as Pearl Certified could potentially reduce the final sale price by thousands of dollars. For example, a home that sold for \$500,000 could potentially sell for 4.45% more if properly promoted as Pearl Certified in a market that recognizes that high-performing homes have a higher value. In this example, the seller could have earned approximately \$22,250 more with proper advertising of its Pearl Certification.

	TOTAL SALES	EXCLUDED	PERCENT REMOVED
Charlottesville	71	20	28.17%
Phoenix	58	18	31.03%
Boston	17	10	58.82%
Total	146	48	32.88%

A Quick Note on Days on Market

The 2017 study conducted in Charlottesville showed that properly marketed Pearl Certified homes were, on average, absorbed in less time than non-certified homes. This finding was not replicated in the analyses of any of the markets included in the current study. This is probably due to the overheated national real estate market in the past two years: With inventory levels very low, every house sold quickly, whether Pearl Certified or not.

Maximizing Value from Pearl Certification

To maximize the value of Pearl Certification, all parties in a real estate transaction need to understand what the certification communicates and what the implications are for handling the transaction.

Consumers

Consumers are most likely to learn about Pearl Certification from a realtor who is familiar with Pearl or from an elite Pearl Contractor. They may then initiate the value chain by having the home they are selling certified by Pearl. Sellers can add value by ensuring that the listing agent incorporates the certification into the marketing of the property. Obtaining a sales premium is also reliant on the lender understanding the need to select an appraiser who is familiar with Pearl Certification and/or with high-performing homes in general.

Real Estate Brokers and Agents

Real estate brokers and agents are at the hub of the real estate transaction and should be sure all parties are aware of the Pearl Certification and the implications for their role in that transaction. The code of ethics of the National Association of REALTORS® (NAR) requires the sales professional to have competency in the unique property being represented; high-performing homes, which are more complex than a built-to-code home; and an understanding of how special a home like this is to the market. Real estate professionals should recognize that it is their ethical responsibility to understand the property type so that the consumer is fairly represented.

When the listing agent markets the home on the MLS and print or social media, how they communicate the features of the home matters. If the listing and advertising omits the Pearl Certification, the certification is essentially wasted. The buyer will not be aware of it and obviously will not pay a premium for something unknown. As indicated in the findings above, this occurred in nearly a third of the paired data sales listings.

Real Estate Brokers and Agents (Continued)

SPECIFIC STEPS AN AGENT OR BROKER SHOULD TAKE INCLUDE:

- Highlighting the Pearl Certification at the top of the listing, emphasizing that the certification means the home exceeds most code standards for comfort, safety, energy efficiency, and low operating costs.
- Using Pearl materials to explain the certification to potential buyers during showings and open houses.
- Requiring language in the sales contract that will ensure a competent appraiser is retained to perform the valuation. The agent should advise the lender that the property is unique and requires specialized competency to value.

The National Association of Home Builders (NAHB) offers a suggestion to agents when writing contracts on properties that are high-performing. The following language was developed by a builder and is offered on the NAHB website as a suggestion to include in contracts:

“This Home is being built/renovated/updated to nationally recognized standards above prevailing code. It is designed and constructed with unique features and materials and with high-efficient equipment and in accordance with high-efficiency standards. The Lender shall choose an Appraiser educated and knowledgeable in this type of valuation of these specialized Homes, preferably an appraiser who holds a professional appraisal designation that requires advanced education on such issues as the valuation of sustainable buildings (e.g., MAI or SRA designations from the Appraisal Institute). The appraiser shall provide verification of green valuation education of 14 hours or more from a qualified educational provider and knowledge to be permitted to conduct the appraisal for this project.”³

Although an agent cannot request that the lender select a specific appraiser for the assignment, such language makes the completion of the transaction contingent on an appraiser with requisite knowledge and experience being selected for the assignment.

Agents and brokers are required to complete several hours of continuing education for every cycle of licensing within their respective states. Ideally, education on high-performance homes would be a part of this continuing education cycle. NAR offers a Green Designation to help agents gain some competency on the complexities of marketing a high-performance home.⁴ The organization also offers various publications on the topic.

In short, failing to market a high-performing home correctly would be an underrepresentation of the consumer’s best interest and a violation of the NAR code of ethics. A full understanding of what the home is and how it appeals to the market is of utmost importance.



³ - Valuing Green Homes for What They Are Worth. NAHB. <https://www.nahb.org/advocacy/industry-issues/appraisals/Valuing-Green-Homes-for-What-Theyre-Worth>. 2021

⁴ - Green. National Association of REALTORS®. <https://www.nar.realtor/education/designations-and-certifications/green>. 2021

Real Estate Appraisers

Real estate appraisers are integral to the loan process. Most home purchases require a mortgage, which in turn typically requires an appraisal. Every market needs qualified appraisers to competently value these homes.

An appraiser retained by a lender using FHA-, FNMA-, USDA-, or FMLC-backed mortgages must already be competent in the property type or recuse themselves from the assignment. They should not accept an assignment to appraise a high-performing home without fully understanding the category.

There should be a registry that leads lenders and consumers to professionals who have demonstrated competency in this specific field of valuation. The Appraisal Institute's registry for "green" appraisers (categorized as "Valuation of Sustainable Buildings: Residential"⁵) is seen by many in the valuation profession as an important registry for this valuation specialty, but it is not well-known outside of the profession. It's essential that mortgage lenders become familiar with the availability of this registry. Pearl should engage appraisers from the registry regarding the Pearl Certification program and communicate the potential for mutually beneficial relationships.

Because appraisers may not yet view high-performing homes as a normal part of the housing market, they may be resistant to the work required to competently value them. Appraisers

(as well as potential contractors and real estate professionals) should take advantage of high-performance, home-relevant coursework and books from the Appraisal Institute and other appraisal education providers.

Some appraisers simply assert that there is no data available on a premium for high-performance homes. If an appraiser accepts an assignment to value a high-performing home, they must fully research the potential premium associated with this type of home in the given market, rather than asserting that there is a lack of available data on high-performing homes within the market. While this may be true, due diligence is required.

The lack of professionally trained appraisers in this specialty is especially a challenge in rural and less-populated markets outside of major MSAs. Appraisers in these areas could benefit from optional support and resources when taking on an assignment involving these complexities.

Professional Development Registries Valuation of Sustainable Buildings: Residential. The Appraisal Institute. https://ai.appraisalinstitute.org/eweb/DynamicPage.aspx?webcode=AIPDPHome&_ga=2.44759975.287113937.1634130338-580166192.1602847256. 2021

Contractors and Related Professionals

Pearl offers an elite contractor network which has built bridges into this profession. Contractors can increase the value of home Pearl certifications by ensuring that the realtors and appraisers they interact with are fully familiar with Pearl and take the appropriate steps to maximize the value of the certification.

Lending Professionals

Energy efficiency-related lending has been around for some time but is still not widespread. There are several lending programs that take into consideration the cost savings that a home will yield and apply that number in qualifying a potential borrower.

The largest issue is the inability of lenders to effectively retain high-performing, home-competent appraisers. Due to the way many lenders work internally, there may be no communication within the lending departments regarding the special characteristics of the high-performing home they are asked to finance. Lenders are charged through policy and legislation with retaining appraisers who are competent to value these types of homes, but if there is some breakdown along the process with the lender communicating this, then the lender will not retain the right person to do the appraisal.

Lending professionals (in origination, compliance, and underwriting) have continued education requirements and these requirements can be met in part through education on financing high-performance homes. Organizations such as the Mortgage Bankers Association and the National Association of Mortgage Brokers should develop relevant training for their members.

Lenders and Pearl could potentially work together to create a network for high-performing home-proficient lenders, so that a list of such lenders could be available to buyers seeking to purchase Pearl Certified homes.

APPENDICES

Appendix A: Paired Data Analysis Detail Example

This example uses two sales from the same new construction subdivision to provide further detail on the paired data analysis methodology. The grid below, which provides details about the properties being compared, is based on the Fannie Mae 1004 report form, which was chosen as it is the most used type of appraisal form and appraisers are familiar with it.

The property labeled “Subject” is just for reference and is not used for comparison. The two sales are model matches, meaning that they are the same model of home with very similar features. There are three adjustments made between the two model matches. Comp Example 1 is the baseline comparison, or rather it is the Pearl Certified home to which other sale(s) will be compared. The idea, as explained previously, is to account for all supportable differences between the two sales.

The first adjustment is a transactional adjustment made for concessions. This adjustment accounts for the concessions paid by the seller on behalf of the buyer, in this case, closing cost assistance. This adjustment is made to modify the sale to the cash equivalent price. In this case it is adjusted on a dollar-for-dollar amount.

FEATURE	SUBJECT	COMPARABLE SALE # 4	COMPARABLE SALE # 5
Address	Subject Property Charlottesville, VA 22902	Comp Example 1 Charlottesville, VA 22902	Comp Example 2 Charlottesville, VA 22902
Proximity to Subject			
Sale Price	\$	\$ 600,550	\$ 614,468
Sale Price/Gross Liv. Area	\$ sq.ft	\$ 237.84 sq.ft	\$ 243.35 sq.ft
Data Source(s)	CAAR MLS	CAAR MLS #example;DOM 0	MLS#example;DOM 0
Verification Source(s)		Assessor's Tax/Agent/Drive	Assessor's Tax/Agent/Drive
VALUE ADJUSTMENTS	DESCRIPTION	DESCRIPTION	+(-) \$ Adjustment
Sales or Financing	ArmLth	ArmLth	
Concessions	Cash;0	Cash;0	
Date of Sale/Time	s10/19;c01/19	s10/19;c01/19	
Location	N;Res;PynsMI	N;Res;PynsMI	
Leasehold/Fee Simple	Fee Simple	Fee Simple	
Site	8712 sf	8712 sf	
View	N;Res;	N;Res;	
Design (Style)	DT2;Transitnl	DT2;Colonial	
Quality of Construction	Q3	Q3	
Actual Age	0	0	
Condition	C1	C1	
Above Grade	Total Bdrms. Baths	Total Bdrms. Baths	
Room Count	9 4 2.1	9 4 2.1	
Gross Living Area	2,525 sq.ft	2,525 sq.ft	
Basement & Finished Rooms Below Grade	1208sf969sfwo 1rr1br1.0ba0o	1208sf969sfwo 1rr1br1.0ba0o	
Functional Utility	Good	Good	
Heating/Cooling	FWA/CAC	FWA/CAC	
Energy Efficient Items	Pearl Gold	Pearl Gold	
Garage/Carport	2ga2dw	2ga2dw	
Porch/Patio/Deck	CvdPch,Dk	CvdPch,Dk	
Additional Items	None	None	
Net Adjustment (Total)		\$ 0	\$ -16,100
Adjusted Sale Price of Comparables		Net Adj. 0.0% Gross Adj. 0.0% \$ 600,550	Net Adj. 2.6% Gross Adj. 16.6% \$ 598,368

APPENDICES

Appendix A: Paired Data Analysis Detail Example

The second adjustment accounts for market conditions difference. This adjustment is made based on market trend differences between the two sales. In this case the adjustment is based on a trend analysis performed on the overall market appreciation seen between the two sales. That is, if the average sales price in the market increased by 5% between the first sale and the sale it is being compared with, the cost of the first sale would be increased by 5%. This type of analysis is one of the simplest that an appraiser can support as it accounts for the change per unit of time, in this case, daily.

There are a few things that differ between the houses for which no adjustment was made. The difference in site size, in this case 8,712 square feet versus 13,155 square feet. No adjustment could be isolated for this difference using additional analysis techniques that included paired land sales, allocation, and extraction. The details of these analysis techniques are readily available in appraisal texts.

Actual age is not adjusted for as the second sale was zero years in age when it sold. The stated age in the grid references the age of the property as of the report date, which in this case is approximately a year later.

The small difference in basement finished area, one having 969 square feet and the other 976 square feet, is not adjusted for as the difference is minimal and no support could be found that the market would pay a difference.

The final adjustment is for the sale not having a Pearl Certification. As all other supportable differences between the two sales have been accounted for, the last remaining “adjustment” is the paired sales price data comparison; in other words, the sales premium. In this case it was 7%.

APPENDICES

Appendix B: Prior Studies on Premiums for “Green” and Related Housing Categories

Study Name	Date Published & Author	Market Area	Date	Sales Price Premium
<i>“What is Green Worth? Unveiling High-Performance Home Premiums in Washington, D.C.”</i>	Sandra K. Adomatis, SRA, LEED GA	Washington, D.C.	Jul-05	Range of 2% to 5%
<i>“An Early Look at Energy Efficiency and Contributory Value: Case Studies of Residential Properties in the Greater Denver Metro Area”</i>	Lisa Desmarais, SRA	Denver	2015	An overall range of 1% to 15% (Excluding outliers, the range is 2% to 5%)
<i>“The Market Valuation of Energy Efficient and Green Certified Northwest Homes”</i>	Taylor Watkins and other appraisers	Northwest US	2015	A range of -0.2% to 8%
<i>“An Empirical Assessment of the Value of Green in Residential Real Estate” The Appraisal Journal</i>	Anjelita Cadena, PhD and Thomas A. Thomson, PhD	San Antonio, TX	2015	1% increase for a green certification, 2% increase for green components, and 6% increase for energy efficient features.
<i>“The Value of LEED Homes in the Austin-Round Rock Real Estate Market,”</i>	Greg Hallman of McCombs School of Business	Austin-Round Rock, TX	2017	A house with a green designation sells for 6% more than one without, and a house with a LEED certification sells for 8% more
<i>“Green Homes Sales Prices in Northern California”</i>	Sandra K. Adomatis, SRA, LEED GA and Denis A. DeSaix	San Francisco, CA	2017	2.19% Average
<i>“Appraisers Analyze Data on Pearl Home Certified Sales”</i>	Sandra K. Adomatis, SRA, LEED Green Assoc.; Donald Boucher, SRA, and Woody Fincham, SRA, AIRRS; Betsy Hughes, SRA; real estate appraisers	Charlottesville, VA Northern, VA	2017	5% in the market area where Pearl has established a presence and where agents are marketing the certification effectively. For Pearl-certified homes in all market areas, the
<i>“Energy Efficiency: Value Added to Properties & Loan Performance” Freddie Mac</i>	ROBERT ARGENTO, XIAN FANG BAK, LARIECE M. BROWN	National	2019	From the property value analysis, rated homes are sold for, on average, 2.7% more than comparable unrated homes

APPENDICES

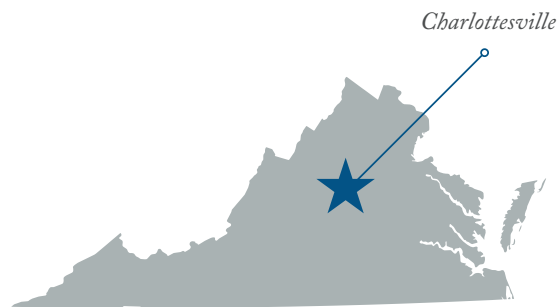
Appendix C: Market Profiles and Housing Data — Charlottesville

REAL ESTATE MARKET OVERVIEW

The Charlottesville MSA has seen a double-digit increase in home sales prices year-over-year. The Charlottesville Area Association of REALTORS® (CAAR) Multiple Listing Service (MLS) reports that the median sales price increased 17.6% from June 2020 to June 2021⁶, while Inventory dropped 57.4%. This reflects national trends, with Charlottesville performing similarly to the rest of the country. The lack of available inventory contributed to increasing prices.

It can be difficult to ascertain the property premiums for high-performing homes in such a market because consumers are often compelled to pay top dollar due to buyer competition. Properties that would normally be seen as inferior will often sell for a higher amount than when the market is more stable. The paired-data analysis approach significantly controls for the issue of tight inventory.

At the time of preparing this report (early October 2021) there were 315 active listings in the Charlottesville market. Of those active listings, 120 were designated as having “green” features in their MLS listings, which equates to about 38%, suggesting a reasonable level of market awareness, perhaps due in part to Pearl Certification’s educational efforts with local real estate agents. Of these properties, a word search for “green” in public remarks returned 18 properties. In agent remarks (not available to the public), there was only one listing with the word “Pearl” in it.



The five largest employers in the region are:

1. University of Virginia
2. County of Albemarle
3. Walmart
4. Sentara Health Care
5. UVA Health Services Foundation

The largest employment by industry is made up of government employees, with most being state employees. This is followed by health care and retail trades. The education level for the region shows that 64% of the workforce has at least some college education, with 37% having a bachelor’s degree or higher.

6- CAAR Charlottesville Area Market Indicators Report. [https://www.caar.com/docs/default-source/market-report/caar-market-indicators-report-\(june-2021\).pdf](https://www.caar.com/docs/default-source/market-report/caar-market-indicators-report-(june-2021).pdf). June 2021

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Appendix C: Market Profiles and Housing Data — Phoenix

REAL ESTATE MARKET OVERVIEW

According to the Arizona Regional Multiple Listing Service Quarterly Housing Summary Q4 2021, key metrics in Maricopa County (Phoenix-Mesa-Scottsdale MSA), the market showed the following changes in the prior one-year period:

- **Median Sale Price: \$439,900, up 27.0%**
- **Mean Sale Price: \$543,179, up 21.9%**
- **Percent of List Price Received: 99.9%, up 0.8%**
- **Days on Market; 33, down 19.5%**
- **Closed Sales: 21,376, down 10.1%**
- **Homes for Sale: 4,160, down 13.7%**
- **Number of Months Housing Supply (the number of months it would take for the current inventory to sell at the current pace): 0.6, down 3.5%**

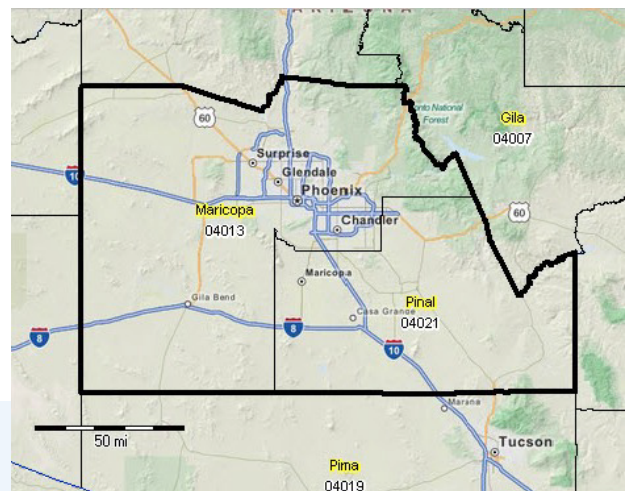
Based on the CoreLogic Home Price Insights Report/CoreLogic HPI for the month of January 2022, Phoenix appears to be No. 1 among the

The five largest employers in the region are:

1. **State of Arizona**
2. **Walmart Inc.**
3. **Banner Health**
4. **City of Phoenix**
5. **Wells Fargo**

top 10 metro areas in the U.S. for increase in housing price, with a 30.2% year-over-year increase. High demand and low inventory combined with favorable mortgage interest rates fueled the local housing market and contributed to increasing prices.

At the time of preparing this report (mid-March 2022) there were 3,476 active listings in Maricopa County. Of those active listings, 616 were noted as having “green” features, and 59 properties were noted as having “green”/energy certifications.



The largest employers are government, health care, retail trade, construction, and finance. U.S. Census data for years 2015-2019 shows that 87.7% of the population in Maricopa County has high school graduate or higher-level education, with 32.7% having a bachelor’s degree or higher.

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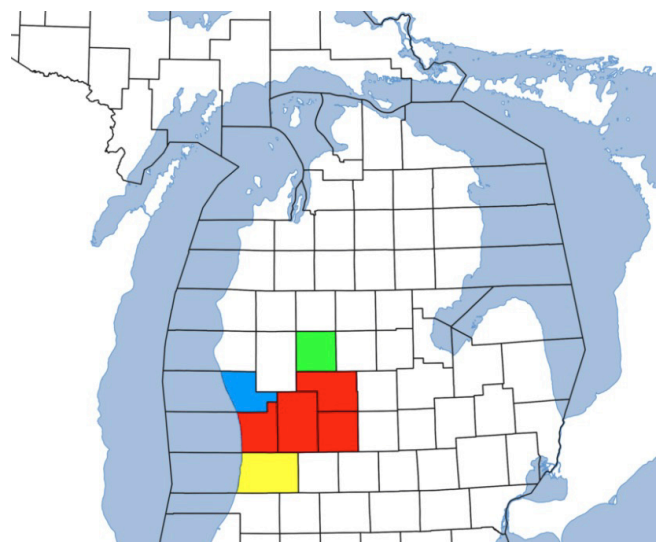
Appendix C: Market Profiles and Housing Data — Grand Rapids

REAL ESTATE MARKET OVERVIEW

The Grand Rapids area (Kent County) has seen a double-digit increase in home sales prices year-over-year.

The Greater Regional Alliance of REALTORS® (GRAR) Multiple Listing Service (MLS) reports that the median sales price increase from December 2020 to December 2021 was 16%. Average months of inventory dropped from 1.2 months in 2020 to 0.6 months in 2021. In this respect, the Grand Rapids market is acting in a similar fashion to the rest of the country. The lack of available inventory contributed to increasing prices.

At the time the research for this report was conducted (in early October 2021), there were 841 active listings in the Grand Rapids market. Of those active listings, seven listings mentioned energy efficiency. Of the seven designated properties, none mentioned Pearl Certification.



The five largest employers in the region are:

1. **Spectrum Health**
2. **Meijer**
3. **Mercy General Health Partners**
4. **Amway Corporation**
5. **Gentex Corporation**

The health care industry is the largest employer in the MSA, followed by retail and manufacturing. The education level for the region shows that 90.7% of the population have a high school degree, and 35.7% have a bachelor's degree or higher.

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Appendix C: Market Profiles and Housing Data — Boston

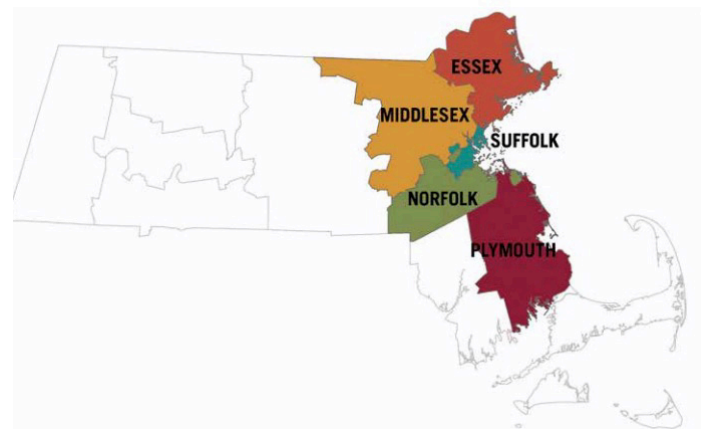
REAL ESTATE MARKET OVERVIEW

The Greater Boston area has seen a double-digit increase in sales prices year-over-year. Using data from the MLS PIN (MLS Property Information Network), which is the primary MLS provider in the Greater Boston area, median sales prices in Suffolk, Middlesex, Essex, and Norfolk Counties (combined) increased approximately 12%. Inventory was reported to have dropped 42.7% in these same counties. This is not an uncommon circumstance nationally; Greater Boston and all of Massachusetts is performing in a similar fashion to the rest of the country. The lack of available inventory contributed to increasing prices. These four counties were chosen due to their proximity to Boston, including Boston itself. These counties also cover most Pearl Certified home sales that were analyzed for this report.

In 2021, there were 25,472 single family homes sold in Suffolk, Middlesex, Essex, and Norfolk Counties combined. Of those active listings, 46

were designated as having “green” features — about a tenth of a percent of listings. This suggests a significantly lower level of market awareness than in Charlottesville, where the figure was almost 40%. Of those designated properties, a word search in public remarks returned three properties identifying the Pearl Certification.

The Five Counties of Greater Boston



The five largest employers in the region are:

1. **Mass General Brigham**
2. **Beth Israel Lahey Health**
3. **University of Massachusetts**
4. **The Stop & Shop Supermarket Company**
5. **Harvard University**

This is not inclusive of corporations that have employees in other states/counties. Health care, higher education, and retail are the largest employers by industry. U.S. Census data shows that 67% of the workforce has at least some college education, with 44% having a bachelor’s degree or higher.

Appendix D: Sales Included in Final Analysis

City	Subdivision/MA	Date of Contract	MLS	ADJ	DOM
Crozet	Old Trail HOA	5/18/2020	600388	7.00%	71
Crozet	Old Trail HOA	3/3/2020	599403	7.50%	37
Charlottesville	Cascadia HOA	5/12/2020	598683	7.00%	131
Charlottesville	Cascadia HOA	5/12/2020	598043	8.50%	136
Charlottesville	Cascadia HOA	11/30/2019	587090	4.00%	263
Crozet	Old Trail HOA	3/14/2020	600682	9.50%	15
Crozet	Old Trail HOA	5/21/2019	590126	5.00%	14
Crozet	Old Trail HOA	9/7/2018	581282	12.50%	0
Crozet	Old Trail HOA	10/18/2019	596318	1.00%	15
Charlottesville	Raintree HOA	1/12/2021	612355	8.50%	3
Charlottesville	Redfields HOA	6/1/2019	591161	6.00%	2
Crozet	Westlake at Foothills HOA	12/15/2020	604879	6.00%	180
Crozet	Old Trail HOA	3/13/2020	591986	0.00%	270
Charlottesville	Cascadia HOA	1/15/2020	598002	0.00%	54
Charlottesville	Cascadia HOA	6/9/2020	602585	0.00%	56
Charlottesville	Cascadia HOA	11/19/2019	595845	0.00%	59
Charlottesville	Payne's Mill HOA	1/14/2019	584810	7.00%	0
Charlottesville	Avinity HOA	1/22/2020	598793	2.00%	15
Charlottesville	Belvedere	1/29/2020	599464	4.50%	1
Charlottesville	Huntley HOA	10/11/2018	576211	3.50%	95
Crozet	Old Trail HOA	2/2/2020	595403	1.00%	144
Crozet	Old Trail HOA	1/19/2021	612589	6.00%	3
Crozet	Old Trail HOA	1/21/2019	581394	3.00%	101
Crozet	Old Trail HOA	12/23/2019	598431	6.50%	10
Palmyra	THE Villages at Nahor HOA	1/3/2020	593774	2.00%	156
Crozet	Westhall HOA	2/7/2021	613000	16.00%	3
Buckeye	Tartesso	2/1/2021	6186872	8.00%	76
Buckeye	Tartesso	9/22/2021	6279572	1.00%	38

City	Subdivision/MA	Date of Contract	MLS	ADJ	DOM
Buckeye	Tartesso	2/1/2021	6186872	1.40%	5
Mesa	Parkwood Ranch	5/24/2021	6231987	7.50%	40
Phoenix	Majestic Hills	11/7/2020	6147558	6.40%	38
Scottsdale	Buenavante	5/25/2020	6015409	1.60%	171
Tempe	Shalimar West	3/15/2020	6049589	1.30%	15
Chandler	Silverton Ranch	12/9/2019	5994042	5.70%	75
Phoenix	Desert Canyon	8/26/2019	5969404	6.00%	39
Phoenix	Lookout Mountain	7/21/2019	5920414	1.50%	79
Scottsdale	Astralgal	7/5/2019	5876256	5.40%	155
Phoenix	Stetson Valley	5/8/2019	5916387	4.40%	13
Mesa	Eastmark	3/27/2019	5879768	2.80%	66
Peoria	West Shore	1/16/2019	5846025	0.90%	72
Goodyear	Sedella	8/16/2019	5951933	0.00%	41
Surprise	Mountain Vista Ranch	3/30/2021	6213236	2.90%	4
Phoenix	Palm Terrace	4/21/2020	6020249	1.60%	121
Phoenix	Townhouse Terrace	4/6/2020	6024431	0.00%	64
Arlington	Menotomy	9/7/2021	72856469	0.00%	89
Wilmington	Wilmington	12/20/2019	72544402	5.00%	154
Boxborough	Boxborough	9/16/2020	72646344	6.00%	99
Somerville	Magoun Sq	3/15/2021	72759959	0.00%	115
Groton	Groton	3/8/2021	72792392	7.00%	5
Winchester	Winchester	4/14/2020	72642710	4.00%	17
Wayland	Wayland	5/3/2020	72649175	6.00%	4
Lunenburg	Lunenburg	5/25/2020	72660439	7.00%	17
Groton	Groton	5/18/2020	72622570	5.00%	87
Wayland	Wayland	4/28/2019	72468951	6.00%	52
Wayland	Wayland	6/22/2021	72849662	0.00%	8
Rockford	Rockford	6/1/2021	21014384	7.00%	2
Rockford	Rockford	8/28/2020	20028049	7.00%	42
Grand Rapids	Grand Rapids	6/15/2021	21015532	2.50%	6

The above table are all the sales used in the final analysis within each market.