

# Appraisers' Analysis of Pearl National Home Certification Sales Premiums



Making **Value Visible**  
in Our Nation's Homes

1577 Spring Hill Rd  
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Vienna, VA 22182

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# Disclaimer & Acknowledgements

This document was prepared by real estate appraisers and supported by Pearl National Home Certification. This work does not form or imply value of a specific property or market area. It is a study of how the market reacts to sales prices of homes certified by Pearl, compared to sales prices of homes without Pearl certification.

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This study would not have been possible without the expertise of local appraisers who formed the Project Team. Woody Fincham and Donald Boucher did the research and pairing of the data to establish the basis for the study conclusions. The biography of each author and the project team are located in the Appendix of this report.

## Project Team Reviewer

A special thank you goes to Betsy Hughes, SRA for the peer review of the study. Betsy is a residential appraiser in Virginia who is also on the Appraisal Institute's Green Registry. She is familiar with residential property valuation and green features. Betsy can be contacted at BK Appraisal Services, Virginia Beach, VA.

## Forward

Pearl National Home Certification was founded on the conviction that home buyers want high-performing homes — homes that are comfortable, healthy, and energy efficient — and will pay more for them. We have strong evidence for this belief: for over a decade, researchers studying how certified “green” and energy efficient homes fare in the marketplace have found that they consistently sell for more than comparable, non-certified homes.

In other words, there's a demand for home performance. The problem is that there's a shortage of high-performing homes — or, more accurately, *certified* high-performing homes, for interested buyers to purchase. A significant proportion of new homes are now built to ENERGY STAR® standards. But there is no comparable, widely accessible certification for existing properties that buyers can use when searching for their dream home.

Pearl meets this need by certifying high-performing homes and creating reports that provide detailed information about the features that make the home comfortable, healthy, safe and energy efficient. We also provide home sellers and their agents with high-quality marketing materials that help them explain the home's special features to potential buyers.

After certifying homes for just over a year in the Virginia and Maryland markets, Pearl has collected a wealth of stories about how Pearl certification helps buyers find the right home, and helps sellers get the right price. Reviewing our experiences in the summer of 2017, we decided that we needed a way to quantify the impact that Pearl is having on local real estate markets. We turned to Sandy Adomatis, who literally wrote the book on appraising green and energy efficient properties, and has authored many studies of behalf of the U.S. Department of Energy, national laboratories, and other stakeholders. We're grateful to Sandy, and to two outstanding appraisers, Don Boucher and Woody Fincham, for their meticulous work on this study. We're also very grateful to Betsy Hughes for generously providing her expert opinion.

This study would not have been possible without the real estate agents who began selling Pearl-certified homes when Pearl certification was still a new thing in Virginia. We also greatly appreciate support and encouragement provided by the U.S. Department of Energy and the U.S. Environmental Protection Agency for supporting Pearl as a pilot Home Performance with ENERGY STAR program sponsor, which played an important role in building the Pearl brand.

We see this as the first step in a larger project. At the authors' recommendation, Pearl plans follow-up studies in Virginia and other market areas. Pearl's mission is to make the full value of U.S. homes visible; we see this research as a major step towards that goal.

**Robin LeBaron, President and COO**  
**on behalf of the Pearl Team**

# Executive Summary

The study data support an average premium attributed to homes that have received certification from Pearl National Home Certification in Northern and Central Virginia. An original dataset of 27 sales of Pearl-certified homes occurring between 2016 and 2017 was the sample used to start the sales search. Of the 27 Pearl-certified home sales, 13 sales had enough similar non-Pearl-certified sales for a data-paired analysis of potential sales price premiums. The project team researched all 27 Pearl-certified home sales through the MLSs to verify the sale prices, dates, and marketing techniques used. No additional Pearl-certified sales were found in the MLS. This study includes 35 paired-datasets that form the basis for the following conclusions:

- The Pearl Home Certification Premium study found an average (mean) premium of 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 average (mean) premium was just over 2%.
- The study areas included two distinct market areas, Northern Virginia and Central Virginia. Pearl-certified homes had less exposure in the Northern Virginia than in the Central Virginia market. The Northern Virginia market had a lower market share of Pearl-certified homes, and MLS marketing of Pearl-certified homes was not as prevalent in Northern Virginia as in the Central Virginia market. It would be misleading to consider only the mean and median sales price premium for both markets jointly. Accordingly, the statistics have been broken down by city, market area, and by premium categories to give a more realistic picture of the markets' response to the certification. In Central Virginia, the average (mean) premium was 5.0%, and in Northern Virginia the average (mean) premium was 1.0%. However, several areas within Northern Virginia showed evidence of larger premiums, as discussed below.



The tables below show the breakdown by market area.

## Central Virginia

Pair No.	Tier	City	State	SF	Age	PHC Sale Price	PHC List Price	PHC Date of Sale	Sales Price Premium	% Sales Price Premium	DOM for PHC	PHC Sale-to-List Price
1	Gold	Charlottesville	VA	1686	3	\$ 344,900	\$ 344,900	4/17/2017	\$10,000	2.90%	11	100%
2	Gold	Charlottesville	VA	1686	3	\$ 344,900	\$ 344,900	4/17/2017	\$2,000	0.58%	11	100%
7	Silver	Zion Crossroads	VA	2120	3	\$ 419,000	\$ 419,900	4/2/2016	\$22,500	5.37%	60	100%
13	Gold	Crozet	VA	2,170	15	\$ 477,000	\$ 479,000	2/26/2017	\$46,234	9.69%	29	100%
14	Gold	Crozet	VA	2,170	15	\$ 477,000	\$ 479,000	2/26/2017	\$41,208	8.64%	29	100%
15	Platinum	Crozet	VA	2,011	0	\$ 545,000	\$ 544,000	5/22/2017	\$28,000	5.14%	164	100%
19	Gold	Crozet	VA	2,593	4	\$ 617,000	\$ 629,900	3/24/2017	-\$10,800	-1.75%	11	98%
20	Gold	Crozet	VA	2,976	4	\$ 617,000	\$ 629,900	3/24/2017	\$14,100	2.29%	11	98%
21	Silver	Zion Crossroads	VA	2,595	7	\$ 400,000	\$ 419,000	10/11/2016	\$42,100	10.53%	300	95%
22	Silver	Zion Crossroads	VA	2,595	7	\$ 400,000	\$ 419,000	10/11/2016	\$26,600	6.65%	300	95%
				<b>Median</b>	<b>4</b>	<b>\$448,000</b>	<b>\$449,450</b>		<b>\$24,550</b>	<b>5.25%</b>	<b>29</b>	<b>99.58%</b>
				<b>Mean</b>	<b>6</b>	<b>\$464,180</b>	<b>\$470,950</b>		<b>\$22,194</b>	<b>5.00%</b>	<b>93</b>	<b>98.60%</b>

## Northern Virginia and Maryland

Pair No.	Tier	City	State	SF	Age	PHC Sale Price	PHC List Price	PHC Date of Sale	Sales Price Premium	% Sales Price Premium	DOM for PHC	PHC Sale-to-List Price
3	Silver	Springfield	VA	1590	54	\$ 590,000	\$ 595,000	4/22/2017	\$26,000	4.41%	3	99%
4	Silver	Springfield	VA	1590	54	\$ 590,000	\$ 595,000	3/17/2017	\$25,000	4.24%	3	99%
5	Silver	Springfield	VA	1590	54	\$ 590,000	\$ 595,000	4/22/2017	\$24,500	4.15%	3	99%
6	Silver	Springfield	VA	1590	54	\$ 590,000	\$ 595,000	4/22/2017	\$24,000	4.07%	3	99%
8	Bronze	Falls Church	VA	1,254	66	\$ 530,000	\$ 539,000	8/8/2016	\$5,000	0.94%	79	98%
9	Bronze	Falls Church	VA	1,254	66	\$ 530,000	\$ 539,000	8/8/2016	\$5,000	0.94%	79	98%
10	Bronze	Falls Church	VA	1,254	66	\$ 530,000	\$ 539,000	8/10/2016	-\$1,000	-0.19%	79	98%
11	Assets	Alexandria	VA	2496	23	\$ 650,000	\$ 680,000	1/11/2016	\$5,000	0.77%	74	96%
12	Assets	Alexandria	VA	2496	23	\$ 650,000	\$ 680,000	1/11/2016	\$3,000	0.46%	74	96%
16	Silver	Ashburn	VA	2,452	7	\$ 580,000	\$ 580,000	1/14/2017	\$11,000	1.90%	3	100%
17	Silver	Ashburn	VA	2,452	7	\$ 580,000	\$ 580,000	1/14/2017	\$10,000	1.72%	3	100%
18	Silver	Ashburn	VA	2,550	7	\$ 580,000	\$ 580,000	1/14/2017	\$4,500	0.78%	3	100%
23	Silver	Herndon	VA	2,560	39	\$ 715,000	\$ 679,000	2/15/2017	\$27,500	3.85%	4	105%
24	Silver	Herndon	VA	2,560	39	\$ 715,000	\$ 679,000	2/15/2017	\$20,100	2.81%	4	105%
25	Silver	Herndon	VA	2,560	39	\$ 715,000	\$ 679,000	2/15/2017	\$26,000	3.64%	4	105%
26	Silver	Herndon	VA	2,560	39	\$ 715,000	\$ 679,000	2/15/2017	\$23,000	3.22%	4	105%
27	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$ 498,000	10/7/2017	-\$28,500	-5.82%	25	98%
28	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$ 498,000	11/16/2016	-\$6,000	-1.22%	25	98%
29	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$ 498,000	10/7/2016	\$5,000	1.02%	25	98%
30	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$ 498,000	11/16/2016	-\$1,000	-0.20%	25	98%
31	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$ 1,599,000	5/12/2017	-\$12,000	-0.78%	7	96%
32	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$ 1,599,000	5/12/2017	-\$73,864	-4.83%	7	96%
33	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$ 1,599,000	5/12/2017	\$59,500	3.89%	7	96%
34	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$ 1,599,000	5/12/2017	-\$68,500	-4.48%	7	96%
35	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$ 1,599,000	5/12/2017	\$8,500	0.56%	7	96%
				<b>Median</b>	<b>39</b>	<b>\$590,000</b>	<b>\$595,000</b>		<b>\$5,000</b>	<b>0.94%</b>	<b>7</b>	<b>98%</b>
				<b>Mean</b>	<b>39</b>	<b>\$778,400</b>	<b>\$792,000</b>		<b>\$4,869</b>	<b>1.03%</b>	<b>22</b>	<b>99%</b>

- The pairing analysis included 13 Pearl-certified home sales that were each compared to between one and five similar non-Pearl-certified home sales. In total, 35 non-Pearl-certified sales were developed to complete this study.

Of the 35 non-Pearl certified home pairs, 19 pairs support a sales price premium, 8 pairs are inconclusive, and 8 pairs show no premium.

- The table below shows the overall statistics of the 35 pairs for combined markets. The study found an average (mean) premium of 2.17% for all homes in the study.

Statistics based on the following breakdown of premiums											Living Area	Age	Sale Price	List Price	% Sales Price Premium	DOM for PHC	PHC Sale-to-List Price
Negative & Positive Premiums		35 Pairs	Median	2452	23	\$580,000	\$580,000	Median	1.90%	11	98%						
		35 Pairs	Mean	2691	30	\$688,623	\$700,271	Mean	2.17%	42	99%						
>0%	Premiums	27 Pairs	Median	2452	23	\$580,000	\$580,000	Median	3.22%	11	99%						
>0%	Premiums	27 Pairs	Mean	2442	27	\$625,733	\$631,467	Mean	3.52%	48	99%						
>1.72%	Premiums	19 Pairs	Median	2452	15	\$590,000	\$595,000	Median	4.07%	4	100%						
>1.72%	Premiums	19 Pairs	Mean	2424	24	\$609,995	\$609,984	Mean	4.69%	50	100%						

- Because real estate is local it is important to look at the average premium by city as follows:

City	Avg. Premium	No. Pairs
Alexandria	0.62%	2
Ashburn	1.47%	3
Charlottesville	1.74%	2
Crozet	4.80%	5
Falls Church	0.57%	5
Great Falls	-1.13%	5
Herndon	3.38%	4
Silver Spring	-1.56%	4
Springfield	4.22%	4
Zion Crossroads	7.51%	3

Notably, as discussed in Appendix B, in both the cities that show a negative premium, Pearl had very little if any market exposure. (See the **Definition of Market Value in Appendix C.**)

- The data show that in six cities, Pearl-certified homes did sell faster than like homes without the certification or features. Those areas include the following:
  - Herndon

- Ashburn
  - Springfield
  - Crozet
  - Charlottesville
  - Great Falls
- MLS marketing practices in promoting Pearl-certified home features varied and may account for some of the pairs that show little or no sales price premium found. For instance, in Silver Spring, MD, and Great Falls, VA, the pairs with the highest negative results were sales where Pearl Certificates and documents were not included in the MLS listing as attachments or as jpg files in the photograph gallery. Also, in Northern Virginia, the number of Pearl-certified homes is lower than in Central Virginia. Northern Virginia's limited market exposure may also account for the difference in premiums between the two market areas.

## The Focus of the Study

**Residential units that had a Pearl Home Certification level at the time they sold.**

- i. Does the market pay a sales price premium for homes with a Pearl Home Certification?
- ii. Do homes with this certification experience less time on the market than homes without the certification?
- iii. Are Pearl Home Certified sales being marketed to maximize the benefits of the brand?
- iv. How can marketing of homes with the certification be improved to influence the sales price premium and appraised values?

# Abstract

This analysis is the first examination of how homes certified by Pearl National Home Certification perform in the market. The Pearl Home Certification program has been in existence since 2015, focusing on Virginia and nearby areas. A list of 27 Pearl-certified home sales were identified in this study and examined, together with comparable non-certified sales, to gain knowledge on how the market is reacting to the certification and the home features it highlights. The Project Team acknowledged previously in this report are appraisers who have knowledge of Pearl's Home Certification program, and two local appraisers who live in the Virginia market. The appraisers used a method known as "paired-data analysis" to learn if the market shows a sales price premium for Pearl-certified houses. While the dataset is not large, it does offer enough sales to reveal potential sales price premium, relative marketing times, and marketing practices for Pearl-certified home properties. Understanding how the properties are being marketed will allow Pearl National Home Certification to develop future education for real estate agents that may lead to more effective marketing, increased sales price premiums, and better data for valuation professionals.

The results of this study give valuation professionals valuable data using methods that are taught and used in the appraisal practice. The study results are not meant to be used by all real property appraisers in their appraisal work, because this study does not prove a sales price premium for every market and only reveals findings as of a specific sales date and location. Real property appraisers must always analyze their market as of a specific period to understand how their market reacts to various physical and location characteristics. The market should be studied again in the future when more homes have been certified by Pearl, to understand sales premiums going forward.

This study does not fall under recognized Appraisal Standards since a value of a specific property address or location is not the focus of the study.

# Introduction

The housing industry is experiencing a growth in labels and certifications for existing and newly constructed homes that show benefits to the property owner and occupants. Most “high performance,” “green,” or “energy efficient” certifications identify homes that have been built or renovated to a higher standard than code-built homes in their local market. Over 100 green-certifying organizations exist in the U.S.A. Some of the building-related certifying organizations have been in place for ten years or more, but only a few, like LEED®, ENERGY STAR®, Home Innovation Research Labs NGBS, and Passivhaus, are offered nationwide. Because so many certifying organizations with individual name brands have differing standards, it is difficult for real estate professionals and the public to become knowledgeable about the benefits associated with the brand. If the market participants do not understand the benefits, they are less likely to seek these brands or pay more upfront for them. A limited number of studies on high-performance homes do exist to suggest that in some markets, the market is willing to pay more for a home that meets a standard higher than code-built.

Markets vary in their acceptance of (or even the existence of) high performance homes and sales price premiums; therefore, any given study should not be applied to all market areas. Just like stocks, real estate values vary with economic conditions, changes in buyer desires, and buyer and seller knowledge of a given feature or certification. Prior studies of other studies in other markets had mixed results when comparing the marketing times of high-performance home sales compared to marketing times of non-high-performance sales. In some markets, for example, the inventory of homes is limited; therefore, houses sell quickly due to the limited supply with no differences found in those markets between high-performance houses and similar code-built houses.

These prior studies of high performance home certifications and/or home features are from different market areas and study periods, but they share one common finding: all show that third party, high performance home certifications provide a sales price premium between 1% and 15%. After outliers were removed, the sales price premiums in these prior studies ranged from 2% to 6%.

Real property valuation professionals should not consider these studies as the basis for valuing high-performance features in their own markets without analyzing their market as of the effective date of value. Studies reveal past trends and may not reflect current market trends. Below are past study results, with this study’s findings highlighted in blue at the bottom of the table.

# Table No. 1 Published Studies

Study Name	Date Published & Author	Data Period Covered & Market Area	Sales Price Premium Range
<b><i>“What is Green Worth? Unveiling High-Performance Home Premiums in Washington, D.C.”</i></b>	September 2015 Sandra K. Adomatis, SRA Donald Boucher, SRA and Tamora Pappas, SRA Real estate Appraisers	February 2013 – July 2015 Washington, D.C.	Range of 2% to 5%
<b><i>“An Early Look at Energy Efficiency and Contributory Value: Case Studies of Residential Properties in the Greater Denver Metro Area”</i></b>	Lisa Desmarais, SRA A real estate appraiser Published in 2015	2006 through 2014 data Greater Denver Metro Area	An overall range of 1% to 15%  Excluding outliers, the range is 2% to 5%
<b><i>“The Market Valuation of Energy Efficient and Green Certified Northwest Homes”</i></b>	Taylor Watkins and other appraisers Published May 2013	2014-2015 data (30 pairs) Northwest U.S. Oregon, Washington	A range of -0.2% to 8%
<b><i>“An Empirical Assessment of the Value of Green in Residential Real Estate”</i></b>	Anjelita Cadena, PhD and Thomas A. Thomson, PhD Published in Appraisal Journal – Winter 2015	October 2008-September 2013 data Bexar County-San Antonio, TX	1% increase for a green certification, 2% increase for green components, and 6% increase for energy efficient features.
<b><i>“The Value of LEED Homes in the Austin-Round Rock Real Estate Market,”</i></b>	Greg Hallman of McCombs School of Business Published 2017	2008-2016 data Austin-Round Rock, TX	A house with a green designation sells for 6% more than one without, and a house with a LEED certification sells for 8% more
<b><i>“Appraisers Analyze Data on Pearl Home Certified Sales”</i></b>	Sandra K. Adomatis, SRA, LEED Green Assoc.; Donald Boucher, SRA, and Woody Fincham, SRA, AI-RRS; real estate appraisers Published 2017	2016 and 2017 data Mostly Virginia sales with one sale in Maryland	The Pearl Home Certification Premium study found an average (mean) premium of 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 average (mean) premium was just over 2%

# About Pearl National Home Certification

Pearl is a national firm that certifies high-performing homes -- homes that are comfortable, healthy, safe and energy efficient. Pearl's system helps homeowners understand how to improve the performance of their homes, and it provides homeowners who have invested in high-performing features with tools that enable them to recapture the value of their investments when they sell their homes.

Pearl Home Certification raised funds to begin full-time operations in 2015, launched a pilot program in 2016, and launched its full certification program in 2017. As of October 31<sup>st</sup>, 2017, more than 300 properties have received a Pearl home certification. The majority of the homes certified to date are located in Virginia, with smaller numbers in Maryland, D.C. and New Jersey. Pearl will be expanding to New York and Pennsylvania later in the year.

A Pearl Home Certification costs \$369, but if homeowners request the certification through Pearl-certified home partner contractors and REALTORS® they can receive a discount, resulting in a significantly lower cost.

Pearl Home Certification actively works with real estate agents and appraisers to bring quality education to the markets they serve. Pearl's real estate team offers trainings for sales agents and takes an active role in MLS and Association events. Collectively, the team has reached over 300 real estate agents to date through presentations and agent enrollment in Pearl's Partner program.

Pearl has actively sought financial sponsors to fund Appraisal Institute courses in the Institute's Valuation of Sustainable Buildings Professional Development Program. These courses do not discuss Pearl-certified homes, but are designed to educate appraisers on the principles and concepts of identifying and valuing high-performance features generally.



The Pearl Home Certification website states, *"Most U.S. homes aren't as comfortable, healthy and efficient as they could be. Pearl's certification system can help you make your home perform better — and increase its value."*

The Pearl Home Certification program awards points for each high-performing asset in your home. High-performing assets are things that make your home more **healthy**,

**comfortable and energy efficient.** These three words are a consistent theme of the Pearl Home Certification brand. They are also key words that resonate with buyers and sellers in the market.

The Pearl Home Certification website offers case studies of certified homes. The Appendix of this report includes case studies on houses that earned a Pearl Home Certification. The following table gives the certification categories and their requirements.

Pearl Home Certification Levels			
Pearl Asset	Pearl Silver	Pearl Gold	Pearl Platinum
Points Not Applicable	725 Points	850 Points	1000 Points
When a home has a particularly high performing component, such as an excellent water heater or a solar installation, these can be valued through a Pearl Home Asset Certification.	A home with a good building shell (e.g. Insulation), or heating and cooling features, will typically qualify for Pearl Silver.	Similar to a home built to modern energy code, a home that has both a good building shell and heating and cooling systems will usually qualify for Pearl Gold.	In addition to a good building shell and heating and cooling systems, a typical Pearl Platinum home will have efficient appliances, lighting and other energy systems.

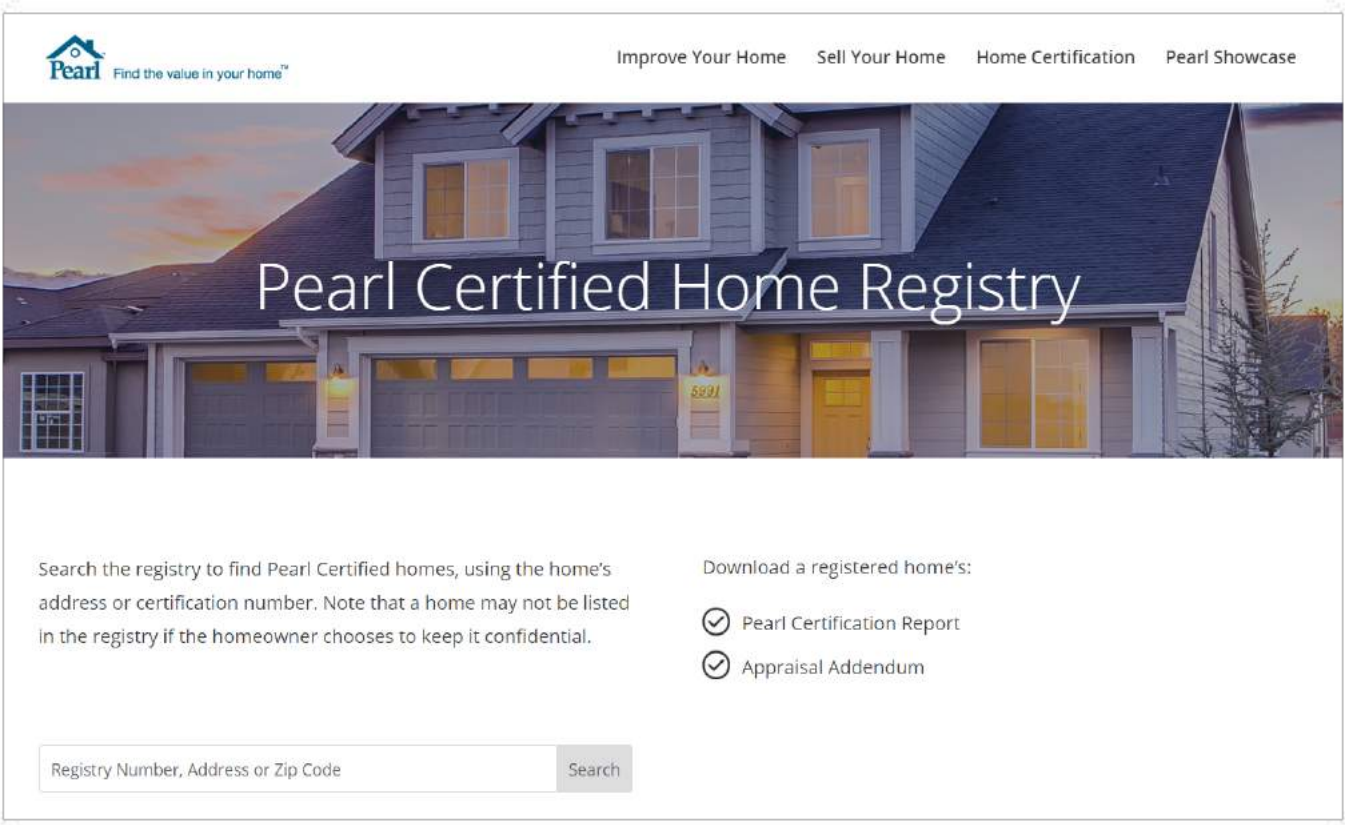
Category	Possible Points
 Building Shell	300
 Heating & Cooling	360
 Baseload	240
 Home Management	300

The Pearl certification system originally had a “Bronze” level that was discontinued shortly after being introduced to the market.



# Pearl Registry of Certified Homes

The registry of Pearl-certified homes is available to the public on the Pearl website at [www.pearlcertification.com/registry](http://www.pearlcertification.com/registry). Real estate agents, appraisers, lenders, or property owners can search for Pearl-certified homes and download a copy of the certification.



**Pearl** Find the value in your home™

Improve Your Home   Sell Your Home   Home Certification   Pearl Showcase

## Pearl Certified Home Registry

Search the registry to find Pearl Certified homes, using the home's address or certification number. Note that a home may not be listed in the registry if the homeowner chooses to keep it confidential.

Download a registered home's:

- ✓ Pearl Certification Report
- ✓ Appraisal Addendum

Registry Number, Address or Zip Code   Search

<https://pearlcertification.com/registry/>

# Methodology

This study used paired-data analysis to analyze sales of residential units with Pearl Home certifications compared to units without the certification, but with characteristics that would compete for the same buyer. The pairing of the sales requires adjustments to one of the sales to account for feature differences such as living area, porches, location, market conditions, room count, and condition. The adjusted sales price for the non-Pearl-certified home is compared to the Pearl-certified home sale price to answer the question: “Did the Pearl-certified home sell for more?” Pairings of two sales with very few or no adjustment are ideal, but this goal is unrealistic in most markets. Feature adjustments may be positive or negative, to make the sales equivalent except for the study feature being measured. At one time, the Fannie Mae and Freddie Mac market guidelines suggested gross adjustments should not exceed 25% and net adjustments should not exceed 15%. Low gross and net adjustments are a measure of the comparability of the two sales paired as well. Only one gross and one net adjustment in the pairs exceeded the suggested guidelines. The pairings show the number of adjustments, as well as the gross and net adjustments, to allow the reader to understand the similarity of the comparisons.

The paired-data analysis is a simple concept but one that is difficult to implement in residential home sales because of the difficulty of securing data on homes that are truly comparable, due to database (MLSs) inadequacies, the motivation of the buyers and sellers, and sometimes, the inability to verify the sale with parties involved in the transaction. However, despite these limitations, this is the method appraisers use as a basis for their adjustments in appraisal assignments.

A simple illustration of the “paired-data analysis” can be applied to the usual trip to the grocery store that offers multiple choices of essentially the same item offered by different companies. The price differences can sometimes be attributed to a brand name which is perceived as indicating a high-quality product. The example below is a “paired-data analysis” from a grocery item.

## An Example of Paired-Data Using a Grocery Item

Del Monte Fresh Cut Green Beans, 14.5 oz. can	\$1.25
Generic Fresh Cut Green Beans, 14.5 oz. can	<u>\$0.75</u>
Difference in sales price or sale price premium attributed to “Brand/Quality”	\$0.50

Appraiser-driven studies using paired-data analysis in a specific market area are preferred by appraisers and their lending clients. While this method usually has limited data from which to draw conclusions, when enough data are available, the results reveal how the market reacts to a given feature. Appraisers use this method to support adjustments for feature differences in the sales comparison approach. Academic studies, often based on hedonic modeling, use robust datasets but have limited applicability in the residential valuation process because the hedonic method is not a widespread practice used by residential appraisers. Most residential appraisers have limited data over a one-to-three-year period in their markets to use the hedonic model. (Most lenders expect the sales used in an appraisal to be within the last year.) Appraisal standards require appraisers to understand the work of others and deem it credible prior to relying on it in an appraisal. Not all appraisers would be comfortable explaining or using a hedonic model as the basis for an adjustment in the appraisal process.

The government-sponsored secondary mortgage market entities<sup>1</sup> have developed a robust dataset of residential properties through their mortgage portal that allows them to make decisions on values, risk-analysis, and other real estate related decisions. However, to date they have not shared the data at their fingertips. Their data cannot identify energy efficient or high-performance homes since the Uniform Appraisal Dataset (UAD)<sup>2</sup> does not have special coding for high performance, green or energy efficient features. It would be extremely beneficial to implement uniform appraisal coding for these features if the mortgage market expects to understand the influence of these increasingly common high performance features on value and default rates. *(If a high-performance home costs less to maintain (utility cost and overall maintenance) and is a healthier environment (potentially reducing health costs), the homeowner may have more money to pay the mortgage.)*

Paired-data analysis is time consuming because few homes are identical with the exception of one or two features. When other physical features require adjustment for feature differences other than the study feature, the adjustments must be based on the market's reaction to the feature. The most reliable database real property appraisers have is the MLS, and MLSs have limitations especially when valuing high-performance properties. Although most MLSs now have "green" fields, these fields are only rarely

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<sup>1</sup> These entities include Fannie Mae, Freddie Mac, the Federal Housing Administration (FHA), and the Department of Veterans Affairs

<sup>2</sup> UAD is a coding used on appraisal reports to allow the secondary market to capture the data in a consistent manner to use in analyzing market data for decision-making purposes including consistency in appraisal reporting by appraiser.

populated. The database limitations add to the time appraisers need to research sales data features to find sales that are truly comparable and compete for a similar buyer. Too often the appraiser attributes no value to high-performance features because of inadequate data and time to do the research and because appraisal fees typically do not cover extensive research time.

# Data

This section describes the data used and the steps involved in developing the paired-data analysis. Pearl Home Certification gave the project team 27 Pearl-certified home sales with certification level, date certified, points achieved, and date sold. Sale addresses are not displayed to protect owner privacy.

**Table 1** below is a summary of the data set used for analysis.

**Table No. 1: Summary of Data Considered for Paired-Data Analysis**

Sale Type	Residential	Townhouse/ Condo	Data Source
Pearl-certified home sales	26	1	Pearl Home Cert. and MLS
Non-Pearl-certified home sales	33	2	MLS
Total Sales	59	3	62 Sales

Pearl National Home Certification tracked sales of Pearl-certified homes and gave the Project Team the sales values for these homes. The Project Team verified the sales through MLS and agent contacts. Next, they searched the MLS areas where the Pearl-certified home sales were found, to discover similar house sales that were not Pearl-certified to use in pairing with the Pearl-certified home sales. The pairs included matching property characteristics that buyers and sellers in the market recognize, including, but not limited to, the following features:

- Address
- Most recent sale date, amount, and terms
- Home characteristics such as condition, living area, room count, pool, year built, quality, porches
- View
- Site size
- Structure type (Single-unit detached, townhouse, condo)
- Energy, green, and high-performance features

It was also important to confirm the days on the market and sale-to-list ratio of all sales used in the study. Once all the data details were known and confirmed, the appraisers conducted pairing analyses of home features to sales prices. Table 2 lists the Pearl-certified home sales that were researched for pairing to form the basis for the sales price premium conclusions.

**Table No. 2: Pearl - Certified Sales from Pearl Home Certification**

No.	Date of Certification	Tier	City/State	Living Area	Price	Date of Sale
1	11/9/16	Silver	Arlin+Q1+F2:F24+F2:F26	5257	\$ 1,620,000	3/27/2017
2	1/16/17	Silver	Ashburn, VA	2,550	\$ 580,000	2/27/2017
3	10/22/16	Silver	Blacksburg, VA	2688	\$ 350,000	5/12/2017
4	1/14/16	Silver	Charlottesville, VA	2354	\$ 457,000	8/2/2016
5	4/13/17	Gold	Charlottesville, VA	2,205	\$ 417,000	7/11/2017
6	4/10/17	Gold	Charlottesville, VA	2100	\$ 344,900	5/11/2017
7	11/30/15	Gold	Crozet, VA	2,900	\$ 477,000	4/5/2017
8	5/7/16	Silver	Crozet, VA	5,097	\$ 902,100	6/8/2016
9	8/30/16	Silver	Crozet, VA	2600	\$ 405,000	10/20/2016
10	12/6/16	Platinum	Crozet, VA	3551	\$ 790,000	5/24/2017
11	2/16/17	Gold	Crozet, VA	3,842	\$ 670,000	6/28/2017
12	2/16/17	Gold	Crozet, VA	6012	\$ 709,200	5/1/2017
13	2/16/17	Platinum	Crozet, VA	3,276	\$ 545,000	6/23/2017
14	3/2/17	Gold	Crozet, VA	3353	\$ 700,000	5/11/2017
15	3/20/17	Gold	Crozet, VA	2,976	\$ 617,000	5/11/2017
16	6/17/16	Bronze	Falls Church, VA	1,254	\$ 530,000	8/10/2016
17	2/2/16	Silver	Gordonsville, VA	2918	\$ 419,000	6/8/2016
18	9/1/16	Silver	Gordonsville, VA	3703	\$ 509,900	12/19/2016
19	5/6/17	Gold	Great Falls, VA	9,000	\$ 1,530,000	6/23/2017
20	1/17/17	Silver	Herndon, VA	2,334	\$ 715,000	3/31/2017
21	7/23/16	Bronze	Keswick, VA	5066	\$ 1,400,000	1/3/2017
22	3/1/17	Gold	Midlothian, VA	2,604	\$ 393,330	1/31/2017
23	7/18/16	Bronze	Silver Spring, MD	2,700	\$ 490,000	11/16/2016
24	11/15/15	Assets	Springfield, VA	3120	\$ 650,000	2/16/2016
25	4/21/17	Silver	Springfield, VA	1590	\$ 590,000	5/26/2017
26	2/14/17	Assets	Washington, DC	1,520	\$ 765,000	5/23/2017
27	1/17/16	Silver	Zion Crossroads, VA	3,633	\$ 400,000	11/14/2016
<b>Median</b>				<b>2918</b>	<b>\$580,000</b>	
<b>Mean</b>				<b>3341</b>	<b>\$665,794</b>	

To date, 27 of the more than 300 Pearl-certified homes in Virginia, Maryland, and D.C. have been put on the market. Of these 27 sales, 13 could be paired with one or more home sales that were similar but did not have the certified high-performing features

found in the Pearl-certified homes. In the process of verifying sales date, price, and living area, we found that some dates above are the date of closing, while the pairs used contract date or the date the contract was negotiated. Sale No. 22 was certified after it sold; therefore, it was not used in this study for pairing because it was not certified at the time it sold.

**Table No. 3: Non-Pearl Home Certified Sales**

The following table shows the non-Pearl-certified sales used to compare to the Pearl-certified sales for the paired-data analyses.

Non- PHC Sale No.	City	State	Sale Price of Non- PHC	List Price of Non- PHC	Adjusted Sale Price	Non- PHC Sale-to- List Price	Sale Date	DOM for Non- PHC	House Type	Age
1	Charlottesville	VA	\$325,000	\$329,900	\$334,900	99%	10/27/2016	214	TH	3
2	Charlottesville	VA	\$315,000	\$329,000	\$342,900	96%	3/20/2016	38	TH	5
3	Springfield	VA	\$560,000	\$559,900	\$564,000	100%	4/17/2017	4	SFD	53
4	Springfield	VA	\$557,500	\$579,900	\$565,000	96%	3/17/2017	107	SFD	53
5	Springfield	VA	\$545,000	\$559,000	\$565,500	97%	4/17/2017	14	SFD	53
6	Springfield	VA	\$535,000	\$535,000	\$566,000	100%	2/17/2017	5	SFD	52
7	Gordonsville	VA	\$410,000	\$419,900	\$396,500	98%	5/3/2015	188	SFD	7
8	Falls Church	VA	\$513,000	\$524,900	\$525,000	98%	3/16/2016	38	SFD	65
9	Falls Church	VA	\$530,000	\$519,999	\$525,000	102%	7/16/2016	4	SFD	66
10	Falls Church	VA	\$575,000	\$539,000	\$531,000	107%	6/16/2016	7	SFD	65
11	Alexandria	VA	\$640,000	\$642,875	\$645,000	100%	4/24/2015	74	SFD	23
12	Alexandria	VA	\$700,000	\$715,000	\$647,000	98%	1/23/2016	5	SFD	23
13	Crozet	VA	\$445,000	\$449,000	\$430,766	99%	7/8/2016	63	SFD	9
14	Crozet	VA	\$449,900	\$449,900	\$435,792	100%	7/30/2016	1	SFD	19
15	Crozet	VA	\$517,000	\$515,000	\$517,000	100%	8/29/2016	133	SFD	3
16	Ashburn	VA	\$595,000	\$595,000	\$569,000	100%	10/6/2016	41	SFD	7
17	Ashburn	VA	\$580,000	\$585,000	\$570,000	99%	10/8/2016	3	SFD	7
18	Ashburn	VA	\$610,000	\$612,000	\$575,500	100%	10/20/2016	50	SFD	11
19	Crozet	VA	\$560,000	\$599,900	\$627,800	93%	5/11/2015	214	SFD	3
20	Crozet	VA	\$575,000	\$590,000	\$602,900	97%	7/3/2016	31	SFD	5
21	Zion Crossroads	VA	\$328,000	\$334,900	\$357,900	98%	3/7/2015	29	SFD	7
22	Zion Crossroads	VA	\$374,000	\$379,000	\$373,400	99%	2/26/2015	233	SFD	7
23	Herndon	VA	\$675,000	\$675,000	\$687,500	100%	9/12/2016	33	SFD	39
24	Herndon	VA	\$749,900	\$749,900	\$694,900	100%	2/12/2017	0	SFD	43
25	Herndon	VA	\$699,000	\$699,000	\$689,000	100%	8/16/2017	11	SFD	41
26	Herndon	VA	\$690,000	\$699,000	\$692,000	99%	7/16/2017	29	SFD	37
27	Silver Spring	MD	\$496,000	\$489,000	\$518,500	101%	7/23/2016	4	SFD	60
28	Silver Spring	MD	\$423,000	\$409,900	\$496,000	103%	9/20/2016	4	SFD	59
29	Silver Spring	MD	\$430,000	\$438,000	\$485,000	98%	8/17/2016	35	SFD	57
30	Silver Spring	MD	\$445,000	\$445,000	\$491,000	100%	4/17/2016	11	SFD	63
31	Great Falls	VA	\$1,550,000	\$1,595,000	\$1,542,000	97%	4/7/2017	2	SFD	22
32	Great Falls	VA	\$1,580,000	\$1,699,000	\$1,603,864	93%	9/12/2017	102	SFD	20
33	Great Falls	VA	\$1,412,500	\$1,475,000	\$1,470,500	96%	2/26/2017	410	SFD	23
34	Great Falls	VA	\$1,625,000	\$1,625,000	\$1,598,500	100%	4/3/2015	32	SFD	21
35	Great Falls	VA	\$1,530,000	\$1,499,000	\$1,521,500	102%	2/9/2017	155	SFD	0
<b>Median</b>			<b>\$560,000</b>	<b>\$559,900</b>	<b>\$565,500</b>	<b>99.15%</b>		<b>32</b>		<b>23</b>
<b>Mean</b>			<b>\$672,709</b>	<b>\$681,768</b>	<b>\$678,803</b>	<b>98.99%</b>		<b>66</b>		<b>29</b>

A total of 35 non-Pearl-certified home sales were compared to 13 Pearl-certified home sales. The Non-Pearl-certified home Sale No. indicates the sale used in the Paired-Data Analysis with that number. (See **Paired-Data Analysis Section** of this report)

## The Study Focus Questions Answered

Pearl is the first known certification program to commission a study on sales with their certification this early in the program's history. Early understanding of how the market reacts to the certifications will allow the organization to focus marketing efforts where they will be most effective in increasing the value of the certification and hence marketability of these homes.

The tables on the following pages give a view of the sales price premiums provided by Pearl certification, in a variety of ways. Since neither the real estate market nor the analysis of the market are perfect, it is important to view the analysis results from a variety of angles. When patterns become consistent, it gives credibility to the conclusions.

### i. Does the market pay a sales price premium for homes with a Pearl Home Certification?

Buyers in Charlottesville, Herndon, Springfield, Crozet, and Zion Crossroads paid sales price premiums of between 1.74% and 7.51% for Pearl-certified properties.

In Silver Spring, Great Falls, Falls Church, Alexandria, and Ashburn (all located in Northern Virginia) the data is insufficient to reach a strong conclusion. The Pearl Home Certification program has less exposure in these areas compared to the study areas around Charlottesville and Richmond (Central Virginia). Reviewing the **Paired-Data Analysis Section** in the study reveals the Pearl-certified home marketing on each Pearl Home Certification sale studied that gives some insight to the differences in sales price premiums and days on the market. The study displays the results by city, overall mean and median premium. In the appraisal process, the appraiser would look at the individual city results and not a statewide statistic. Because real estate is local, the markets studied are so different, and each market has differing Pearl-certified home market share, the



most reliable picture of the sales price premium is by looking at each city's results found in Table No. 6.

**Table No. 4: Sales Price Premium Results**

The table below shows the sales price premium percentages found in each pair using paired-data analysis and includes all premiums, negative and positive.

						PHC		PHC	Sales	% Sales		PHC	
						Sale		List	Price	Price		Sale-to-	
Pair No.	Cert.	City	State	SF	Age	Price		Price	Date of	Premiu	Premiu	DOM	
									Sale	m	m	for PHC	
												Price	
1	Gold	Charlottesville	VA	1686	3	\$ 344,900	\$	344,900	4/17/2017	\$10,000	2.90%	11	100%
2	Gold	Charlottesville	VA	1686	3	\$ 344,900	\$	344,900	4/17/2017	\$2,000	0.58%	11	100%
3	Silver	Springfield	VA	1590	54	\$ 590,000	\$	595,000	4/22/2017	\$26,000	4.41%	3	99%
4	Silver	Springfield	VA	1590	54	\$ 590,000	\$	595,000	3/17/2017	\$25,000	4.24%	3	99%
5	Silver	Springfield	VA	1590	54	\$ 590,000	\$	595,000	4/22/2017	\$24,500	4.15%	3	99%
6	Silver	Springfield	VA	1590	54	\$ 590,000	\$	595,000	4/22/2017	\$24,000	4.07%	3	99%
7	Silver	Zion Crossroads	VA	2120	3	\$ 419,000	\$	419,900	4/2/2016	\$22,500	5.37%	60	100%
8	Bronze	Falls Church	VA	1,254	66	\$ 530,000	\$	539,000	8/8/2016	\$5,000	0.94%	79	98%
9	Bronze	Falls Church	VA	1,254	66	\$ 530,000	\$	539,000	8/8/2016	\$5,000	0.94%	79	98%
10	Bronze	Falls Church	VA	1,254	66	\$ 530,000	\$	539,000	8/10/2016	-\$1,000	-0.19%	79	98%
11	Assets	Alexandria	VA	2496	23	\$ 650,000	\$	680,000	1/11/2016	\$5,000	0.77%	74	96%
12	Assets	Alexandria	VA	2496	23	\$ 650,000	\$	680,000	1/11/2016	\$3,000	0.46%	74	96%
13	Gold	Crozet	VA	2,170	15	\$ 477,000	\$	479,000	2/26/2017	\$46,234	9.69%	29	100%
14	Gold	Crozet	VA	2,170	15	\$ 477,000	\$	479,000	2/26/2017	\$41,208	8.64%	29	100%
15	Platinum	Crozet	VA	2,011	0	\$ 545,000	\$	544,000	5/22/2017	\$28,000	5.14%	164	100%
16	Silver	Ashburn	VA	2,452	7	\$ 580,000	\$	580,000	1/14/2017	\$11,000	1.90%	3	100%
17	Silver	Ashburn	VA	2,452	7	\$ 580,000	\$	580,000	1/14/2017	\$10,000	1.72%	3	100%
18	Silver	Ashburn	VA	2,550	7	\$ 580,000	\$	580,000	1/14/2017	\$4,500	0.78%	3	100%
19	Gold	Crozet	VA	2,593	4	\$ 617,000	\$	629,900	3/24/2017	-\$10,800	-1.75%	11	98%
20	Gold	Crozet	VA	2,976	4	\$ 617,000	\$	629,900	3/24/2017	\$14,100	2.29%	11	98%
21	Silver	Zion Crossroads	VA	2,595	7	\$ 400,000	\$	419,000	10/11/2016	\$42,100	10.53%	300	95%
22	Silver	Zion Crossroads	VA	2,595	7	\$ 400,000	\$	419,000	10/11/2016	\$26,600	6.65%	300	95%
23	Silver	Herndon	VA	2,560	39	\$ 715,000	\$	679,000	2/15/2017	\$27,500	3.85%	4	105%
24	Silver	Herndon	VA	2,560	39	\$ 715,000	\$	679,000	2/15/2017	\$20,100	2.81%	4	105%
25	Silver	Herndon	VA	2,560	39	\$ 715,000	\$	679,000	2/15/2017	\$26,000	3.64%	4	105%
26	Silver	Herndon	VA	2,560	39	\$ 715,000	\$	679,000	2/15/2017	\$23,000	3.22%	4	105%
27	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$	498,000	10/7/2017	-\$28,500	-5.82%	25	98%
28	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$	498,000	11/16/2016	-\$6,000	-1.22%	25	98%
29	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$	498,000	10/7/2016	\$5,000	1.02%	25	98%
30	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$	498,000	11/16/2016	-\$1,000	-0.20%	25	98%
31	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$	1,599,000	5/12/2017	-\$12,000	-0.78%	7	96%
32	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$	1,599,000	5/12/2017	-\$73,864	-4.83%	7	96%
33	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$	1,599,000	5/12/2017	\$59,500	3.89%	7	96%
34	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$	1,599,000	5/12/2017	-\$68,500	-4.48%	7	96%
35	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$	1,599,000	5/12/2017	\$8,500	0.56%	7	96%
Statistics based on the following				Living		Sale	List			% Sales		PHC	
breakdown of premiums				Area	Age	Price	Price			Price	DOM	Sale-to-	
										Premiu	for PHC	List	
										m		Price	
35 Pairs				Median	2452	23	\$580,000	\$580,000		Median	1.90%	11	98%
35 Pairs				Mean	2691	30	\$688,623	\$700,271		Mean	2.17%	42	99%

Three of the four paired-data analysis (Pairs No. 27-30) in Silver Spring, MD show a negative premium. This means the non-Pearl-certified home sold for more than the Pearl-

certified home. This is the only Pearl-certified home sale in MD that could be paired and the Pearl-certified home MLS listing did not promote the certification or its features. It is possible that this accounts for the negative premium, since the buyers would not have been aware of the Pearl certification.

Pearl National Home Certification has been in the Charlottesville – Richmond, VA areas longer than in the MD area and the results from the four MD pairs may be a result of the limited knowledge of the program. Future study in MD when more time and sales have occurred will give a better view of sales price premiums in MD.

Great Falls, VA is in Northern VA and Pearl has not focused their efforts in Great Falls as they have in the areas around Charlottesville and Richmond, VA. Three of the five pairs in Great Falls show non-Pearl-certified home homes sold for more than Pearl-certified homes. However, the MLS did not actively promote the Pearl-certified home features or attach the documents to the listing.

In Crozet, VA, three out of four Pearl-certified homes sold for more than non-Pearl-certified home sales. Pair No. 19 required a heavy market condition adjustment for the time that lapsed between dates of sale. For this reason, Pair 19 is weak but the best available now and the only one that shows a negative result. As more Pearl-certified home sales occur in Crozet it will be necessary to do further research to understand how the market views Pearl-certified home sales.

Pair No. 10 in Falls Church shows a -0.19% premium, meaning the non-Pearl-certified home sale sold for more than the Pearl-certified home sale. In \$500,000+ housing, this result is inconclusive.

Because some pairings had heavy adjustments that weaken the results of the pairing and because in some areas the Pearl-certified home program is new, future study should be done for a better understanding of the sales data. The following table shows the negative premiums as 0% for no premium to see how it affects the mean and median price premiums. Showing the negative premiums as 0% premium is also done because the pairs with the negative premiums were not as solid pairings, are less reliable than pairs with fewer adjustments and have less room for error, and the Pearl-certified home features were not marketed as they were in the pairs showing negative results.

In the appraisal process, an appraiser would remove outliers or results that had more weaknesses than strengths. The following table shows that inserting the negative premiums as a 0% changes the mean only slightly. With or without the negative premiums the overall mean and median for the overall study data strongly supports just over 2%.

**Table No. 5: Revised Sales Price Premium Results**

The following table shows the 35 pairs. Pairs that showed a negative premium and were less reliable pairs are given a zero for the reasons previously discussed.

Pair No.	Cert.	City	State	SF	Age	PHC Sale Price	PHC List Price	PHC Date of Sale	Sales Price Premium	% Sales Price Premium	DOM for PHC	PHC Sale-to-List Price
1	Gold	Charlottesville	VA	1686	3	\$ 344,900	\$ 344,900	4/17/2017	\$10,000	2.90%	11	100%
2	Gold	Charlottesville	VA	1686	3	\$ 344,900	\$ 344,900	4/17/2017	\$2,000	0.58%	11	100%
3	Silver	Springfield	VA	1590	54	\$ 590,000	\$ 595,000	4/22/2017	\$26,000	4.41%	3	99%
4	Silver	Springfield	VA	1590	54	\$ 590,000	\$ 595,000	3/17/2017	\$25,000	4.24%	3	99%
5	Silver	Springfield	VA	1590	54	\$ 590,000	\$ 595,000	4/22/2017	\$24,500	4.15%	3	99%
6	Silver	Springfield	VA	1590	54	\$ 590,000	\$ 595,000	4/22/2017	\$24,000	4.07%	3	99%
7	Silver	Zion Crossroads	VA	2120	3	\$ 419,000	\$ 419,900	4/2/2016	\$22,500	5.37%	60	100%
8	Bronze	Falls Church	VA	1,254	66	\$ 530,000	\$ 539,000	8/8/2016	\$5,000	0.94%	79	98%
9	Bronze	Falls Church	VA	1,254	66	\$ 530,000	\$ 539,000	8/8/2016	\$5,000	0.94%	79	98%
10	Bronze	Falls Church	VA	1,254	66	\$ 530,000	\$ 539,000	8/10/2016	\$0	0.00%	79	98%
11	Assets	Alexandria	VA	2496	23	\$ 650,000	\$ 680,000	1/11/2016	\$5,000	0.77%	74	96%
12	Assets	Alexandria	VA	2496	23	\$ 650,000	\$ 680,000	1/11/2016	\$3,000	0.46%	74	96%
13	Gold	Crozet	VA	2,170	15	\$ 477,000	\$ 479,000	2/26/2017	\$46,234	9.69%	29	100%
14	Gold	Crozet	VA	2,170	15	\$ 477,000	\$ 479,000	2/26/2017	\$41,208	8.64%	29	100%
15	Platinum	Crozet	VA	2,011	0	\$ 545,000	\$ 544,000	5/22/2017	\$28,000	5.14%	164	100%
16	Silver	Ashburn	VA	2,452	7	\$ 580,000	\$ 580,000	1/14/2017	\$11,000	1.90%	3	100%
17	Silver	Ashburn	VA	2,452	7	\$ 580,000	\$ 580,000	1/14/2017	\$10,000	1.72%	3	100%
18	Silver	Ashburn	VA	2,550	7	\$ 580,000	\$ 580,000	1/14/2017	\$4,500	0.78%	3	100%
19	Gold	Crozet	VA	2,593	4	\$ 617,000	\$ 629,900	3/24/2017	\$0	0.00%	11	98%
20	Gold	Crozet	VA	2,976	4	\$ 617,000	\$ 629,900	3/24/2017	\$14,100	2.29%	11	98%
21	Silver	Zion Crossroads	VA	2,595	7	\$ 400,000	\$ 419,000	10/11/2016	\$42,100	10.53%	300	95%
22	Silver	Zion Crossroads	VA	2,595	7	\$ 400,000	\$ 419,000	10/11/2016	\$26,600	6.65%	300	95%
23	Silver	Herndon	VA	2,560	39	\$ 715,000	\$ 679,000	2/15/2017	\$27,500	3.85%	4	105%
24	Silver	Herndon	VA	2,560	39	\$ 715,000	\$ 679,000	2/15/2017	\$20,100	2.81%	4	105%
25	Silver	Herndon	VA	2,560	39	\$ 715,000	\$ 679,000	2/15/2017	\$26,000	3.64%	4	105%
26	Silver	Herndon	VA	2,560	39	\$ 715,000	\$ 679,000	2/15/2017	\$23,000	3.22%	4	105%
27	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$ 498,000	10/7/2017	\$0	0.00%	25	98%
28	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$ 498,000	11/16/2016	\$0	0.00%	25	98%
29	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$ 498,000	10/7/2016	\$5,000	1.02%	25	98%
30	Bronze	Silver Spring	MD	1,920	57	\$ 490,000	\$ 498,000	11/16/2016	\$0	0.00%	25	98%
31	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$ 1,599,000	5/12/2017	\$0	0.00%	7	96%
32	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$ 1,599,000	5/12/2017	\$0	0.00%	7	96%
33	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$ 1,599,000	5/12/2017	\$59,500	3.89%	7	96%
34	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$ 1,599,000	5/12/2017	\$0	0.00%	7	96%
35	Gold	Great Falls	VA	6,220	23	\$ 1,530,000	\$ 1,599,000	5/12/2017	\$8,500	0.56%	7	96%
Statistics based on the following breakdown of premiums				Living Area	Age	Sale Price	List Price			% Sales Price Premium	DOM for PHC	PHC Sale-to-List Price
35 Pairs		Median		2452	23	\$580,000	\$580,000		Median	1.90%	11	98%
35 Pairs		Mean		2691	30	\$688,623	\$700,271		Mean	2.72%	42	99%

Real estate markets are local, as discussed throughout this study. The Northern Virginia market is less familiar with Pearl-certified home, has fewer Pearl-certified sales, and local marketing did not promote Pearl Certification as much. Removing the negative premiums and showing them as 0% changes the mean from 2.17% to 2.72%, a minor change overall. Because real estate is local the following tables will show the premiums by city to capture a more representative picture of the market's reaction to Pearl-certified home sales by city.

**Table No. 6: Sales Price Premium by City**

The tables below compare the city results using all 35 pairs. The pairs on the left have 8 pairs that show the actual negative premium. The table on the right shows the same 35 pairs but shows those 8 negative premiums as a 0% because the pairs with negative results were often not marketed as PCH and/or required heavier feature adjustment in the pairing that weakens the results. The definition of Market Value found in the Appendix of this study implies that *"Both parties are well informed or well advised, and acting in what they consider their own best interests. If the buyer was not fully aware of the high-performing features he/she would not be fully informed.*

Average of % Sales Price Premium			No. Pairs
City			
Silver Spring	-1.56%		4
Great Falls	-1.13%		5
Falls Church	0.57%		3
Alexandria	0.62%		2
Ashburn	1.47%		3
Charlottesville	1.74%		2
Herndon	3.38%		4
Springfield	4.22%		4
Crozet	4.80%		5
Zion Crossroads	7.51%		3
<b>Total Pairs</b>			<b>35</b>
<b>All Pairs with negative premium amounts.</b>			

Average % Sales Price Premium			No. Pairs
City			
Silver Spring	0.26%		4
Alexandria	0.62%		2
Falls Church	0.63%		3
Great Falls	0.89%		5
Ashburn	1.47%		3
Charlottesville	1.74%		2
Herndon	3.38%		4
Springfield	4.22%		4
Crozet	5.15%		5
Zion Crossroads	7.51%		3
<b>Total Pairs</b>			<b>35</b>
<b>All Pairs with 0% for negative pairs</b>			

Both tables strongly support a finding that Pearl certification offers sales price premiums in Zion Crossroads, Crozet, Springfield, Herndon, and Charlottesville. The rest of the areas are in Northern Virginia where less penetration of Pearl Home Certifications exists, and MLS marketing of Pearl homes was omitted or less visible than in Central Virginia. In both tables, whether the premiums are positive or negative, the results in Silver Spring, Great Falls, Falls Church, Alexandria, or Ashburn are inconclusive.

**Table No. 7: Sales Price Premium by City Revised**

The following table shows the premiums greater than 0% compared to greater than 1.72%. Premiums less than 1.72% are inconclusive in the price range of houses.

City	Average % Sales Price Premium	No. Pairs	City	Average % Sales Price Premium	No. Pairs
Alexandria	0.62%	2	Ashburn	1.81%	2
Falls Church	0.94%	2	Charlottesville	2.90%	1
Silver Spring	1.02%	1	Herndon	3.38%	4
Ashburn	1.47%	3	Great Falls	3.89%	1
Charlottesville	1.74%	2	Springfield	4.22%	4
Great Falls	2.22%	2	Crozet	6.44%	4
Herndon	3.38%	4	Zion Crossroads	7.51%	3
Springfield	4.22%	4	<b>Total Pairs</b>		<b>19</b>
Crozet	6.44%	4			
Zion Crossroads	7.51%	3			
<b>Total Pairs</b>		<b>27</b>			
<b>Only Pairs showing premiums &gt;0%</b>			<b>Only Pairs showing premiums &gt;1.72%</b>		

The table above removes those premiums that are negative or outliers, because those pairs were so heavily adjusted, and therefore less reliable. The Northern Virginia cities, in which the Pearl-certified homes were not marketed as such, still show an insignificant sales price premium even when negative results are excluded.

The five cities with the highest premiums show insignificant changes when removing the premiums that are insignificant from the results. This table showing the premium differences by city further supports the fact that real estate is local and should be reviewed on a local basis and not on a state or national basis.

Appraisers typically remove outliers or data is more questionable from the analysis. It is inappropriate to remove data simply to change an outcome just as it would be misleading to include data that is weak and may not truly represent value. This study presents all sides of the data to give a complete picture of what the data supports.

## Test of Reasonableness

Because sales data are limited, motivations of buyers and sellers are often not reported, and the market is not perfect, appraisers should always check the results of market extraction<sup>3</sup> by paired-data analysis with a secondary method. If the Home Energy Rating Score (HERS) report had been available on all the sales, an income approach could have been used. There was not sufficient data available to produce a credible analysis using this method. The most common method buyers and sellers use and understand is cost new. Cost new can always be a secondary method along with surveys of market participants.

The results of the 35 pairs mirror the McGraw Hill Smart Market 2017 report in which 231 single-family builders and developers were polled. Those polled believe their customers are willing to pay 1% to 4% more for a green home. The 63 single-family remodelers polled showed 79% of them believe their clients are willing to pay “more” for a green home than one without green features. The most common perception of builders polled is that it costs between 5% and 10% more to build a new green home.<sup>4</sup> The results of the paired-data fall within the range of the builders and developers polled and below the cost to build new green homes. In a balanced market a buyer would not pay more than cost new for a product that can be purchased in the market. Twelve of the Pearl-certified home sales are of resales with results that are lower than cost new. Pair No. 15 is new

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<sup>3</sup> Market extraction is the process appraisers use to develop adjustments for features using paired-data analysis.

<sup>4</sup> Dodge Data Analytics and National Association of Home Builders, *Smart Market Brief Green Multifamily and Single Family Homes 2017*, survey conducted December 2016 – April 2017 <https://analyticsstore.construction.com/GreenHomesSMB2017.html>

construction that shows a sales price premium of 5.1%. This premium is at the low end of what builders say it cost to build green over the typical code-built standard. **Table No. 8** shows the comparison of the McGraw Hill Smart Market Report and this study's results.

**Table No. 8: Tests of Reasonableness for Study Results**

	Builder Developer Poll	Remodelers Poll	Most Common Belief by Builders of Added Cost New	This study results for Pearl-certified home Sales Price Premiums
<b>Results</b>	<b>1% to 4%</b>	<b>Felt customers were willing to pay more</b>	<b>5% to 10%</b>	<b>Positive Premiums 0.46% to 10.53%</b>
<b>The study results meet the test of reasonableness because they fall within the range of percentages from multiple sources quoted.</b>				

The study results are within the test of reasonableness whether you consider the results with or without the negative premiums or by individual city. This is especially true in the Central Virginia market.

This test of reasonableness supports the conclusion that the Northern Virginia market results are weak and do not fall within the degree of reasonableness. When a new, unfamiliar feature is introduced to the market, it is often difficult to determine the premium buyers are willing to pay especially when the feature is not properly marketed. Once the Northern Virginia market has more exposure to Pearl Certification, the sales price premiums may mirror those in Central Virginia.

ii. Do homes with this certification experience less time on the market than homes without the certification?

**Table No. 9** shows that Pearl-certified home sales experience less time on the market than comparable non-Pearl-certified home sales in Herndon, Ashburn, Springfield, Crozet, Charlottesville, and Great Falls.

**Table No. 9 Days on the Market (DOM) by City**

Days on Market Results			
City	Avg. DOM for Non-PHC	Avg. DOM for PHC	No. PHC Homes to Date
Silver Springs	14	25	1
Falls Church	16	79	2
Herndon	18	4	1
Ashburn	31	3	2
Springfield	33	3	3
Alexandria	40	74	1
Crozet	88	49	18
Charlottesville	126	11	25
Zion Crossroad	131	220	1
Great Falls	140	7	1
Gordonsville	188	*	2
*No PHC in this study			

Charlottesville and Crozet, with the highest concentration of certified homes, also have lower days on the market for Pearl-certified home sales. These two areas have more knowledge of the Pearl label. This suggests that moving forward, other market areas could see the same results, with more certified homes and improved marketing of them. Falls Church and Silver Spring are two Pearl-certified home sales that did not promote the Pearl-certified home features or present the documents in the MLS.



**Table No. 10 Days on the Market for Study Areas**

Category		Sale Price	List Price	Sale-to-List Price	DOM
Non-Pearl certified home	Median	\$575,000	\$585,000	99%	32
	Mean	\$697,576	\$706,207	99%	66
Pearl-certified home	Median	\$580,000	\$580,000	98%	11
	Mean	\$688,623	\$700,271	99%	42

DOM = days on market

The overall days on the market statistics in **Table No. 10** reveals Pearl-certified homes do sell quicker than non-Pearl-certified homes. Because the markets are so different, it is more reflective of the market to answer the question of marketing time broken down by city. In six cities (Herndon, Ashburn, Springfield, Crozet, Charlottesville, and Great Falls), Pearl-certified homes sold more quickly than non-Pearl-certified homes. (Note that although the Pearl-certified home median sale and list price are the same, the sale-to-list price is 98% and not 100%, because the list-to-sale price was derived by dividing actual sales prices, rather than the medial sales price, by actual listing prices.) Both Pearl-certified homes sales and non-Pearl-certified homes are selling at 99% of list price. The sale-to-list ratio is the result of a healthy market and in some areas a market in undersupply. The high sale-to-list ratio of the Pearl-certified home sales suggests that in fact these homes could have been priced higher than they were, which may have increased their pricing premium.

### iii. Are Pearl Home Certified sales being marketed to maximize the benefits of the brand?

MLS systems were searched for property sales to discover the MLS for all Pearl Home Certified sales and for similar properties without a certification to develop the paired-data analyses. All study data came from the following MLS Systems:

- Charlottesville Area Association of Realtors (CAAR),
- Greater Augusta Association of Realtors (GAAR)
- Harrisonburg-Rockingham Association of Realtors (HRAR).
- Metropolitan Regional Information Systems (MRIS)

It was a challenge to find Pearl-certified homes in the MLS searches, suggesting that improvements are needed in how MLS listings market Pearl-certified homes to influence the sales price and appraised values.

In reviewing the MLSs for the sales considered in this study, the wording used in some of the comment and remark sections were not very descriptive of a high-performance house, nor was it emotionally appealing. In some cases it is possible that the buyer wouldn't understand the wording. The following page shows a good example of predominant words used in the MLSs to describe Pearl-certified homes compared to language used by Pearl Home Certification, Shelton Group Report, and the Most Powerful Words in Advertising. The MLS descriptions of the high-performance features must change to appeal to the emotion of buyers. Most buyers can connect with **safe, healthy, and lower cost** as characteristics they want in a home.

The National Association of Realtors published a study<sup>5</sup> on April 6, 2017, in its *REALTORS® and Sustainability Report*,<sup>5</sup> which revealed that over half of the REALTORS® surveyed report that consumers have interest in real estate sustainability issues and practices. A **comfortable** living space topped the list of importance of home features to clients. Comfortable may have different meanings to buyers but most often buyers associate comfort in a house as one having even temperatures throughout the living area, good indoor air quality, and good lighting.<sup>6</sup> Comfortable is a word used by Pearl Home Certification to describe a home that meets their standard.

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<sup>5</sup> <https://www.nar.realtor/sites/default/files/reports/2017/2017-realtors-and-sustainability-04-13-2017.pdf>

<sup>6</sup> Based on informal surveys of real estate agents, appraisers, and market participants.

## Summary of Words Used in MLS Searches in this study compared to Reports on Words that Appeal to Buyers' Emotions

Words Used in MLSs	EnergyPulse™ 2017 by Shelton Group	10 Most Powerful Words in Advertising	Pearl Home Certification
PEARL verified energy saver home	Save Money	You	Healthy
ENERGY STAR	Healthier Home	Results	Comfortable
PEARL Certified	Comfort	Health	Energy Efficient
Low VOC Paint		Guarantee	
Green Verified		Discover	
3rd Party Eco-friendly Certified		Love	
AI Res. Green & Energy Efficient Addendum		Proven	
Super comfort & lower utility bills		Safety	
		Save	
		New	

### Words Matter in Describing the Features of a Home

Healthy

Comfortable

Save Money-Lower Cost



The words used in marketing high-performance homes often have no meaning to potential buyers. ENERGY STAR® is the name most recognized name by the public but while most buyers would describe it as an energy efficiency symbol, they could not describe the building standard. Buyers want a home that is healthy, comfortable, and lower cost to maintain and most would relate ENERGY STAR® to these three characteristics. Using healthy, comfortable, and lower cost to maintain in the MLS remarks appeals to the emotions of a buyer according to the Shelton Group reports. The MLS listings have agent comments or remarks about the listing. The remarks regarding the Pearl-certified homes rarely used words that appeal to buyers' emotions and often used words that buyers do not understand. **The listings assume buyers understand what Pearl Home Certification (and other house labels) mean to the value and performance of the home, which is unlikely to be the case. Using words that describe the**

performance are extremely necessary in listings to help potential buyers know why a house might be worth more than a home without the label or features.

## MLS Listings Showing Comments/Remarks of Pearl-Certified Home Sales Used in this Study

What follows are a few examples of comments used to describe the Pearl-certified homes. The address, city/subdivision, and agent's name for each listing have been removed to protect privacy. The paired-data shows marketing comments for each pair found in the **Paired-Data Analysis Section** of this study that may shed light on the sales price premium findings.

### MLS Comment 1 for an Asset Certification

The photograph gallery did not include a copy of the Asset Certification and the documents were removed after the status changed to sold. The following shows the remarks and how Pearl Home Certification was addressed.

#### REMARKS in MLS

##### General/Agent

**PEARL VERIFIED Energy Saver Home** (see Docs) ~ Fantastic Value for this 3000+ sqft Beauty in popular subdivision on Premium Cul-de-Sac lot. Hardwoods on entire main, gorgeous stone fireplace, renovated KIT w/granite, custom backsplash, island & black appl, 8-zone irrigation system. Newer Systems & lots more. Picture perfect yard w/3-season screened rm. Beautiful home. Just move in!

## Internet/Public

\$45k Price Reduction on this **Pearl Verified Energy Saver Home**. Fantastic Value for this 3000+ sqft Beauty on Premium Cul-de-Sac lot. Hardwoods on entire main, gorgeous stone fireplace, renovated KIT w/granite, custom backsplash, island & black appl. Newer Systems, picture perfect yard w/3-season screened room & lots more.

## MLS Comment 2 for Bronze Certified Listing

The remarks do show Pearl Home Certification at the end of the comment section. The Pearl Home Certificate was not included in the photograph gallery.

### General/Agent:

All Reasonable Offers Considered! HRA Mid-Century Modern, fully upgraded kitchen with custom crafted cabinets, newer appliances, energy star windows, hybrid heating/cooling, low-maintenance yard brimming with gardens, native plants & permaculture. Fire pit in the back for those cooler nights entertaining outside. **Pearl Certified Bronze level for energy efficiency.**

### Internet/Public:

New Price!!! Holmes Run Acres Mid-Century Modern, fully upgraded kitchen with custom crafted cabinets, newer appliances, energy star windows, hybrid heating/cooling, low-maintenance yard brimming with gardens, native plants & permaculture. Fire pit in the back for those cooler nights entertaining outside. **Pearl Certified Bronze level for energy efficiency.**

**Comments on Listing:** Putting the Pearl Certified Bronze level for energy efficiency at the beginning of the comments and following it up with, "a home that offers comfort, lower maintenance costs, and a safer home environment," would be more meaningful.

## MLS Comment 3 for this Silver Certified Listing

This listing did **not** have a picture of the Pearl Certification in the photograph gallery but did have documents attached that were removed once the status changed to sold.

### General/Agent:

New with flat lot <1 mile to Metro. Gracious front porch/detached 1+car gar/large low maintenance Azek deck. Light filled flex floor plan w/living room that converts to BR suite. Spacious kit/fam room w/banquette/custom light fix/ trim/built-ins/wainscot/LL wetbar/ 5,257 SF. **This house in upper 2% for Energy Efficiency-see Pearl Certification report in documents.**

### Internet/Public:

New with flat lot <1 mile to Metro. Gracious front porch/detached 1+car gar/large low maintenance Azek deck. Light filled flex floor plan w/living room that converts to BR suite. Spacious kit/fam room w/banquette/custom light fix/ trim/built-ins/wainscot/LL wetbar/ 5,257 SF. **This house in upper 2% for Energy Efficiency-see Pearl Certification report in documents.**

**Comments on Listing:** Placing the last sentence first will grab the attention of the reader. The most important features that have benefits worth a premium should be in the first couple of sentences of the descriptions.

## MLS Comment 4 for Platinum Certified Listing – Most Descriptive

This MLS listing has the most impressive comments and had the Pearl Home Certification attached and in the photograph gallery. The second sentence of the comments called the home an energy efficient home. Toward the end of the comments were good feature descriptions as follows: **This home achieved a HERS score of 48 and includes high SEER mini -split HVAC as well as foam insulation and tankless water heater. Cost of ownership will be much lower than the average home. PEARL Certified Platinum Level**

## Overall MLS Observations

The MLSs do have fields for some energy or green features, but it was very difficult to search for Pearl Home Certified sales. Pearl Home Certification populates the AI Residential Green and Energy Efficient Addendum and Pearl Certificate. If the homeowner has lost the documents, they can be retrieved on the Pearl Home Registry mentioned early in this report. Most Pearl-certified home sales found in the MLS had documents attached. In some MLSs the attachments are removed once the status of sold is applied. This makes it very difficult for appraisers to compare features.

There is room for improvement in the marketing of Pearl Home Certified properties and other properties with energy and/or green features. Improving marketing through use of Pearl documentation, words that appeal to buyer emotion, and full population of relevant fields could materially affect the sales price paid and the appraised values for these homes.

Some agents do a very good job marketing the benefits of Pearl-certified home as illustrated by the earlier comments from actual listings. Marketing can play a role in sales price premiums and appraised values moving forward. Appraisers do read the agent comments to aid them in understanding the features, condition, and benefits. We often assume other agents and appraisers understand terms like HERS or Pearl and that often is not the case; agent comments should provide assistance in this regard.

The Silver Spring and Falls Church Pearl-certified home listings did not include Pearl-certified home wording or documents and these pairings show the highest negative premium (that is, the Pearl-certified home sold for less than the non-Pearl-certified home sales comparable). Would the result have been different if the MLS remarks and attachments promoted the Pearl Certified high-performance features? Future study of the MLS descriptions and promotion of these homes compared to the sales price premium is needed to draw supported conclusions.

Woody Fincham reports a Pearl Home Certified listing in Central Virginia was staged with posters that pointed out the energy efficient and green features. He was impressed by the marketing techniques used and thought it resulted in the seller getting a good price.

Garbett Homes in Salt Lake City, Utah does an excellent job staging their models with posters that educate potential buyers on construction features that have health, comfort,

and cost saving benefits. This is an excellent way for new or existing homes to be marketed to maximize the potential sales price and educate home buyers at the same time. This leads the discussion into the following question on steps forward.

#### iv. How can marketing of homes with the Pearl certification be improved to influence the sales price premium and appraised values?

- Include high-performing feature details and their benefits using words that resonate with buyers in the MLS remarks. **Don't assume the buyers understand a house label or energy score; explain the benefits using words buyers understand.**
- Accurately populate searchable green and energy fields to maximize marketing impact for these features. If an appraiser has difficulty finding sales or listings of homes with high-performing features, how can a potential buyer be expected to find them?
- Stage the home with education/informative posters that point out the energy and green features along with the benefits.
- The for-sale sign should show a "Pearl Home Certified" sticker that will pique the interest of potential buyers. Leave paper copies of the certified documents on site.
- Include the home certification and AI Residential Green and Energy Efficient Addendum<sup>7</sup> as an attachment in the MLS; leave attachments in place even after the sale.
- Label the electrical box onsite showing the HERS Rating, Home Certification Rating, and Date Rated.
- Put the Green/Energy Certificate as a .jpg file in the MLS photograph gallery. If the MLS does not allow this, work to change the rules.

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<sup>7</sup> <https://www.appraisalinstitute.org/assets/1/7/ResidentialGreenandEnergyEfficientAddendum.pdf>



- Work towards the capability to auto populate the MLS fields from a trusted source.
- Recognize that proper marketing of green home listings may result in higher sales prices and larger commissions.
- Sales of homes with high-performance features are best accomplished by using agents that have knowledge and experience in this special property type.

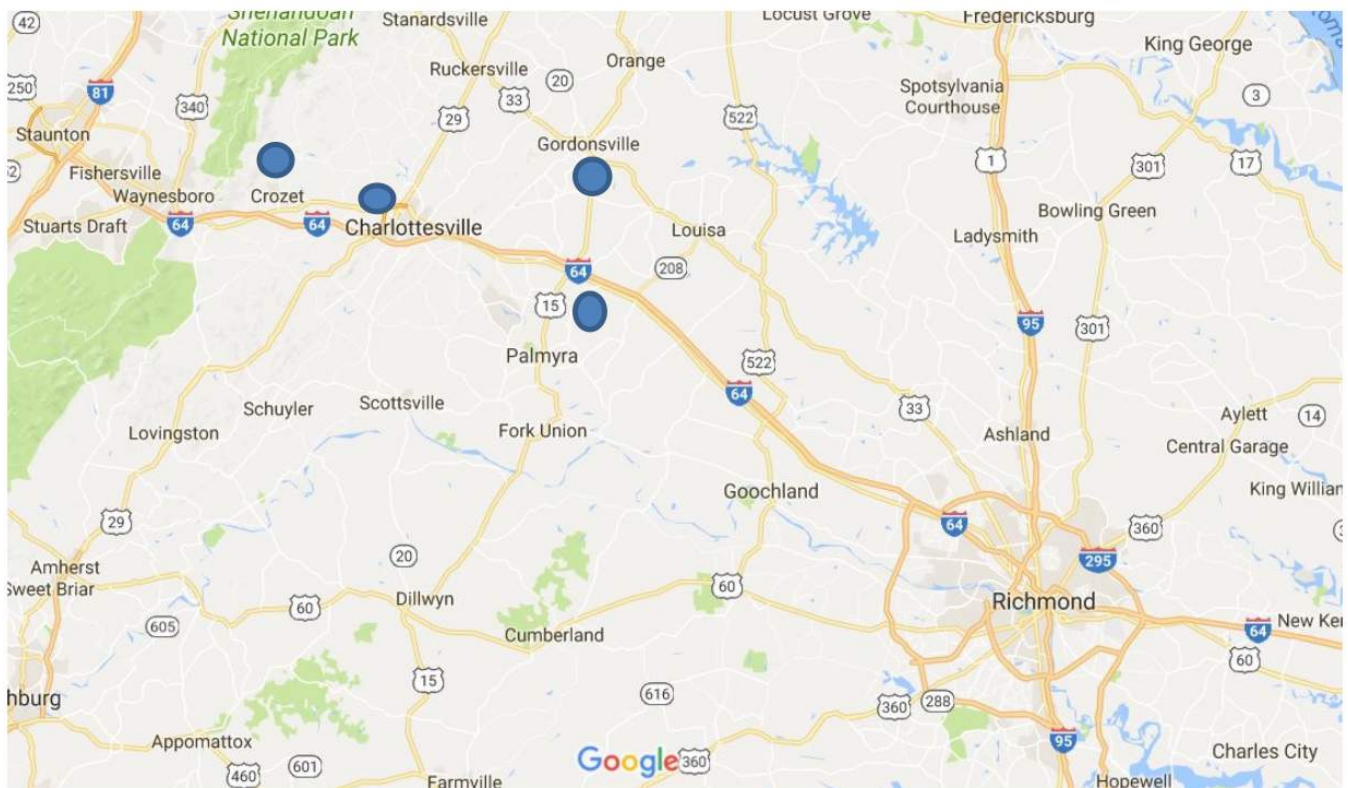
**Conclusions:** Pearl National Home Certification is actively training real estate agents and appraisers in the markets they serve. Change is a challenge, but it will come as education continues and studies like this one do show sales prices may be higher if buyers do understand the benefits of buying a house that performs better than a code-built home.

# Appendix A: Description of the Two Market Areas

The initial study area captured 27 Pearl-certified sales in 15 cities, 2 states, and in the District of Columbia. The homes used for the direct comparisons are in the same areas as the Pearl-certified home sales and are similar in physical and locational characteristics except without the high-performing features identified in the Pearl certification.

## Description of the study areas

This area covers six counties and includes homes in the Charlottesville metropolitan statistical area (MSA). The sales used for the direct comparisons are in Albemarle County, Louisa County and the City of Charlottesville. This area is referred to as Central Virginia.



<https://www.google.com/maps/> The blue markers on the map identify areas where Pearl Home Certifications were located.

Charlottesville is on the eastern side of the Blue Ridge mountains in the Piedmont region of Virginia. It is mostly associated with University of Virginia and the home of the third president of the United States and founder of the university, Thomas Jefferson. The urban core is relatively small with a large suburban area but even larger rural area as one moves

away from Charlottesville. The major employers in the area include a diverse make up of sectors such as rigid plastic manufacturing, programmable controls design and development, a national electronics retailer, defense intelligence, the higher education sector and a large insurance company.

This study focused on three markets within the region: Crozet, Charlottesville and Zion Crossroads. Public transportation is only available within the urban core; there is a public bus service that does reach the outlying areas, but is a limited service. Owning an automobile, unless you live in the city, is a requirement.

Crozet is at the base of the eastern side of the Blue Ridge Mountains and is mostly regarded as a bedroom community, consisting of mostly residential homes. There is a limited presence of small-town like businesses, including breweries, light industry, and typical retail to support the residential presence. There is a large competitive market of residential new construction in this area of the county. This market has seen appreciation, in some cases some of the highest in the region, over the last 36-months.

The City of Charlottesville is a small city (cities are like counties in the commonwealth, and are separate from the counties legally). It is home to the university and some major companies. There are many research-related businesses that work with the university. The city has seen values appreciate, as being in the city or just outside of it commands a market premium. Major retailers and a desire to be located close to restaurants and services is a primary driver for this market.

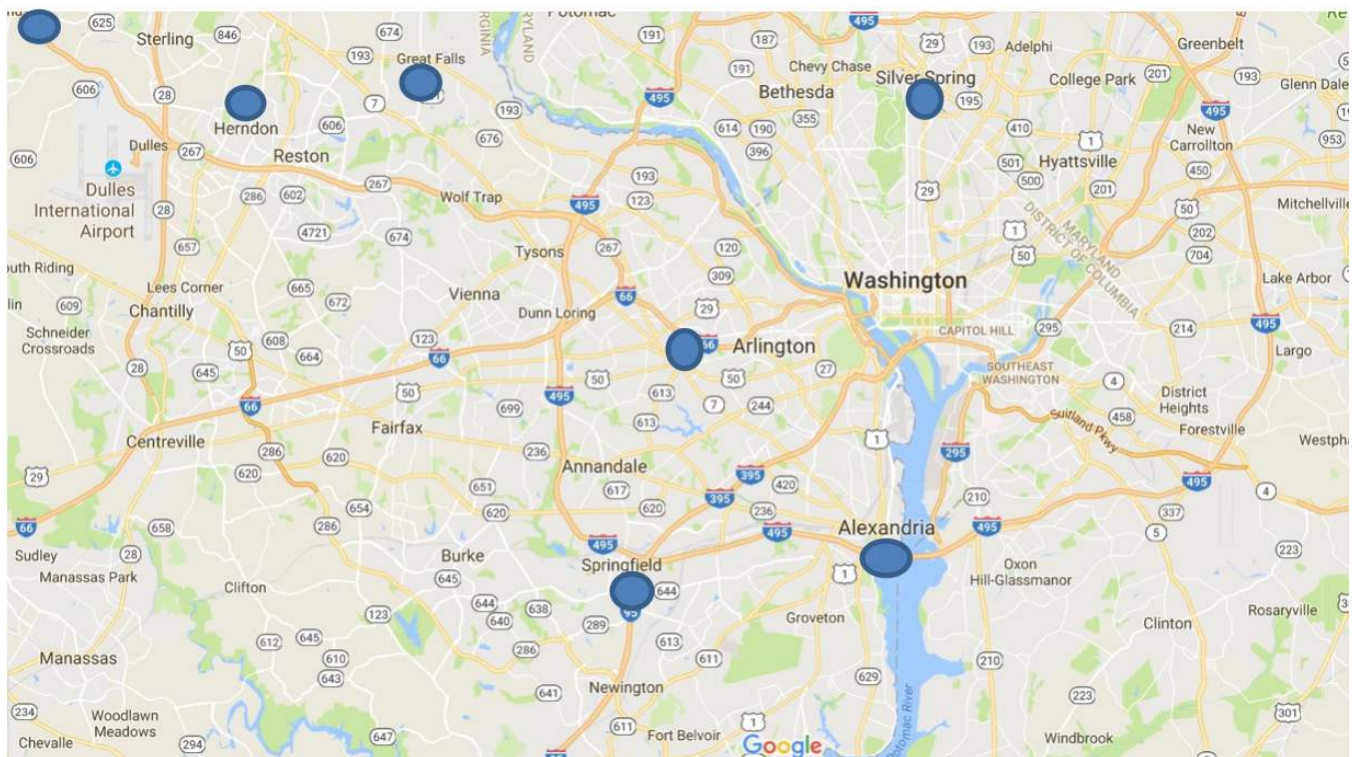
Louisa County is a mostly rural county in the most eastern part of the Charlottesville MSA. It lies between Charlottesville and Richmond, the capital of the Commonwealth. The western part of the county is largely a bedroom community for Charlottesville, with the eastern side being a bedroom community to Richmond. The subdivision studied for this project is called Spring Creek. It is located within an easy 15-minute drive, to Charlottesville. It is a lifestyle community that attracts upper-middle class families and a large percentage of retirees.

During the period covered by the study, the general market conditions are best described as featuring increasing prices. Marketing times are typically below 90 days and multiple offers are common.

It is of note that the multiple listing service (MLS) in this area is a combined regional market area of three distinct boards: The Charlottesville Area Association of Realtors (CAAR), the Greater Augusta Association of Realtors (GAAR) and the Harrisonburg-Rockingham Association of Realtors (HRAR). The MLS does allow for searching specifically for green features, but it is quite problematic.

The MLS allows searching for anything from energy efficient appliances to green-related construction. While the range of selectable options are tremendous, the resulting searchable single field is a yes or no option. There is a need for more searchable fields that allow for specific searchable criteria, and the search returns need to be broken into more options. The biggest step forward would be for each of the various green-related ratings or certifications available in the region to be identified as a separate searchable field.

A secondary market area of Pearl-certified homes was located in the Washington Metropolitan Statistical Area. Except for one property in Montgomery County, Maryland, the other properties are in an area referred to as "Northern Virginia". Four properties are in Fairfax County, Virginia, and one property is in Loudoun County, Virginia.



<https://www.google.com/maps/>

The blue markers are areas where Pearl Home Certified Sales are found.

The Washington metropolitan area is one of the most educated and affluent metropolitan areas in the United States. The metro area anchors the southern end of the densely populated northeast megalopolis, with an estimated total population of 6,133,552 as of 2016 Census Reporter estimate, making it the 6<sup>th</sup> or 7<sup>th</sup> largest metropolitan area in the country depending on your source.

The Washington MSA is anchored by the Federal Government, and as a result, there are many private contractors such as defense and high-technology companies located in the area. The Federal Government, contractors, and companies supporting the Government provide a very stable employment base supporting the residential markets throughout the MSA.

Fairfax, Loudoun, and Montgomery Counties have very affluent and educated population bases. These counties and other cities and counties in the MSA also have some of the highest incomes in the nation with Fairfax and Loudoun County leading the way according to Census Data.

The MSA is served by three regional airports and has an extensive public transportation system including a subway system that was recently extended to Dulles Airport in Fairfax and Loudoun Counties. Train and bus service give added transportation options connecting the subway system to various close-in urban and distant suburban or rural areas.

Fairfax County is the most populous jurisdiction in Virginia. Fairfax County is a broad geographic area that is bordered by the Potomac River on the south, southeast and north, and runs up to Loudoun County on the northwest. Prince William County is on the southwest, and various counties in Maryland to the north and east. To the east side of the county between Washington D.C. and the county is Arlington, Virginia. The county seat, Fairfax City, is in the center of the county. Fairfax County has a very well regarded public school system which draws many to live in the area. As with other suburban areas close-in to Washington, D.C.) Fairfax County has relatively high residential property values. According to the Realtor.com web site, the median price of homes sold in Fairfax County is \$510,000, and the median current housing list price is \$600,000. The average days on market for 6,040 recently sold houses was 37 days.

Loudoun County had a 2010 census population count of 312,311. It is a broad geographic area that is bordered by Fairfax County to the southeast, other counties in Virginia and



West Virginia to the northwest and southwest, and various counties in Maryland to the north and northeast. Loudoun County has high residential property values. According to the Realtor.com web site, the median housing sold price in Loudoun County is \$489,000, and the median current housing list price is \$599,000. The average days on market for 4,307 recently sold houses was 38 days.

Montgomery County, with a 2010 census population count of 971,777, is a broad geographic area that is bordered by the Potomac River on the southwest, the District of Columbia on the south, and other counties in Maryland to the north and east. The county seat, the City of Rockville, is to the south side of the county. Montgomery County has a very well regarded public school system which draws many to live in the area. As with other suburban areas close in to Washington, D.C., Montgomery County has high residential property values. According to the Realtor.com web site, the median price for houses sold in Montgomery County is \$440,000, and the median current housing list price is \$520,000. The average days on market for 6,568 recently sold houses was 41 days.

Overall, the Washington Metropolitan area is one of the most affluent MSA's in the nation with a highly educated population. It has a very stable employment base and economy due to the presence of the Federal Government which attracts many companies to locate in the area. Fairfax, Loudoun, and Montgomery counties all have high wage earners. These three counties should all continue to experience high demand of all types of residential housing due to the stable employment base.

## Appendix B: Paired-Data Analysis

The following tables show the 13 Pearl-certified sales compared to one or more similar sales without the certification or energy features.

### 1. Pearl-Certified Home Sale – Gold Certification Level – Townhouse Style

Pearl Gold	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age
Charlottesville, VA								
	Townhouse							
Pearl	4/17/2017	11	\$344,900		1,686			3
S-1	10/27/2016	214	\$325,000	\$334,900	1,680	\$10,000	2.90%	3
S-2	3/20/2016	38	\$315,000	\$342,900	1,593	\$2,000	0.58%	5

Pair 1 had 2 adjustments for a gross and net adjustment of 3.00%.

Pair 2 had 3 adjustments for a gross and net adjustment of 8.8%.

These two pairs are very similar to the Pearl Certified sale and support a positive premium. The Pearl-certified home sold more quickly than the two non-Pearl-certified homes.

### Marketing of the Pearl Gold Sale

The MLS had the documents attached and the certification in the photograph gallery. The documents attached included the AI Residential Green and Energy Efficient Addendum. The agent remarks mentioned the energy efficiency items and certification in the last three sentences.

## 2. Pearl-Certified Home Sale - Silver Certification Level – Single-Unit Detached

Silver	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
Springfield, VA								
Single-Unit Detached								
Pearl	4/22/2017	3	\$590,000		1,590			54
Pair 3	4/17/2017	4	\$560,000	\$564,000	1,800	\$26,000	4.41%	53
Pair 4	3/17/2017	107	\$557,500	\$565,000	1,590	\$25,000	4.24%	53
Pair 5	4/17/2017	14	\$545,000	\$565,500	1,590	\$24,500	4.15%	53
Pair 6	2/17/2017	5	\$535,000	\$566,000	1,590	\$24,000	4.07%	52

Pair 3 had 6 adjustments with 10% gross and 0.7% net adjustment.

Pair 4 had 4 adjustments with 5.8% gross and 1.3% net adjustment.

Pair 5 had 5 adjustments with 10.2% gross and 3.8% net adjustment.

Pair 6 had 2 adjustments with 5.8% gross and 5.8% net adjustment.

The number, gross and net adjustments are not excessive and suggest good comparisons with a very tight range of sales price premiums for all four, clustering at more than 4%.

### Marketing of the Pearl Silver Sale

The MLS did not specifically reference Pearl Home Certification but did include the Pearl Home Certification in the photograph gallery. It also included significant information in the documents that were retained in the listing after the property sold.



### 3. Pearl-Certified Home Sale – Silver Certification Level – Single-Unit Detached

Pearl Silver	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
<b>Zion Crossroads, VA</b>								
<b>Single-Unit Detached</b>								
<b>Pearl</b>	<b>4/2/2016</b>	<b>60</b>	<b>\$419,000</b>		<b>2,120</b>			<b>3</b>
<b>Pair 7</b>	5/3/2015	188	\$410,000	\$396,500	2,062	\$22,500	5.37%	7

Pair 7 has 2 adjustments with 3.3% gross and net adjustment.

This comparison is a very strong comparison with only two adjustments that have good support. This pair lends solid support for a 5.37% premium.

### Marketing of the Pearl Silver Sale

The MLS listing included the certification in the photograph gallery and attached the documents from Pearl. However, the comments did not mention these special features or energy efficiency of this property.

#### 4. Pearl Home Certified Sale – Bronze Certification Level- Single-Unit Detached

Pearl Bronze	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
Falls Church, VA								
Single-Unit Detached								
Pearl	8/8/2016	79	\$530,000		1,254			66
Pair 8	3/16/2016	38	\$513,000	\$525,000	1,184	\$5,000	0.94%	65
Pair 9	7/16/2016	4	\$530,000	\$525,000	1,056	\$5,000	0.94%	66
Pair 10	6/16/2016	7	\$575,000	\$531,000	1,186	-\$1,000	-0.19%	65

Pair 8 has 4 adjustments with 12.9% gross and 2.3% net adjustments.

Pair 9 has 4 adjustments with 12.3% gross and -0.9% net adjustment.

Pair 10 has 4 adjustments with 10.6% gross and -7.7% net adjustment.

Pairs 8 and 9 strongly support a minor premium while the more heavily adjusted Pair 10 shows such a minor negative premium that it is inconclusive. In this housing price range, a positive or negative premium of less than 1% is insignificant; however, it does not mean an appraiser should not apply it if enough data does supports it. The lack of marketing of the Pearl-certified home features, benefits, and documentation may have affected the results as well.

#### Marketing of this Bronze Certified Sale

The Pearl Certification was not in the photograph gallery and the documents were not attached. However, the description said at the end, "Pearl Certified Bronze level for energy efficiency."

## 5. Pearl-Certified Home Sale – Asset Certification Level – Single-Unit Detached

Pearl Asset	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
<b>Alexandria, VA</b>								
<b>Single-Unit Detached</b>								
<b>Pearl</b>	<b>1/11/2016</b>	<b>74</b>	<b>\$650,000</b>		<b>2,496</b>			<b>23</b>
<b>Pair 11</b>	4/24/2015	74	\$640,000	\$645,000	2,508	\$5,000	0.77%	23
<b>Pair 12</b>	1/23/2016	5	\$700,000	\$647,000	2,747	\$3,000	0.46%	23

Pair 11 has 4 adjustments with 14.8% gross and 0.8% net adjustment.

Pair 12 has 6 adjustments with 10.4% gross and -7.6% net adjustment.

Both pairs show minor sales price premiums with a couple heavy line item adjustments. These pair results are inconclusive because the result is so minor compared to the price range of the sales.

### Marketing of this Asset Certified Sale

The listing did not have the Asset Certificate in the photograph gallery but did reference Pearl in the comments at the very beginning of the comments and referenced attached documents. The documents were removed after the sale.

## 6. Pearl Certified Home Sale – Gold Certification Level- Single-Unit Detached

Pearl Gold	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
<b>Crozet, VA</b>								
<b>Single-Unit Detached</b>								
<b>Pearl</b>	<b>2/26/2017</b>	<b>29</b>	<b>\$477,000</b>		<b>2,170</b>			<b>15</b>
<b>Pair 13</b>	7/8/2016	63	\$445,000	\$430,766	2,535	\$46,234	9.69%	9
<b>Pair 14</b>	7/30/2016	1	\$449,900	\$435,792	2,518	\$41,208	8.64%	19

Pair 13 has 4 adjustments with 8.4% gross and -3.2% net adjustment.

Pair 14 has 3 adjustments with 8.3% gross and 3.1% net adjustment.

These pairs have minor adjustment and strongly support a close positive adjustment. This Pearl-certified home was marketed in the MLS and may account for the higher premiums. These premiums support the upper end of the range with good solid pairings closely bracketing 9%.

### Marketing of the Pearl Gold Sale

The MLS included Pearl Home Certification documents including the AI Residential Green and Energy Efficient Addendum. The photograph gallery had the Pearl Certificate. The second sentence of the comments said, "Gold certified efficiency rating from Pearl."

## 7. Pearl-Certified Home Sale – Platinum Certification Level – Single-Unit Detached – New Construction

Pearl Platinum	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
Crozet, VA								
Single-Unit Detached								
Pearl	5/22/2017	164	\$545,000		2,011			0
Pair 15	8/29/2016	133	\$517,000	\$517,000	2,155	\$28,000	5.14%	0

Pair 15 is a good match because no adjustment is needed. This pair is the ideal illustration of a “Paired-Data Analysis” that is so very hard to find in many markets. No adjustment was made for the difference in square footage because the market does not show a sale price difference for the small square footage.

This pairing strongly supports a positive premium of 5.14%.

### Marketing of the Pearl Platinum Sale

This MLS had the Pearl Home Certification attached and in the photograph gallery. The second sentence of the comments called the home an energy efficient home. Toward the end of the comments were good feature descriptions as follows: This home achieved a HERS score of 48 and includes high SEER mini -split HVAC as well as foam insulation and tankless water heater. Cost of ownership will be much lower than the average home.

**PEARL Certified Platinum Level.**

## 8. Pearl-Certified Home Sale – Silver Certification Level – Single-Unit Detached

Pearl Silver	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
Ashburn, VA								
	SFD							
Pearl	1/14/2017	3	\$580,000		2,452			7
Pair 16	10/6/2016	41	\$595,000	\$569,000	2,973	\$11,000	1.90%	7
Pair 17	10/8/2016	3	\$580,000	\$570,000	2,452	\$10,000	1.72%	7
Pair 18	10/20/2016	50	\$610,000	\$575,500	2,817	\$4,500	0.78%	11

Pair 16 has 4 adjustments with 7.7% gross and -4.4% net adjustment.

Pair 17 has 1 adjustment with 1.7% gross and -1.7% net adjustment.

Pair 18 has 7 adjustments with 11.6% gross and -5.7% net adjustment.

All three pairs show a positive premium with two of the three closely supporting a premium at 1.8% (the mid-range of Pairs 16 and 17).

### Marketing of the Pearl Silver Sale

The comments referenced the "Silver" certified but did not reference Pearl. It did include the Pearl certification in the photos.

## 9. Pearl-Certified Home Sale – Gold Certification Level – Single-Unit Detached

Pearl Gold	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
<b>Crozet, VA</b>								
<b>Single-Unit Detached</b>								
<b>Pearl</b>	<b>3/24/2017</b>	<b>11</b>	<b>\$617,000</b>		<b>2,593</b>			<b>4</b>
<b>Pair 19</b>	5/11/2015	214	\$560,000	\$627,800	2,628	-\$10,800	-1.75%	3
<b>Pair 20</b>	7/3/2016	31	\$575,000	\$602,900	2,496	\$14,100	2.29%	5

Pair 19 has 3 adjustments with 17.5% gross and 12% net adjustment.

Pair 20 has 3 adjustments with 6.6% gross and 4.9% net adjustment.

Pair 19 required a heavy market conditions adjustment with the heaviest gross adjustment of all the pairs. Pair 19 is less credible than Pair 20 because of the heavier gross and net adjustment.

These two pairs show a negative and a positive premium for reasons explained previously. Pair 20 deserves more consideration as support for a premium.

### Marketing of the Pearl Gold Sale

This listing did show at the end of the comments a HERS score of 49 and Pearl Gold Certified. The description assumes buyers understand HERS and Pearl. A HERS score of 49 is very good and is based on a blower door and duct blaster test, diagnostic tools that measure the tightness of the envelope and ducted system. The typical 2006 code-built house has a HERS score of 100. The lower the number the more energy efficient the home should be. A HERS score of 49 means it is 51% more energy efficient than a 2006 code-built house.

## 10. Pearl- Certified Home Sale – Silver Certification Level – Single-Unit Detached

Pearl Silver	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
<b>Zion Crossroads</b>								
<b>Single-Unit Detached</b>								
<b>Pearl</b>	<b>10/11/2016</b>	<b>300</b>	<b>\$400,000</b>		<b>2,595</b>			<b>7</b>
<b>Pair 21</b>	3/7/2015	29	\$328,000	\$357,900	2,443	\$42,100	10.53%	7
<b>Pair 22</b>	2/26/2015	233	\$374,000	\$373,400	2,559	\$26,600	6.65%	7

Pair 21 has 4 adjustments with 19.4% gross and 9.1% net adjustment.

Pair 22 has 3 adjustments with 10.6% gross and -0.02% net adjustment.

Pair 21 has one heavy line item adjustment that pushed the gross and net adjustments upward. The line item adjustment has good support and does not weaken the results. Both pairs support a sales price premium higher than the other sales. These pairs are higher than Pair 7 that supports a 5.37% premium. The following three pairs support sales price premiums in Zion Crossroads at

- Pair 7 – 5.37%
- Pair 21- 10.53%
- Pair 22 – 6.65%

### Marketing of the Pearl Silver Sale

The MLS had the Pearl Home Certification documents attached and the certificate in the photograph gallery. The last sentence of the remarks said, “Energy efficiency verified through Pearl Certification.”



## 11. Pearl- Certified Home Sale – Silver Certification Level – Single-Unit Detached

Pearl Silver	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
<b>Herndon, VA</b>								
<b>Single-Unit Detached</b>								
<b>Pearl</b>	<b>2/15/2017</b>	<b>4</b>	<b>\$715,000</b>		<b>2,560</b>			<b>39</b>
<b>Pair 23</b>	9/12/2016	33	\$675,000	\$687,500	2,278	\$27,500	3.85%	39
<b>Pair 24</b>	2/17/2017	0	\$749,900	\$694,900	2,432	\$20,100	2.81%	43
<b>Pair 25</b>	8/16/2017	11	\$699,000	\$689,000	2,132	\$26,000	3.64%	11
<b>Pair 26</b>	7/16/2017	29	\$690,000	\$692,000	2,376	\$23,000	3.22%	29

Pair 23 has 4 adjustments with 7.3% gross and 1.9% net adjustment.

Pair 24 has 8 adjustments with 17.2% gross and -7.3% net adjustment

Pair 25 has 5 adjustments with 14.6% gross and -1.4% net adjustment.

Pair 26 has 6 adjustments with 9.6% gross and 0.3% net adjustment.

These four pairs form a tight premium range clustering around 3%.

### Marketing of the Pearl Silver Sale

This property listing referenced the Pearl Home Certification at the end of the remarks which also pointed the reader to documents. The documents were removed after the property sold. It did include the Pearl certification in the photos.

## 12. Pearl- Certified Home Sale – Bronze Certification Level – Single-Unit Detached

Pearl Bronze	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
Silver Spring, MD								
Single-Unit Detached								
<b>Pearl</b>	<b>10/7/2016</b>	<b>25</b>	<b>\$490,000</b>		<b>1,920</b>			<b>57</b>
<b>Pair 27</b>	7/23/2016	4	\$496,000	\$518,500	1,338	-\$28,500	-5.82%	60
<b>Pair 28</b>	9/20/2016	4	\$423,000	\$496,000	1,100	-\$6,000	-1.22%	59
<b>Pair 29</b>	8/17/2016	35	\$430,000	\$485,000	1,302	\$5,000	1.02%	35
<b>Pair 30</b>	4/17/2016	11	\$445,000	\$491,000	1,106	-\$1,000	-0.20%	63

Pair 27 has 7 adjustments with 12.5% gross and 4.5% net adjustment.

Pair 28 has 7 adjustments with 19.6% gross and 17.3% net adjustment.

Pair 29 has 4 adjustments with 12.8% gross and 12.8% net adjustment.

Pair 30 has 6 adjustments with 18.2% gross and 10.3% net adjustment.

### Marketing of the Pearl Bronze Sale

These pairs needed heavier adjustment and all four sales are smaller square footages than the Pearl Home. These sales were the best available. This is the only Pearl-certified home sale studied in MD. Pearl Home Certification program has not been marketed heavily in this area. It is too early to conclude with confidence how the market reacts to the certification in Silver Spring, MD. Future study after more Pearl-certified home sales with improved marketing (see below marketing comments) occurs will give a more accurate understanding of the market's reaction to Pearl-certified home sales.

### Marketing of the Pearl Bronze Sale

The MLS did not mention the Pearl Home Certification, nor include any attachments regarding the Pearl Certification, or include the certification in the photograph gallery.

Marketing of the Pearl-certified home features were not evident in the MLS and may have contributed to the paired-data conclusions.

### 13. Pearl-Certified Home Sale – Silver Certification Level – Single-Unit Detached

Pearl Gold	Contract Date	Days on Market	Sold Price	Adjusted Sale Price	Living Area	Sales Price Premium (Pearl Sale Price- Adjusted Non Green Sale Price)	Premium as % of Sale Price (Premium/Pearl Sale Price)	Age Yrs
<b>Great Falls, VA</b>								
<b>Single-Unit Detached</b>								
<b>Pearl</b>	<b>5/12/2017</b>	<b>7</b>	<b>\$1,530,000</b>		<b>6,220</b>			<b>23</b>
<b>Pair 31</b>	4/7/2017	2	\$1,550,000	\$1,542,000	4,960	-\$12,000	-0.78%	22
<b>Pair 32</b>	9/12/2017	102	\$1,580,000	\$1,603,864	5,064	-\$73,684	-4.82%	20
<b>Pair 33</b>	2/26/2017	410	\$1,412,500	\$1,470,500	5,953	\$59,500	3.89%	23
<b>Pair 34</b>	4/3/2015	32	\$1,625,000	\$1,598,500	6,452	-\$68,500	-4.48%	21
<b>Pair 35</b>	2/9/2017	155	\$1,530,000	\$1,521,500	5,326	\$8,500	0.56%	0

Pair 31 has 6 adjustments with 22.1% gross and -0.5% net adjustments.

Pair 32 has 5 adjustments with 17.4% gross and 1.5% net adjustments.

Pair 33 has 6 adjustments with 21.8% gross and 4.1% net adjustments.

Pair 34 has 3 adjustments with 7.4% gross and -1.6% net adjustments.

Pair 35 has 7 adjustments with 33.1% gross and -0.6% net adjustments.

These pairs have heavy adjustment that weakens the conclusion. Great Falls is in Northern Virginia where Pearl does not yet have heavy concentration. The marketing of this Pearl-certified home sale did not promote the Pearl-certified home features. Improved marketing and a higher presence in this market area soon may result in a more positive premium in the future.

### Marketing of the Pearl Silver Sale

The MLS listing had no remarks about the efficiency or Pearl Home Certification and no picture of the certification was included in the photograph gallery.

The remarks did reference "See List of Home Features Under Documents" but the documents were removed so any reference to Pearl or other energy related items were not available if they were provided.

# Appendix C – The Project Team and Resources

## The Author

**Sandra K Adomatis, SRA, LEED Green Associate** is a real estate appraiser, instructor, author, and appraisal course developer. She is the author of *Residential Green Valuation Tools*, published April 2014, by the Appraisal Institute. Sandra spearheaded the development of the Appraisal Institute Residential and Commercial Green and Energy Efficient Addendums.

Her knowledge and experience are sought by consulting clients including builders, governmental agencies, utility companies, and energy organizations. She has spoken at events such as GreenBuild, International Builders Show (IBS), Energy and Environmental Building Alliance (EEBA), Affordable Comfort, Inc. (ACI), The White House Conference Center, Residential Energy System Network (RESNET), National Association of Realtors, and Appraisal Institute Conferences.

As a nationally recognized expert, news columnists often quote Sandra on the valuation of high-performance buildings. The *New York Times* interviewed her about her involvement in the Lawrence Berkeley National Laboratory study, “Selling into the Sun: Price Premium Analysis of a Multi-State Dataset of Solar Homes.”

**Disclosure:** Sandra was recently appointed to the Advisory Board for Pearl Home Certification. When Pearl Home Certification President and COO Robin LeBaron contacted her to discuss her potential involvement in this study, the conditions under which Sandra agreed to would accept this project included the following:

- The data result would not be subject to their edit. Whatever the Project Team’s data revealed would be final.
- The contract would be in a three-phase format that allowed the project team to:
  1. Search the market to first decide if enough sales were possible to develop meaningful paired data;
  2. Determine whether there were sufficient sales to develop the paired-data analysis with the Pearl Home Certified sales. If enough credible paired

datasets could be found (20-50 pairings), the Project Team would move to Phase 3.

3. Proceed with a written report for potential publishing for the public.

- Appraisers with local knowledge of the market areas where the sales were located and that had taken the Appraisal Institute's Green Courses would be hired.
- This Project Team made no promise of any outcome and Pearl Home Certification would render payment regardless of the study conclusions. The fee would not change based on the outcome and the team would not be pressured to arrive at any conclusion.

Robin readily agreed the terms were fair and reasonable. While the funding for the study is from Pearl National Home Certification, the terms of the contract and the study results were not influenced by Sandra's recent appointment to the Advisory Board (a voluntary position). As of the date of this writing, she had not attended an Advisory Board meeting or conference call and had no connection to the financial interest of Pearl National Home Certification or their financials.

Sandra can be contacted at [adomatis@hotmail.com](mailto:adomatis@hotmail.com) or through her website at [www.adomatisappraisalservice.com](http://www.adomatisappraisalservice.com)

## Project Team Appraiser 1

**Donald Boucher, SRA** developed the Paired-Data Analysis in Northern Virginia, Maryland, and Washington, D.C.

This report would not have been possible without his time and talents. Donald has extensive knowledge of the targeted study area. He researched the data used in paired-data analysis and developed the sales price premium analyses to understand how the market is reacting to the Pearl Home Certifications.

Mr. Boucher joined the family real estate valuation firm found by his father, C. Robert Boucher, MAI, CRE in 1972. The elder Mr. Boucher founded this firm in 1950 after returning from service in WWII and spending time selling real estate with another family

related company, Humphries Realty. The elder Mr. Boucher also served as National President of the American Institute of Real Estate Appraisers (AIREA) in 1971.

Don was awarded the RM designation by the AIREA in 1978. Following the merger of the AIREA and Society of Real Estate Appraisers in 1990, his RM designation was converted to an SRA designation. When the AIREA and Society merged Don took an active role in the merging by serving as a member of the National Experience Review and Admissions Committees. He served as Vice-Chair and Chair of both committees in the early 1990's. Prior to the merger of these two organizations Don also served as a Director of the District of Columbia Chapter of the AIREA and on various committees of this Chapter. After the merger, Don has been very active in both the D.C. Chapter of the Appraisal Institute (AI) and Nationally. In 2012, Don served as President of his local AI Chapter and for the last seven years was a member of the national Government Relations Committee (GRC) of the AI. In 2015, he was appointed Vice-Chair of the GRC. He now serves on the Admissions Designations and Qualifications Committee of the AI, and is a member of the Residential Appraisal Project Team. In 2017, Don was awarded the Lifetime Achievement Award by the Appraisal Institute.

In addition to his involvement with appraisal organizations, Don also served in various leadership positions in the local Realtor's Associations in the 1970's and 1980's.

Since the early 1990's Don has focused his valuation work primarily in the residential sector. He provides residential valuation services to a variety of clients including attorneys, lenders, relocation Companies, and other private clients. He has testified as an expert witness in local and Federal Courts relating to various litigation matters including marriage dissolution, partnership disputes and bankruptcies.

Don lives in Orange, Virginia with his wife Erika. Together they have seven children and six grandchildren.

## Project Team Appraiser 2

**Woody Fincham, SRA, AI-RRS** is a residential specialist from Charlottesville, VA.

Woody earned his first designation, the SRA, in 2011. His AI-RRS designation followed in 2014. Woody is vice-president with the national residential and commercial firm, Valucentric, LLC. His main practice centers on complex residential, historically significant

homes, equestrian hobby farms and estates, sustainable residential building, relocation work, and some commercial valuation. Woody has valued some of the most recognizable residences in the Commonwealth of Virginia. He has competency in all areas of the commonwealth for high-end homes, and primarily focuses on Charlottesville

Woody is an approved instructor with the Appraisal Institute on residential topics. He has also been very active with the Appraisal Institute having served on national committees, was chosen as Discussion Leader for the 2014 Leadership Development and Advisory Council, and presently is Co-chair of the Residential Appraiser Project Team. He is on the board of directors of the Virginia Commonwealth Chapter of the Appraisal Institute, and will be the Chapter Treasurer in 2018. Woody was given the Volunteer of Distinction award by the appraisal in 2017, which is given by the Appraisal Institute for outstanding volunteer service to the organization and profession. Woody has a strong desire to give back to the valuation profession.

He lives in the Charlottesville area with his wife, Laurie. He recently began mentoring his son, Woody, Jr. a trainee with the firm.



# Resources for Valuing and Marketing Residential Properties with Green Features

**“Appraised Value and Energy Efficiency: Getting It Right”** is a useful brochure that gives links to the secondary mortgage market guidelines, tips on preparing documents for the appraisal, and a sample letter to inform the lender of the special features a home has that require a special appraiser.

- New Construction - [https://www.appraisalinstitute.org/assets/1/29/AI-BCAP\\_Flyer.pdf](https://www.appraisalinstitute.org/assets/1/29/AI-BCAP_Flyer.pdf)
- Real Estate Agents – <http://www.greenresourcecouncil.org/Appraisal-Links>
- Energy and Green Retrofits of existing homes - <http://www.homeperformance.org/news-and-resources/news/appraised-value-and-energy-efficiency-getting-it-right>

**AI Residential Green and Energy Efficient Addendum (820.05)** – Designed to improve and standardize the communication of high-performance features. It was recently updated and mapped to the Real Estate Standards Organization (RESO), the data dictionary for MLSs, and to MISMO, the data dictionary for the mortgage industry.

**Housing and Urban Development (HUD)** - The most recent [Single Family Housing Policy Handbook 4000.1](#) (FHA) was released June 24, 2015 and became effective September 14, 2015.

**[Residential Green Valuation Tools](#)** – A publication by the Appraisal Institute and authored by Sandra K. Adomatis, co-author of this study, offers valuation guidance for appraisers, builders, real estate agents, home owners, and lenders.

**[Appraiser’s Guide to Identifying Green Features in Homes](#)** - Kathy Price-Robinson wrote this guide in 2012 to help appraisers identify the most common green features in a home. The Appraiser’s Research Foundation funded the guide that was published in 2012.

**Home Energy Score (HES):** The Home Energy Score, developed and managed by the U.S. Department of Energy (DOE), is a national system that allows homes to receive an energy rating, like the MPG rating available for cars. The Home Energy Score uses a 10-point scale to reflect how much energy a home is expected to use under standard operating

conditions. The Home Energy Score uses a standard calculation method and considers the home's structure and envelope (walls, windows, foundation) and its heating, cooling, and hot water systems. Only Assessors who pass DOE's Simulation Training can provide the Home Energy Score. [www.HomeEnergyScore.gov](http://www.HomeEnergyScore.gov)

**Residential Energy Services Network (RESNET)** adopted the [Mortgage Industry National Home Energy Rating Standards \(HERS\)](#). The HERS Index is a scoring system established by the Residential Energy Services Network in which a home built to the specifications of HERS Reference Home (based on the [2006 International Energy Conservation Code](#)) scores a [HERS Index](#) of 100, while a net zero energy home scores a HERS Index of 0. The lower a home's score, the more energy efficient is in comparison to the HERS Reference Home.

**Solar Ready Homes** – Documentation is available for builders on what types of planning and construction methods to consider when building a solar ready home. This information can be useful for valuation professionals by pointing out specific features to look for when valuing the property.

Renewable Energy Ready Home - [https://www1.eere.energy.gov/buildings/residential/pdfs/rerh\\_pv\\_guide.pdf](https://www1.eere.energy.gov/buildings/residential/pdfs/rerh_pv_guide.pdf)

**Zero Energy Ready Home (ZERH)** – A [DOE Zero Energy Ready Home](#) is a high-performance home which is so energy efficient that a renewable energy system can offset all or most of its annual energy consumption. Check out the resources on this site that give webinars, fact sheets, and building science details that can be extremely helpful in understanding high-performance buildings.

**A Field Guide to Solar Energy Resources** – This extensive [resource](#)<sup>8</sup> gives a myriad of information on solar photovoltaic systems including cost new, growth, and databases of installations.

[Database of State Incentives for Renewables & Efficiency](#) (DSIRE) – This website and associated database of incentive information houses the most up-to-date information on incentives associated with green features. It gives information on federal, state, local and utility incentives. This website is useful to all types of properties both existing and new construction. Incentives and rebates are listed that can be most helpful in replacing items

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<sup>8</sup> <http://www.adomatisappraisalservice.com/Field-Guide-to-Solar-Energy.pdf>

in existing homes or offsetting costs of new construction. This website also has a solar section that address rebates, incentives, and solar legislation.

## Valuation of Solar Photovoltaic Systems

[PV Value®](#) is a free discounted cash flow and cost approach program that was designed specifically for appraisers' use in valuing solar photovoltaic systems as well as other related professionals. The program requires specific inputs based on the solar system and inverter size in watts, age and of system, azimuth and tilt of panels, discount rate, warranty term of the system and inverter(s), current net and gross cost of the system, and verification of utility and utility escalation rate. PV Value® gives some defaults but allows the user to input custom numbers. It is important that the user understand the discounted cash flow and importance of accuracy of the inputs to arrive at a credible value opinion. This web-based software is also available as an application, Ei Value®.

PV Value® is used in the classroom setting through the Appraisal Institute's [Residential and Commercial Valuation of Solar](#). This class provides appraisers, lenders, real estate agents, builders, and energy raters with a better understanding of solar photovoltaic systems and how they can be valued.

**Market Value Defined** – All sales in this study met the definition of market value.

*"Market Value is defined as the most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition are the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:*

- *Buyer and seller are typically motivated;*
- *Both parties are well informed or well advised, and acting in what they consider their own best interests;*
- *A reasonable time is allowed for exposure in the open market;*
- *Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and,*

- *The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale."*

**Source:** [Federal Register/Interagency Appraisal and Evaluation Guidelines](#)

**Note:** The pairs in Northern Virginia had limited exposure to the Pearl home certified properties. Market value definition includes a reasonable time is allowed for exposure to the open market. The following definition shows a definition to marketing exposure.

**Definition: Marketing Exposure**

Degree to which a company's target market is exposed to the company's communications about its product/ services, initiatives etc. is called **Marketing Exposure**.

<http://www.mbaskool.com/business-concepts/marketing-and-strategy-terms/10710-marketing-exposure.html>

# Marketing High Performance Homes

The surveys and studies listed below all suggest that buyers and sellers in the residential real estate market are interested in high performance features. Several of these reports were mentioned in the Summary of Words Use in the MLS searches Section of this report.

1. *The Most Wanted List*<sup>9</sup> was published by the National Association of Home Builders in 2016. The list shows consumers are interested in energy efficient features.

The Most Wanted List (% of all respondents)			
Feature	% Essential	% Desirable	Total %
Laundry room	50%	42%	92%
ENERGY STAR® appliance	32%	58%	90%
Exterior lighting	39%	51%	90%
ENERGY STAR® rating for whole house	27%	61%	88%
ENERGY STAR® windows	34%	53%	87%
Ceiling fan	44%	42%	86%
Patio	27%	57%	84%
A full bath on the main level	43%	40%	83%
Hardwood on main floor	26%	56%	82%
Insulation higher than required by code	18%	63%	81%
Garage storage	25%	56%	81%
Table space for eating in kitchen	26%	54%	80%
Walk-in pantry	25%	55%	80%

**Source: NAHB, 2016 Housing Preferences of the Boomer Generation: How They Compare to Older Home Buyers**

2. EnergyPulse™ 2016 Special Report<sup>10</sup>

Play the Planet Card

by: Shelton Group

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<sup>9</sup> <http://www.nahbclassic.org/generic.aspx?sectionID=734&genericContentID=249797&channelID=311>

<sup>10</sup> [www.sheltongrp.comhttps://sheltongrp.com/insights/planet-card-special-report](http://www.sheltongrp.comhttps://sheltongrp.com/insights/planet-card-special-report)

The Shelton Group surveyed the top reasons Americans participate in energy conservation activities or buy an energy-efficient product/make home improvements. This study polled 2,025 Americans to gain insights about their growing concerns about the environment and their basic beliefs about energy.

35% - To make my home more comfortable

27% - To make my home healthier

25% - To be responsible and not waste

25% - To get more control over personal energy consumption

22% - To protect our environment

20% - To make my home more valuable for resale

20% - To have a high-quality home

18% - To have a higher-performance home

15% - To preserve the quality of life for future generations

### 3. Special Studies March 1, 2016

By Rose Quint

NAHB Economics and Housing Policy Group

To date, most participants have been between the ages of 25 and 45 (69%), live in 2-3 person households (57%), and live in apartments or condominiums (47%) between 500 and 1,200 square feet (54%).

**What makes a home livable to you?<sup>11</sup>**

**Urban centers are increasing in population, with that comes the challenge of making them a healthy and enjoyable place to live, both in your home and out.**

Posted by : Ecohome | Kim Barnsley

Further analysis tracked trending patterns of these key themes on the most common social media platforms including Facebook, Twitter, blogs and news sites. Natural light, one of the top three in the Livable Homes initiative, emerged as the most prevalent trend.

- Sunlight or natural light – **Most prevalent**

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<sup>11</sup> Report available to the public as a courtesy of HousingEconomics.com  
<http://www.ecohome.net/guide/makes-home-livable>

- Fresh air
- Views
- Connections to nature
- Small well-designed spaces
- Creative spaces – flexible to allow personalization
- Security
- Storage

#### 4. *10 of the 15 Most Powerful Words in Advertising*<sup>12</sup>

While this study does not specifically discuss houses, it does reflect advertising themes that are prominent and could be applied to home listing descriptions.

1. You
2. Results
3. Health
4. Guarantee
5. Discover
6. Love
7. Proven
8. Safety
9. Save
10. New

#### 5. *Five Trends in Single-Family Home Construction*<sup>13</sup>

1. Open floor plans
2. Natural Light
3. Home Office
4. Energy Efficient Design
5. Younger Home Buyers

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<sup>12</sup> <https://www.thebalance.com/most-powerful-words-in-advertising-38708>

<sup>13</sup> [https://www.proudgreenhome.com/news/5-trends-in-single-family-home-construction/?utm\\_source=Email\\_marketing&utm\\_campaign=emnaPGH06022017123005&cmp=1&utm\\_medium=Email](https://www.proudgreenhome.com/news/5-trends-in-single-family-home-construction/?utm_source=Email_marketing&utm_campaign=emnaPGH06022017123005&cmp=1&utm_medium=Email)



building professional for their insights on action. Energy efficient and smart home most popular design trends in 2017.<sup>14</sup>

## Building a Brand with Pearl

### Sustainability 2017 Report<sup>15</sup>

In February 2017, NAR surveyed its members on sustainability issues facing their industry. The survey found that the following:

Greg Slater

ASSOCIATE BROKER

[gregslater@nestrealty.com](mailto:gregslater@nestrealty.com)

ph: 434-981-6655

[www.gregslateragent.com](http://www.gregslateragent.com)

**Greg Slater, Past President of Charlottesville Area Association of REALTORS, has been a big proponent of energy efficiency promotion in listings was very or somewhat valuable. high-performing homes for more than a decade. For example, he led the charge on the CAAR MLS Committee to add Green Fields to their MLS in 2014.**

increased perceived property value.

- 27% of agents and brokers were involved with 1-to-5 properties that had green features in the past 12 months.

**for potential certification** and understands the benefits provided by Pearl's Appraisal Addendum, Certification Report, and MLS Listing Report when it comes to getting the most value for his sellers.

In both his personal and property marketing, Pearl plays a role. Greg prominently **displays Pearl Certified properties in his social channels** and makes sure potential sellers know **he can bring a better pricing and marketing strategy** to owners with energy efficient features than the next agent.

A one man show, Greg is nonetheless **one of the highest producing agents in Charlottesville, VA.** Most of his business comes from referrals because clients have deep respect for his knowledge about home features, and how those features contribute to quality of life and home value. Greg has made **Pearl an important component to that experience and his business success.**



<sup>14</sup> <https://www.fmr.com/blog>

<sup>15</sup> <https://www.nar.realtor/reports/realtors-and-sustainability-2017>





## Ensuring Investment Property ROI

# SUCCESS STORY

**Dawn Gurganus from Weichert Realty Alexandria worked with Pearl on her renovated property in Springfield, VA to ensure the home would achieve Pearl Silver certification once completed. Pearl's certification ended playing a very important role in helping the home to appraise.**

Earlier on in the process Pearl staff met with the contractor and Dawn to complete a Home Performance Asset Inventory of the 1963 home. He made a **complete set recommendations** for insulation, HVAC, and other systems in the home, many of which were implemented to **result in a Silver certified home.**

When the home came under contract, though, the appraiser couldn't find any comparable homes to justify the agreed on pricing. Dawn sought **Pearl's help in educating the appraiser** on the Appraisal Addendum and the added value of certification. **Pearl provided additional documentation on certified homes selling and appraising for more that helped the appraiser justify the home coming in at value.**

The buyers were so taken with the process, **they plan to make additional improvements to upgrade the home to Gold.** With plans to sell in three years, they're hoping to **increase the value** of their investment too!



## One Agent, Two Properties

### JULIE HAWKINS

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[pearlcertification.com](http://pearlcertification.com)

# SUCCESS STORY

**2017 for Julie Hawkins from KW Realty Dulles has turned into a very successful year, and she certainly kicked it off right with Pearl certifying two listings that sold for *much more and faster* than she expected.**

One Ashburn, VA home was built in 2010 in a 55+ retirement community, and the other was a 1978 home in Herndon, VA. With the first home, the seller had upgraded the insulation, installed ENERGY STAR appliances and **earned Silver certification**. With the second home, the seller had upgraded HVAC, ENERGY STAR appliances and new windows. This home also earned **Pearl Silver certification**.

**Julie implemented all of Pearl's marketing recommendations:**

- Included the Pearl Certificate photo as the third photo in the listing
- Mentioned Pearl in the remarks
- Uploaded the report and Appraisal Addendum into the documents section.
- Displayed the High-Performing Home Feature Tour cards and had copies of the Home Highlights flyers out for prospective buyers

**Pearl's marketing of certain home features really appealed to the buyer segments for these homes:** retirees are typically on fixed budgets and spend more time at home. Knowing that the house's energy bills would be affordable and that the home would be comfortable made a difference to the purchasers of the Ashburn home. For the Herndon home, it was helpful to know its core systems were upgraded and modern – in spite of its 1978 construction year.

When the homes went under contract, she shared the Pearl's letters to the buyer, lender, and appraiser with the appropriate parties. These **template letters are issued with every report and explain to each entity the value of the certification**. Both homes appraised.

So here's the success: **one home sold in 3 days at its full listing price** (unexpected!) and the **other sold in 4 days at \$36K higher than the listing price** (very unexpected!).

