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Professionals Providing Real Estate Solutions

September 13, 2012

Mr. Alfred Pollard
General Counsel
Federal Housing Finance Agency
Attn: Comments/RIN 2590-AA53
Eighth floor, 400 Seventh St SW.
Washington, DC 20024

Re: Notice of Proposed Rulemaking on Enterprise Underwriting Standards Relating to PACE Programs (RIN 2590–AA53)

On behalf of the 23,000 members of the Appraisal Institute, thank you for the opportunity to comment on the Notice of Proposed Rulemaking on Enterprise Underwriting Standards.

The purpose of the PACE program is to encourage residential property owners to make energy efficient improvements to their residences and finance those improvements through a tax lien. The Federal Housing Finance Agency (FHFA) has highlighted several concerns relating to implementation of the PACE program and has proposed a rule to not allow Fannie Mae or Freddie Mac to purchase loans backed by PACE loans, while offering three different Risk Mitigation Alternatives. The Second and Third Risk Mitigation Alternatives involve appraisal and/or loan-to-value ratio provisions.

We believe that a thorough and credible appraisal process may enhance risk management, and we encourage FHFA to integrate such requirements into any plan involving PACE or loans backing properties with green or energy-efficient features.

Further, the Notice provides several areas of comment relating to the unsettled nature regarding market impacts of energy-efficient improvements. We will seek to resolve some of those questions from an appraisal standpoint, and we would like to offer the following suggestions to enhance the Second and Third Risk Mitigation Alternatives:

Recommendations

1. Establish a scope of work for appraisals that requests analysis of green and energy-efficient features on properties and requires use of highly qualified and competent real estate appraisers. We believe that the appraisal requirements could be enhanced greatly by further commenting on, and potentially requiring, use of professionally designated real estate appraisers, or appraisers who have demonstrated competency in valuing properties with green features and/or energy-efficient improvements. Such enhanced qualified appraiser program criteria would establish expectations of lenders regarding the identification of qualified appraisers of green or high performance properties, an addition that would provide additional credibility to any appraisal- or LTV-related requirement that seeks to mitigate risk of both Enterprises.

   Further, we encourage the establishment of a scope of work for an appraisal of a high performance property to include an analysis of potential market impacts attributable to energy-efficient or green fixtures or improvements. As a part of this, we believe that FHFA should evaluate the use of, or potentially require the completion of, the *Residential Green and Energy Efficiency Addendum* (Form 820.03), published by the Appraisal Institute, in any appraisal that is prepared for a property that has a PACE lien.[1] This

[1] Available at http://www.appraisalinstitute.org/education/downloads/ai_82003_reslgreenenergyeffaddendum.pdf

addendum was developed to help appraisers analyze market impacts of green or energy-efficient features. Despite not being required as part of any federal or state program, the Addendum has been used as a means of communicating property level information to appraisers, and has been used successfully by appraisers in the field.

We believe that it makes great sense for any program overseen by FHFA to include the *Addendum* as part of any program requirement established by FHFA of Fannie Mae and Freddie Mac to enhance risk assessment in the area of green buildings and energy efficiency. The Addendum may be used in conjunction with the *Uniform Residential Appraisal Report* (URAR) form required by Fannie Mae and Freddie Mac and could enhance considerably the analysis of green and energy-efficient features on the value of real property. This is especially true given that the URAR is wanting in the area of green and energy efficiency, providing only two specific areas in which appraisers may comment on such features. To complement these areas, the Addendum provides a framework for appraisers to thoroughly analyze the market impacts (if any) of such features.

2. In addition, we encourage FHFA to allow Fannie Mae and Freddie Mac to amend its seller/servicer guidelines to specifically allow the use of the Income Capitalization Approach. Specifically, the guidelines should clarify that in the absence of paired sales data, two or more of the following methods may be considered and reconciled:
    a. Gross Rent Multiplier (GRM) x monthly savings (GRM may be from the market or proxy method),
    b. Published study from a similar market area,
    c. PV Value™ Tool or an equivalent system of analysis,
    d. Present Value analysis with adequate explanation of the inputs,
    e. Depreciated cost analysis (The market uses this method and there is plenty of support for current cost. The weak part of this method is accurately estimating depreciation; however, it can be done using logic.), and
    f. Lastly, the policy should ensure that the impact of any tax credits is taken into consideration by the appraiser.

    These methods are recognized and have been taught and published for several years. This gives the appraiser options but it should be clear that more than one method should be used and the two results reconciled.

Explained below, is the use of discounted cash-flow analysis for developing the present value (PV) of a solar photovoltaic system where there is market evidence for such an approach. Further, we will explain the research and education that is being developed by the Appraisal Institute, Sandia National Laboratories and Solar Power Electric.

Appraisal Considerations: Valuation of Green and Energy Efficient Features

Generally speaking, professional real estate appraisers use three "approaches to value" to value real property. These are known as the "sales comparison," "cost" and "income capitalization" approaches. Green buildings has applications to all three approaches to value, the points of which are taught in widely attended seminars and courses offered by the Appraisal Institute and other organizations. As a means of introducing some of these concepts, some general aspects of the three approaches to appraising green/energy-efficient buildings are as follows:

Cost Approach

- The cost approach can be especially useful in appraising green retrofitted buildings, as the actual cost of the work being proposed is easily identified. Although cost does not equal value, knowing the costs of particular green components may help the appraiser gauge how they compare with traditional building costs and, thus, begin to weigh the cost against the perceived benefit. Buyers know cost and they do consider cost in their buying decisions.
- One important point to consider is whether any component or element of the building is a "superadequacy." At times, new technology may be just that. For some components, such as a green

roof, life-cycle cost analysis may be more accurate than straight-line depreciation for comparison with a traditional roofing system.

- Two of the largest cost data providers, *Marshall & Swift* and *RS Means*, have green cost guides (see www.marshallswift.com and www.rsmeans.com for more information). Although these guides are not fully developed, they do provide insight into the costs of some green building components and, therefore, they may be helpful to appraisers.
- Note that cost alone does not reflect the added efficiencies available through integrated systems design. Three areas of the cost approach that may require more attention with green buildings are obsolescence, physical deterioration and incentives.

Physical deterioration also may have an impact on value – a longer physical lifespan of a green building due to its durability also may alter the rate of physical deterioration and thus influence how the appraiser formulates part of the cost approach.

Lastly, incentives may have a major impact on the costs for a green project and should be researched, understood, and applied by appraisers in their cost approach analyses.

Sales Comparison Approach

Appraiser considerations for the sales comparison approach involve both comparable sales selection and developing adjustments to the sales prices to reflect physical differences. Some general considerations include the following:

- When undertaking comparable sales selection, because green buildings is an emerging field, there may be a shortage of data on recent sales available for a green subject property. This may be a larger issue in residential appraising than in commercial appraising, but the fact remains that often there are few recent green sales available for comparison. This lack of data may lead appraisers to expand the typical parameters of their comparable searches.
- Even if sales of green properties are available, it is important to remember how points-based certification systems operate: not all buildings of the same certification level are similar. Appraisers also need to understand the elements of the buildings themselves.
- The difficulty in obtaining sales data also may require appraisers to develop other approaches to value more fully and/or justify the weighting of the approaches in more detail with regard to the reconciliation section of their reports.
- Features requiring adjustments in appraising green buildings, as follows:
    - Energy efficiency
    - Heating and cooling
    - Quality of construction
    - Water efficiency
    - Functional utility
- In most cases, a lump sum adjustment for all the features will be made because of the difficulty in accurately supporting an adjustment for each feature.

Income Capitalization Approach

As we explain below, the income capitalization approach is useful to residential valuation questions using the Gross Rent Multiplier (GRM). However, the income capitalization approach is most common in valuing commercial property. Some considerations for appraisers include:

- The useful life, physical deterioration and obsolescence all come into play in the income capitalization approach, as well as in the cost approach. Beyond these elements, the following items should be considered in the income capitalization approach when appraising green buildings:
    - *Income:* Do tenants of the green building pay a premium?
    - *Vacancies:* Are vacancy rates lower in the green building?
    - *Tenancy:* Is tenant retention better in the green building?

  - *Present value:* Are there anticipated future savings attributable to any green features in the building, such as HVAC or water system or energy savings?
  - *Operations and maintenance:* Does the durability of the building or its components mean that O&M costs will be lower over time?
  - *Incentives:* Are any rebates, permit savings or other incentives available for this building because of the green features?
- It is important that appraisers remember that adjustments in the sales comparison and cost approaches may come from the analysis in the income capitalization approach. For instance, savings from water, energy and even maintenance may be derived through present value analysis and applied in both the sales comparison and cost approaches. For longer-lived items present in green buildings, such as eco roofs, discounted cash flow analysis may be the best method for capturing benefits over time.
- The elements described above for the income capitalization approach all arise from differences between a green building and a traditional building. The differences between green and conventional buildings can guide appraisers in analyzing this emerging class of buildings.

PACE Considerations

We previously commented to FHFA on how appraisers would analyze properties with PACE liens, but we will reiterate them here and expand upon the application of the three approaches to value cited above. The existence of a PACE loan is comparable with situations that involve a special assessment for sewer or water. The special assessment may pass to the new buyer or be paid off by the seller. The sale price paid is negotiated based on who assumes the special assessment.

From a valuation perspective, it is important to understand whether a seller-paid assessment influenced the sales price. This is best understood by comparing sales with a PACE Loan or Special Assessment to a sale without one. This comparison quickly reveals if the Assessment affected the price paid.

This is likely a form of sales or seller concession and, if so, recognized appraisal methodology would deduct this concession, dollar for dollar, under a "cash equivalency" basis, or if the market suggests the amount is less than market-based on a paired sales analysis, the market-derived adjustment would be applied.

The example found at Table 1 below illustrates how the appraisal industry analyzes this type of situation. The appraiser would consider the PACE loan as a concession paid by the seller. As a result, the appraiser would deduct $10,000 from Sale 2's price, as its price was increased by $10,000 ($185,000 - $175,000 = $10,000) because of the PACE Loan. It should be noted that there are no absolutes and every situation is different, since every real estate market is different. However, this is likely to be a common scenario. This scenario is a typical occurrence in the City of Cape Coral, FL, where some properties have special water and sewer assessments up to $16,000. Appraisers use the paired sales analysis shown below to develop adjustments.

Table 1

	Sale 1	**Sale 2**
Sale Price	$175,000	$185,000
Concessions	None- No PACE or Utility Loan	Seller paid $10,000 PACE Loan or utility payment
Financing	Conventional mortgage	Conventional Mortgage
Date of contract	7/2/2011	7/31/2011

Energy Efficiency	Good – HERS 55	Good- HERS 58

Of course, any positive impacts of any fixed improvements or features of the property also would be analyzed by an appraiser. This includes cost and income considerations, as discussed above in the description of appraiser considerations and the three approaches to value.

It is here – the application of the income capitalization approach – where we believe FHFA, Fannie Mae and Freddie Mac could provide strong direction to lenders, by encouraging analysis by appraisers, mitigating risks to the Enterprises, and potentially resolving several areas of concern with regard to the PACE program, particularly as it relates to solar integration.

Background

The U.S. Department of Energy has, through several decades of R&D by Sandia National Laboratories, the National Renewable Energy Laboratory and others,[2] [3] [4] produced a wealth of data relating to the expected and actual performance of solar photovoltaic systems installed throughout all geographical areas of the U.S. With that data, we reliably and conservatively can estimate the remaining lifetime energy production of a residential solar photovoltaic system, including anticipated operations and maintenance costs (O&M).[5]

Need for using all methods of estimating market value that fall within the guidelines of Uniform Standards of Professional Appraisal Practice (USPAP) and available to appraisers

Solar photovoltaic systems has enjoyed widespread acceptance throughout the U.S., with the highest adoption rates in CA and NJ. However, even with those relatively high adoption rates and continued successful deployment of residential-owned solar, it may be a decade or more before reliable and accurate sales comparables of homes sold with solar photovoltaics are available throughout every geographical area of the U.S., covering every type of residence. The sales data sources, such as MLS, public records and private data sources, are just beginning to implement searchable data fields to assist in measuring the market's reaction to these features.

In order to aid appraisers in developing the income approach, an algorithm (PV Value™)[6] was developed by Solar Power Electric in 2010 for use and illustration by the Appraisal Institute to develop the value of a customer-owned solar photovoltaic system based on a discounted cash-flow (DCF) analysis under the Income Capitalization Approach. PV Value™ follows the USPAP 2012-2013 guidelines, specifically the statement on Appraisal Standard 1-4 (c) under the subject of discounted cash flow analysis. The algorithm has been developed initially as an Excel spreadsheet tool for appraisers, underwriters, real property assessors and others to use. Solar Power Electric and Sandia National Laboratories made the first version of the tool public in January 2012 and the most recent version was released on September 1, 2012. The recent version also applies to the cost approach to provide a secondary method or test of reasonableness.

In light of this, and with a lack of comparable sales for the Sales Comparison Approach, we encourage FHFA when sales comparables are not available, to allow the Income Capitalization Approach, specifically the discounted cash-flow analysis as presented within PV Value™, for developing the market value of solar photovoltaic within the Enterprises published appraisal standards.

Residential solar photovoltaic installations have a positive net present value in 10 states based on 2010 data

[2] Jordan D.C. and S.R. Kurtz (2011) Photovoltaic Degradation Rates – an Analytical Review. Prog. Photovolt: Res. Appl. DOI: 10.1002/pip.1182.
[3] Osterwald C.R., J. Adelstein, J.A. del Cueto, B. Kroposki, D. Trudell and T. Moriarty (2006) Comparison of Degradation Rates of Individual Modules Held at Maximum Power. Report number NREL/PR-520-39844. Presented at the 2006 IEEE 4th World Conference on Photovoltaic Energy Conversion, May 7-12, Waikoloa, HI.
[4] Perez, R., P Ineichen, K. Moore, M Kmiecik, C Chain, R. George and F. Vignola (2002) A new operational model for satellite-derived irradiances: description and validation. *Solar Energy*, 73:307-317.
[5] Menicucci, D.F. (1985) PVFORM – A New Approach to Photovoltaic System Performance Modeling, 18th IEEE PVSC, Las Vegas, NV, October 21-25, 1985.
[6] www.pvvalue.com

The proposed rule asserts "we are not aware of reliable evidence supporting a conclusion that energy efficiency improvements increase property values in an amount equal to the cost of the improvements".[7] Based on data available for 2010, the Appraisal Institute, Sandia National Laboratories and Solar Power Electric have indentified 10 states where the net cost after incentives of a residential solar photovoltaic installation is lower than the potential market value developed through the Income Capitalization Approach using a discounted cash-flow analysis. Once data for 2011 is available and reviewed, we anticipate that more states will be added to this list, as installed costs decrease and utility rates increase. This analysis is preliminary, as these represent new photovoltaic installations in 2010 that have not yet 'sold,' though it does show the potential value of systems installed in different states as a function of the energy produced by the photovoltaic system.

As an income approach is sensitive to the amount of solar resource available, selected discount rate, utility rate and utility escalation rate, the 10 states where income approach value is greater than installed cost are dominated by both high average utility rates and high utility escalation rates. This shows that the value to the homeowner potentially may be greater than the cost to install the system. When an appraiser uses all the tools available – the sales comparison data, income approach and cost approach – the value range indicated by the approaches will be reconciled based on the strengths and weaknesses of each approach to arrive at a market value of the solar photovoltaic system. As utility rates increase, the more states may end up having a higher income approach value than installed cost. Currently, when the appraised value is below the income approach value, it should be noted that the savings by the homeowner still could be very high and the forgone utility bill will free up additional money that then could be used to pay the PACE loan, or pay down the mortgage and increase their home equity position.

Funding awarded to further study the increase in value for residential properties with solar PV based on sales comparables

In August 2012, the U.S. Department of Energy, through the Sun Shot initiative, awarded funding for three years (FY's 2013-2015) to Sandia National Laboratories/Lawrence Berkley National Laboratory for the further deployment of the tool, along with additional research into the market value that solar photovoltaic adds to a residence, and additional appraiser training on valuing solar photovoltaic with classes to be offered through the Appraisal Institute. An overarching goal of this work is to reduce installed costs by allowing homeowners the ability to access current low-rate first mortgage financing.

PV Value™ tool is FREE to use and available now

Version 1.1 of PV Value™ currently is available as an Excel spreadsheet; additionally PV Value™ is expected to be available as a web application in the spring of 2013 and will be accessible across most computer platforms and workstation environments. The PV Value™ tool is FREE to use and may be downloaded at www.pvvalue.com and http://pv.sandia.gov/pvvalue. A detailed user manual is available that outlines the assumptions used in the tool and outlines how to properly enter the inputs.

Sandia National Laboratories and Solar Power Electric presented two different webinars about the PV Value™ tool, which are available at http://pv.sandia.gov/pvvalue and at https://vimeo.com/40703731.

Appropriate Discount Rates used for DCF Analysis

FHFA has expressed reservations about appropriate discount rates and the methodologies used to determine them.[8]

We believe that the choice of an appropriate discount rate used in a DCF analysis is best left to a properly trained appraiser who is familiar with local market conditions and who has accepted the appraisal assignment. The appraiser is best equipped to determine that discount rate based on current mortgage interest rates and additional risk-based market factors. PV Value™ uses the FNM 30- or 15-year fixed

[7] Proposed Rule page 36091
[8] Proposed Rule page 36109

rate, 60-day commitment rate (a custom rate also is available in accordance with USPAP [9]) in addition to an appraiser-chosen risk-based spread to determine the appropriate discount rate. That being said, a municipality can work with an appraiser or an assessor who is knowledgeable on how to value photovoltaic systems to ensure that the PACE loan application accurately reflects current market conditions and utility rates.[10] The newest version of PV Value™ separates residential property from commercial property valuations to allow the input of appropriate discount rates by simply selecting the property type first.

Discussion on "Weighted average expected useful life of PACE-funded projects"

For solar photovoltaic systems, the PV Value™ tool calculates the useful life of the photovoltaic system through the module warranty, which is typically longer than any other component in the system. Typical photovoltaic module warranties are 20, 25 and 30 years. Now in many cases, the system may perform longer than the warranty period, however, risk to the homeowner includes having to make a roof replacement, and the cost to remove and re-install the same system may be greater than what it would cost to install a new photovoltaic system in the future. In addition, the financial risk of replacing one or many modules after the warranty may be difficult if that technology no longer exists and newer technologies may not be compatible. These factors also influence how an appraiser may choose a basis point spread to develop the discount rate used in the DCF analysis.

Implementation of PACE Payments Comparison to DCF Energy Value Analysis

FHFA has expressed reservations about the Third Risk-Mitigation Alternative specifically with the statement "The total energy and water cost savings realized by the property owner and the property owner's successors during the useful lives of the improvements, as determined by [a mandatory] audit or feasibility study are expected to exceed the total cost to the property owner and the property owner's successors of the PACE assessment,"…"no methodology for computing the costs and savings is provided."[11]

The attached version of PV Value™ uses a present value DCF analysis of the total PACE payments in comparison to the DCF Energy value analysis to determine if the solar photovoltaic project has a positive benefit-cost ratio or Net Present Value. The discount rate used in the PACE payment analysis is the same discount rate used for the DCF Energy Value Analysis, although it may be modifiable in future versions of PV Value™.

Appraiser Training Classes

The appraiser training classes that will be offered by the Appraisal Institute focus on fair market valuations of residential and commercial structures with solar photovoltaic. The first class is to be attended by appraisers and mortgage underwriters and is anticipated to be held in Washington, DC, in late winter/early spring 2013.

We encourage FHFA to participate in the inaugural class by sending senior individuals and underwriters from Fannie Mae and Freddie Mac who have direct knowledge of appraisal standards and specifically the income capitalization approach using the discounted cash flow method. This will be a working class with direct feedback desired from all attendees.

Research for 2010/2011 relating to the market value of residential solar PV to be published in the Appraisal Journal

Although we have done extensive research into the present value and net present value of residential solar PV by state, the findings are slated to be published in the *Appraisal Journal* in the Winter 2012/Spring 2013 edition. We would be pleased to provide FHFA a pre-release copy of the article once the editor has approved it for publication.

[9] Uniform Standards of Professional Appraisal Practice 2012-2013, Standard 2, Pages U82-U84, lines 2617-2710
[10] Barnes J., Heinemann A., Lips B. (2012) The Cost of Value: PV and Property Taxes, NCSC. Presented at ASES 2012
[11] Proposed Rule page 36109

Concluding Remarks

We have explained several concepts that may offer additional enhancements to the appraisal process for any program offered by Fannie Mae and Freddie Mac on the subject of PACE. We would be pleased to discuss these concepts in greater detail, as FHFA reviews the public comments and deliberates on potential next steps.

We also are attaching several research articles[12] that discuss valuation issues, as well as some tools that potentially could be used by appraisers.

If you have any questions or would like to arrange a meeting, please contact Bill Garber, Director of Government and External Relations, at 202-298-5586 or bgarber@appraisalinstitute.org, or Brian Rodgers, Manager of Federal Affairs, at 202-298-5597 or brodgers@appraisalinstitute.org.

Sincerely,

//c

Appraisal Institute

Attachments

[12] See the following studies and articles: https://ases.conference-services.net/resources/252/2859/pdf/SOLAR2012_0356_full%20paper.pdf; http://www.costar.com/uploadedFiles/JOSRE/JournalPdfs/06.109_126.pdf ; http://www.readperiodicals.com/201205/2692565101.html

AI Reports®
Form 820.03*

Client File #:		Appraisal File #:	

Residential Green and Energy Efficient Addendum

Client:		
Subject Property:		
City:	State:	Zip:

Additional resources to aid in the valuation of green properties and the completion of this form can be found at http://www.appraisalinstitute.org/education/green_energy_addendum.aspx

ENERGY EFFICIENT ITEMS

The following items are considered within the appraised value of the subject property:

Insulation	☐ Fiberglass Blown-In ☐ Foam Insulation ☐ Cellulose ☐ Fiberglass Batt Insulation ☐ Other (Describe): ☐ Basement Insulation (Describe): ☐ Floor Insulation (Describe):	R-Value: ☐ Walls ☐ Ceiling ☐ Floor
Water Efficiency	☐ Reclaimed Water System (Explain): ☐ Rain Barrels - #:	☐ Cistern - Size: Gallons ☐ Rain Barrels Provide Irrigation Location:

Windows	☐ ENERGY STAR®	☐ Low E	☐ High Impact	☐ Storm	☐ Double Pane ☐ Triple Pane	☐ Tinted	☐ Solar Shades
Day Lighting	☐ Skylights - #:	☐ Solar Tubes - #:	☐ ENERGY STAR Light Fixtures		☐ Other (Explain):		
Appliances	ENERGY STAR Appliances: ☐ Range/Top ☐ Dishwasher ☐ Refrigerator ☐ Other:		Water Heater: ☐ Solar ☐ Tankless (On Demand) Size: Gal.		Appliance Energy Source: ☐ Propane ☐ Electric ☐ Natural Gas ☐ Other (Describe):		
HVAC (Describe in Comments Area)	☐ High Efficiency HVAC - SEER:		☐ Heat Pump		☐ Thermostat/Controllers		☐ Passive Solar
	☐ Programmable Thermostat		☐ Wind		☐ Radiant Floor Heat		☐ Geothermal
Energy Rating	☐ ENERGY STAR Home ☐ HPwES (Home Performance with ENERGY STAR) ☐ Other (Describe):				☐ Indoor Air PLUS Package ☐ Energy Recovery Ventilator Unit ☐ Certification Attached		

HERS Information	Rating:	Date Rated:	Monthly Energy Savings on Rating: $
Utility Costs	Average Utility Cost: $ per month based on:		☐ Dashboards - #:
Energy Audit	Has an energy audit/rating been performed on the subject property? ☐ Yes ☐ No ☐ Unknown If yes, comment on work completed as result of audit.		
Comments			

*NOTICE: The Appraisal Institute publishes this form for use by appraisers where the appraiser deems use of the form appropriate. Depending on the assignment, the appraiser may need to provide additional data, analysis and work product not called for in this form. The Appraisal Institute plays no role in completing the form and disclaims any responsibility for the data, analysis or any other work product provided by the individual appraiser(s).

Client:		Client File #:	
Subject Property:		Appraisal File #:	

Solar Panels

The following items are considered within the appraised value of the subject property:

Description	Array #1 ☐ Leased ☐ Owned	Array #2 ☐ Leased ☐ Owned	Array #3 ☐ Leased ☐ Owned	Array #4 ☐ Leased ☐ Owned
KW				
Age of Panels				
Energy Production Kwh per Array				
Source for Production				
Location (Roof, Ground, Etc.)				
If Roof/Slope for Array				
Azimuth per Array				
Age of Inverter(s)				
Name of Utility Company:		Cost per Kwh charged by Company: $ /Kwh		
Comments (Discuss incentives available for new panels, condition of current panels, and any maintenance issues)				

Green Features

The following items are considered within the appraised value of the subject property:

Certification	Year Certified:	Certifying Organization:	☐ Reviewed on site	☐ Certification attached to this report
Rating	Score:	☐ LEED® Certified: ☐ Silver ☐ Gold ☐ Platinum ☐ Other:		
		☐ ICC-700 *National Green Building Standard* Certified: ☐ Bronze ☐ Silver ☐ Gold ☐ Emerald		
		Certifying Organizations Green Score Range - High Score:	Low Score:	
Additions	Explain any additions or changes made to the structure since it was certified:			
	Do changes require recertification to verify rating is still applicable? ☐ Yes ☐ No			
Comments				

Client:		Client File #:	
Subject Property:		Appraisal File #:	

Location - Site

The following items are considered within the appraised value of the subject property:

Walk Score	Score:	Source:	
Public Transportation	☐ Bus – Distance: Blocks	☐ Train – Distance: Blocks	☐ Subway – Distance: Blocks
Site	Orientation - front faces: ☐ East/West ☐ North/South	Landscaping: ☐ Xeriscaped ☐ Zero Impact ☐ Natural	
Comments			

Incentives – Amount of Incentive and Terms

The following items are considered within the appraised value of the subject property:

Federal	
State	
Local	
Source	
Comments	

*NOTICE: The Appraisal Institute publishes this form for use by appraisers where the appraiser deems use of the form appropriate. Depending on the assignment, the appraiser may need to provide additional data, analysis and work product not called for in this form. The Appraisal Institute plays no role in completing the form and disclaims any responsibility for the data, analysis or any other work product provided by the individual appraiser(s).

SOLAR POWER ELECTRIC

Sandia National Laboratories

PV Value™ Photovoltaic Energy Valuation Model v. 1.1

Choose Property Type: ◉ Residential (Single-family, Duplex/Villa, Townhouse, Condo) ○ Commercial

Solar Resource Calculation	
Zip Code	95403
System Size in Watts	5,000
Derate Factor	0.770
Commissioning report # is required to override default derate factor	
Commissioning Report #	
Module Degradation Rate	0.5
Array Type	Fixed
Array Tilt (unchecked = latitude) ☐	22.0
Array Azimuth (default = South)	180
	kWh Produced/Year
	6,852

Discount Rate Calculation	
Basis Points (low)	50
Basis Points (high)	200
Basis Points (average)	125
Choose Net Yield Rate	
FNM 30-Year Fixed 60-day / FNM 15-Year Fixed 60-day / Custom	
Custom Rate	7.00
Discount Rate (low)	7.50
Discount Rate (average)	8.25
Discount Rate (high)	9.00

Electricity Rate Inputs	*Pacific Gas and Electric Co.*
Residential Rate ¢/kWh	15.00
☐ User Defined (check box) ¢/kWh	
Utility Escalation Rates for California	
Residential Escalation Rate - EIA	2.06
☐ User Defined (check box)	

Operation & Maintenance Inputs	
15-Year O&M Expenses as a function of the system size	
O&M Expenses ¢/W	.55
☐ User Defined (check box) ¢/W	
Est. Inverter Replacement Cost	$ 837.36
System Age and Remaining Lifetime	
Module Warranty/Years	25
Age of System/Years	0
Remaining Energy/Years	25
Is this ☐ Lease to Purchase option?	Check for Buyout Valuation

User Input

User Input Override

Calculated Value

Appraisal Range of Value Estimate		
Low	$	11,567.97
Average	$	12,330.34
High	$	13,176.31

Present Value Estimate of Accumulated Energy Production

Year	KWh Production /YR	Energy Value /YR (low DR)	Accumulated Energy Present Value with O&M Expenses (low DR)	Energy Value /YR (average DR)	Accumulated Energy Present Value with O&M Expenses (average DR)	Energy Value /YR (high DR)	Accumulated Energy Present Value with O&M Expenses (high DR)
1	6,827	$ 1,024.10	$ 1,024.10	$ 1,024.10	$ 1,024.10	$ 1,024.10	$ 1,024.10
2	6,793	$ 967.35	$ 1,991.45	$ 960.64	$ 1,984.74	$ 954.03	$ 1,978.13
3	6,759	$ 913.71	$ 2,905.16	$ 901.10	$ 2,885.84	$ 888.74	$ 2,866.87
4	6,724	$ 863.03	$ 3,768.19	$ 845.22	$ 3,731.06	$ 827.89	$ 3,694.77
5	6,690	$ 815.14	$ 4,583.34	$ 792.79	$ 4,523.85	$ 771.19	$ 4,465.96
6	6,656	$ 769.89	$ 5,353.23	$ 743.59	$ 5,267.44	$ 718.36	$ 5,184.31
7	6,621	$ 727.13	$ 6,080.36	$ 697.42	$ 5,964.86	$ 669.12	$ 5,853.43
8	6,587	$ 686.73	$ 6,767.09	$ 654.11	$ 6,618.97	$ 623.24	$ 6,476.68
9	6,553	$ 648.55	$ 7,415.64	$ 613.46	$ 7,232.43	$ 580.50	$ 7,057.18
10	6,519	$ 612.48	$ 8,028.12	$ 575.33	$ 7,807.76	$ 540.67	$ 7,597.84
11	6,484	$ 578.40	$ 8,606.52	$ 539.55	$ 8,347.31	$ 503.56	$ 8,101.40
12	6,450	$ 546.20	$ 9,152.72	$ 505.99	$ 8,853.30	$ 468.98	$ 8,570.38
13	6,416	$ 515.78	$ 9,668.50	$ 474.49	$ 9,327.79	$ 436.76	$ 9,007.14
14	6,381	$ 487.04	$ 10,155.54	$ 444.95	$ 9,772.74	$ 406.75	$ 9,413.89
15	6,347	$ 459.89	$ 10,615.42	$ 417.23	$ 10,189.97	$ 378.79	$ 9,792.68
16	6,313	$ 434.23	$ 11,212.29	$ 391.23	$ 9,743.84	$ 352.74	$ 9,308.06
17	6,278	$ 410.00	$ 10,622.29	$ 366.84	$ 10,110.68	$ 328.47	$ 9,636.53
18	6,244	$ 387.11	$ 11,009.40	$ 343.96	$ 10,454.63	$ 305.86	$ 9,942.39
19	6,210	$ 365.48	$ 11,374.89	$ 322.49	$ 10,777.12	$ 284.80	$ 10,227.19
20	6,175	$ 345.06	$ 11,719.94	$ 302.35	$ 11,079.48	$ 265.18	$ 10,492.37
21	6,141	$ 325.76	$ 12,045.70	$ 283.47	$ 11,362.95	$ 246.91	$ 10,739.28
22	6,107	$ 307.53	$ 12,353.23	$ 265.76	$ 11,628.71	$ 229.89	$ 10,969.17
23	6,073	$ 290.32	$ 12,643.55	$ 249.14	$ 11,877.85	$ 214.03	$ 11,183.20
24	6,038	$ 274.06	$ 12,917.61	$ 233.58	$ 12,111.40	$ 199.26	$ 11,382.46
25	6,004	$ 258.70	$ 13,176.31	$ 218.94	$ 12,330.34	$ 185.51	$ 11,567.97

Click on + to expand additional analysis features for calculating Average Net Present Value

Average Net Present Value Determination

Residential & Commercial Inputs		
Gross Price	Federal Tax Rate Yr 1	25
$17,500		
Rebate (if Applicable)		
$1,000		
Cost $/Watt		
$/ 3.50		

☑ Residential PACE Analysis

Method A	Assumes the rebate is deducted from the gross price before the tax credit is applied	
Tax Credit @ 30% of Basis	$	4,950.00
State Tax Credit (if applicable)	0%	
State Tax Credit % of Basis	$	-
Net Cost after Incentives	$	11,550.00
Average NPV	$	780.34
Method B	Assumes the tax credit is based on gross price before rebate is deducted, tax is paid on rebate	
Tax Credit @ 30% of Basis	$	5,250.00
State Tax Credit from Above	0%	
State Tax Credit % of Basis	$	-
State Income Tax Rate	0%	
State Income Tax on Rebate	$	-
Net Cost after Incentives	$	11,500.00
Average NPV	$	830.34

Residential PACE Payment and Value Comparison

PV = Present Value FV = Future Value

DR = Discount Rate SIR = Savings to Investment Ratio

PACE Program Inputs	
PACE Interest Rate (Cell E15)	7%
PACE Term Yrs [# pmts]	20
PACE Initial Loan Amount	$11,550.00
PACE Program Administrator	
PACE Program Calculations	
Annual Payment (FV) $	$ 1,090.24
Total Pace Payments (FV) $	$ 21,804.77
Total PACE Pmt (PV) $ (low DR)	$ 13,929.96
Total PACE Pmt (PV) $ (avg DR)	$ 11,358.96
Total PACE Pmt (PV) $ (high DR)	$ 10,834.12

		SIR
PACE Pmt vs. 'PV Value' (low DR)	$ 3,817.34	1.16
PACE Pmt vs. 'PV Value' (avg DR)	$ 400.39	1.03
PACE Pmt vs. 'PV Value' (high DR)	$ 733.85	1.07

SIR = [Estimated savings over the life of the assessment, discounted back to present value using an appropriate discount rate] divided by [Amount financed through PACE assessment]

From DOE Guidelines for Financing PACE Pilot Programs - May 7,2010

Available at: http://www1.eere.energy.gov/wip/pdfs/arra_guidelines_for_pilot_pace_programs.pdf

Click on - to hide additional analysis features for calculating Average Net Present Value

An ENERGY STAR ® Version 2 Qualified Home

This home built at

NM 88201

by XXX Homes, LLC

has been verified by Inspection 3rd Party an independent professional or organization,
to meet or exceed strict energy efficiency guidelines
set by the U.S. Environmental Protection Agency.

HERS Index: 58

5/04/11

Sam Rashkin
National Director
ENERGY STAR for Homes

www.energystar.gov

REM/Rate - Residential Energy Analysis and Rating Software v12.93

Home Energy Rating Certificate

XXXXX, NM XXXXX

5 Stars Plus

Confirmed Rating Energy Efficient

Uniform Energy Rating System

1 Star	1 Star Plus	2 Stars	2 Stars Plus	3 Stars	3 Stars Plus	4 Stars	4 Stars Plus	5 Stars	5 Stars Plus
500-401	400-301	300-251	250-201	200-151	150-101	100-91	90-86	85-71	70 or Less

HERS Index: 58 **Efficient Home Comparison:** 42% Better

General Information

Conditioned Area:	1800 sq. ft.	House Type:	Single-family detached
Conditioned Volume:	21264 cubic ft.	Foundation:	Slab
Bedrooms:	3		

Mechanical Systems Features

Air-source heat pump:	Electric Htg: 8.5 HSPF Clg: 15.0 SEER
Water Heating:	Conventional, Electric, 0.91 EF, 50.0 Gal.
Duct Leakage to Outside:	0.00 CFM.
Ventilation System:	Exhaust Only: 63 cfm, 20.0 watts.
Programmable Thermostat:	Heating: Yes Cooling: Yes

Building Shell Features

Ceiling Flat:	NA	Exposed Floor:	NA
Vaulted Ceiling:	U-0.047	Window Type:	Double/LoE - Wd*
Above Grade Walls:	R-13	**Infiltration:**	
Foundation Walls:	NA	Rate:	Htg: 289 Clg: 289 CFM50
Slab:	R-5.0 Edge, R-0.0 Under	Method:	Blower door test

Lights and Appliance Features

Percent Fluorescent Pin-Based:	0.00	Clothes Dryer Fuel:	Electric
Percent Fluorescent CFL:	100.00	Range/Oven Fuel:	Electric
Refrigerator (kWh/yr):	506.00	Ceiling Fan (cfm/Watt):	0.00
Dishwasher Energy Factor:	0.67		

The Home Energy Rating Standard Disclosure for this home is available from the rating provider.

REM/Rate - Residential Energy Analysis and Rating Software v12.93

Rating Number: 316062
Certified Energy Rater:
Rating Date: 5/04/11
Rating Ordered For:

Estimated Annual Energy Cost

Confirmed Rating

Use	MMBtu	Cost	Percent
Heating	12.1	$305	25%
Cooling	3.8	$99	8%
Hot Water	11.0	$280	23%
Lights/Appliances	19.1	$487	39%
Photovoltaics	-0.0	$-0	-0%
Service Charges		$67	5%
Total		**$1238**	**100%**

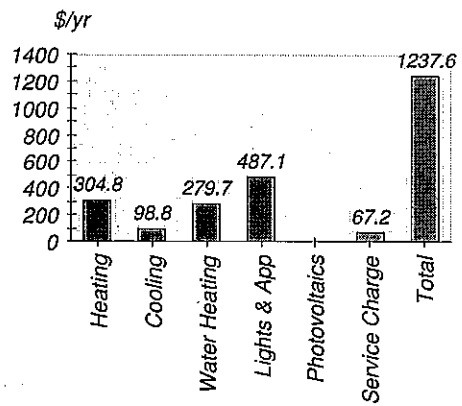
This home meets or exceeds the minimum criteria for all of the following:

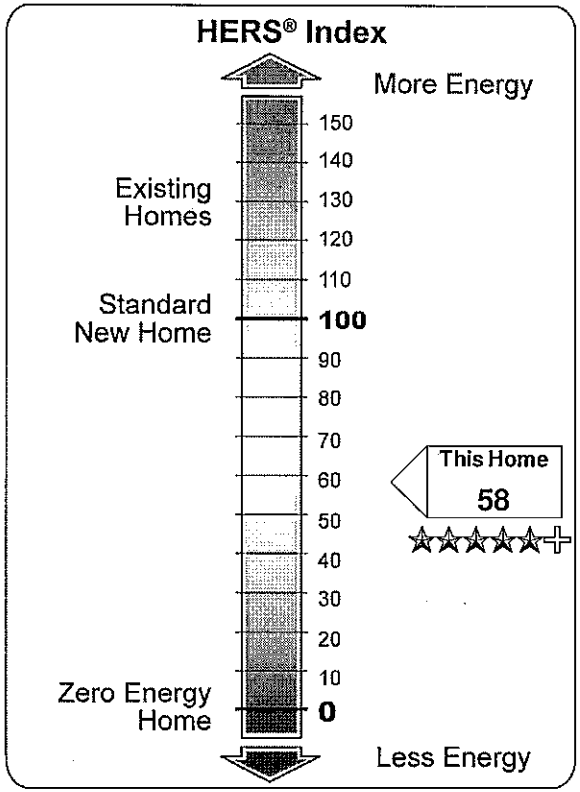
MD - Rater
PO Box XXX
XXX, NM
aRn@mail.com

Certified Energy Rater

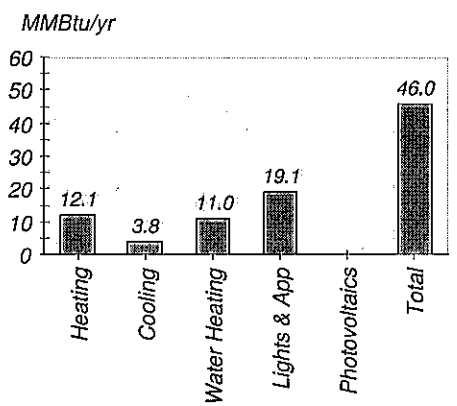
HOME PERFORMANCE WITH ENERGY STAR
ENERGY RATING CERTIFICATE

Estimated Annual Energy Cost





Estimated Annual Energy Consumption



Address: 1200 XXXX
XXX , NM

House Type: Single-family detached
Cond. Area: 1800 sq. ft.
Rating No.: 316062
Issue Date: May 10, 2011

Annual Estimates*:
Electric(kWh): 13490
C02 emissions(Tons): 13

**Based on standard operating conditions*

This home meets ENERGY STAR v 2

- Rater Inspection
PO Box XXX

Certified Rater: MiD
Certification No: EERA #316
Rating Date: 5/04/11

Signature: _____

REM/Rate - Residential Energy Analysis and Rating Software v12.93

Valuing High Performance Houses

by Sandra K. Adomatis, SRA

Appraisers are breaking new ground in the area of valuing green or high performance houses. Green construction has been around for a long time. However, today more emphasis is placed on the term *energy efficient* as part of the green concept and Energy Star program. These terms need defining before the related valuation issues can be discussed.

Defining and Rating Green

A *high performance house* is one that takes advantage of energy efficiency, and sustainable and environmentally friendly products. A search of many articles and Web sites does not result in one standard definition of *high performance house*, but all seem to emphasize energy efficiency, sustainability, and environmentally friendly products.

The fifth edition of *The Dictionary of Real Estate Appraisal* defines *sustainability*, in green design and construction, as "the practice of developing new structures and renovating existing structures using equipment, materials, and techniques that help achieve long-term balance between extraction and renewal and between environmental inputs and outputs, causing no overall net environmental burden or deficit."[1]

According to the National Home Builders Association (NAHB), *green construction* pays attention to energy efficiency, water and resource conservation, the use of sustainable or recyclable products, and measures to protect indoor air quality.[2]

The green trend does not appear to be a fad, but will be the market for tomorrow. The government is strongly encouraging the use of environmentally friendly construction, and there may be green-construction mandates in the future. Efforts and techniques to document and analyze green construction will come to be expected by the users of appraisal reports.[5]

There are numerous green rating programs available in communities for appraisers to research and to learn about each program's incentives. Three examples of these programs include Energy Star certification, LEED certification, and NAHB green certification.

Energy Star is a joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy. It was created to help save money and protect the environment through energy-efficient products and practices. To earn the Energy Star label, a home must meet energy-efficiency guidelines set by the EPA.[4] An independent home energy rater conducts onsite testing and inspection to verify that a home's performance meets Energy Star requirements. A HERS Index is used to rate the energy efficiency of a home.[5]

Another green certification that building owners can pursue is the Leadership in Energy and Environmental Design (LEED) certification. LEED is a voluntary green building certification program developed by the U.S. Green Building Council, which provides third-party verification of green building and performance measures.[6] LEED-rated homes are

1. *The Dictionary of Real Estate Appraisal*, 5th ed. (Chicago: Appraisal Institute, 2010), 192.
2. NAHB National Green Building Program, http://www.nahbgreen.org/.
3. The brochure and the NAHB Model Green Home Building Guidelines are available at http://www.nahbgreen.org/Guidelines/nahbguidelines.aspx.
4. Requirements include effective insulation systems; high-performance windows; tight construction and ducts; efficient heating and cooling equipment; and high-efficiency lighting and appliances.
5. The HERS Index is like a golf game, the lower the score the more energy efficient the house. A HERS Index of 100 is representative of the standard code-built house; an Energy Star house must be at least 15% more energy efficient than the standard home, meaning the maximum score for a qualifying home is 85. According to the EPA, there are over one million Energy Star houses. For more information, see http://www.energystar.gov.
6. LEED-certified buildings are designed to lower operating costs, reduce landfill waste, conserve energy and water, and have improved indoor environmental quality. For more information, see http://www.usgbc.org.

considered to have the premier green rating, but LEED ratings are the most expensive ratings to obtain.

The NAHB Green Building Coalition also has a green certification program and rating for houses. A NAHB green-certified house has higher energy savings than an Energy Star house. Green certification is based on the NAHB Model Green Home Building Guidelines and the National Green Building Standard.[7]

Because there is not one definition for green and more than a hundred green programs, learning about the relevant green products can be a challenge for the appraiser. It requires research by the appraiser and documentation from the client. But despite the difficulty, it is important for the appraiser to be thorough and to document his or her file. Green building products, techniques, and ratings are constantly changing, so appraisers will need to stay abreast by seeking out educational opportunities. It is helpful to spend time with a builder of green houses to learn more about the products used in green construction. Also, the Appraisal Institute offers two seminars on green construction, *An Introduction to Valuing Green Commercial Buildings* and *Valuation of Residential Green Residential Properties.* More educational offerings on the subject are expected soon.

The NAHB has a local green council in most areas that offer short seminars or roundtables on the topic and would welcome appraisers. State and local green organizations also provide information. For example, for appraisers in Florida, the Web site of the Florida Green Building Coalition is helpful, http://www.floridagreenbuilding.org/db/. Other useful Web sites where appraisers can research a product, material, or term include the following:

http://www.energystar.gov/index.cfm?c=new_homes.hm_index

http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_HERS

http://www.natresnet.org/

http://www.usgbc.org/Default.aspx

http://www.nahbgreen.org/

http://www.appraisalinstitute.org

http://www.earthadvantage.com

The Valuation Process

Documentation

It is important to convey to the appraisal management company, lender, realtor, homeowner, or builder the necessary documentation used to complete an accurate report of a high performance house. This may take some tenacity on the part of the appraiser.

If a green or energy-efficient property has a third-party rating, there will be a paper trail. This paper trail is the documentation needed to support the analysis of the high performance home. The appraiser should ask the client for the following:

1. Any documentation of a third-party rating, score sheets, Home Energy Rating System (HERS) rating, and Fannie Mae Energy Report
2. Documentation of any incentives available to the buyer or owner, such as a
   a. lower interest rate mortgage/higher loan-to-value ratio[8]
   b. utility rebate
   c. IRS tax credit
   d. real estate tax discount
   e. expedited building permit

The incentives available to the owner or buyer are good talking points to include in the analysis. However, as mentioned before, sometimes it is very difficult to obtain the related documents. Appraisers should be patient but persistent in getting the documentation necessary to support the facts in their reports.

A third-party rating provides monthly utility savings that can be converted into a contributory value. This figure is printed on a form called the Fannie Mae Energy Report and signed by the third-party rater.

The contributory value estimate found on the Fannie Mae Energy Report form from the third-party rater can be calculated by the Calcs Plus Software using the present value of the annual energy savings, the prevailing mortgage interest rate, and the anticipated life of the measure or savings. For example, using an HP 12C to calculate the contributory value of a monthly energy savings of $59.58, or annually $714.96 ($59.58 × 12 = $714.96), with an annual interest rate of 6% for a 15-year period, results in the

7. The NAHB green rating is like a bowling game, the higher the green score the better. The NAHB Research Center accredits third-party verifiers and acts as the certifying body for the National Green Building Program. For more information, see http://www.nahbgreen.org.

8. Energy efficient mortgages (EEMs) are sponsored by FHA, VA, Fannie Mae, and Freddie Mac as well as conventional lenders. An EEM credits a home's energy efficiency in the mortgage itself, and gives borrowers the opportunity to finance cost-effective, energy-saving measures as part of a mortgage and stretch debt-to-income qualifying ratios on loans, thereby allowing borrowers to qualify for a larger loan amount on an energy-efficient home. For more information, see http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.energy_efficient_mortgage.

following key strokes: N = 15, I = 6, PMT = $714.96, and the PV should result in $6,943.87.

The appraiser's question is how reliable is the estimate of monthly savings and the estimated life of the savings? Is this estimated contributory value reasonable and worthy of belief? Does this contributory value represent a number that mirrors market reaction? Each appraiser must answer these questions in relationship to the particular market and the product he or she is appraising. This approach to valuing the energy savings is only one way to approach value and should be supported with another piece of secondary support.

Having some basis for value or lack of contributory value is the main point addressed by Uniform Standards of Professional Appraisal Practice (USPAP) and by Fannie Mae in its mortgages. For example, comparing the HERS Index ratings of the comparables is a measurement of comparability. It would be ideal to have the HERS Index on all comparables; however, that is typically not available in the real world unless the subject is in a development of green construction with ample sales data.

Describing Improvements

Describing an Energy Star or green home should begin with page one of Fannie Mae Form 1004, the Uniform Residential Appraisal Report (URAR), even if the conclusion is no contributory value is appropriate. An accurate description of the subject property is a requirement set forth in the USPAP Standard 2.

The description of a green property begins with the site description. Green properties take advantage of trees for shading in specific locations and minimize yard watering by using deciduous plants. The improvement description should properly describe the energy and green features, which may include solar panels, low-volatile organic compound (VOC) paint, an NAHB green score or HERS Index rating, recycled glass counter tops, structural insulated panel (SIP) exterior walls, energy-efficient central air, linoleum, wool carpet, etc. Figure 1 shows an example of a description of green improvements on page one of a URAR form.

Figure 1 Improvements Section of the URAR

IMPROVEMENTS

General Description	Foundation	Exterior Description materials/condition	Interior materials/condition
Units ☒ One ☐ One with Accessory Unit	☒ Concrete Slab ☐ Crawl Space	Foundation Walls Concrete New	Floors Wool carpet/Linoleum/New
# of Stories One	☐ Full Basement ☐ Partial Basement	Exterior Walls SIP (Structural Insulated Panel)	Walls Drywall/New
Type ☒ Det. ☐ Att. ☐ S-Det./End Unit	Basement Area sq. ft.	Roof Surface Metal New	Trim/Finish Wood/new
☐ Existing ☒ Proposed ☐ Under Const.	Basement Finish %	Gutters & Downspouts Yes/New	Bath Floor Linoleum/New
Design (Style) Key West	☐ Outside Entry/Exit ☐ Sump Pump	Window Type Low-E, High Impact/New	Bath Wainscot Tile/New
Year Built Proposed - 2009	Evidence of ☐ Infestation	Storm Sash/Insulated Yes/new	Car Storage ☐ None
Effective Age (Yrs) New	☐ Dampness ☐ Settlement	Screens Yes/new	☒ Driveway # of Cars
Attic ☐ None	Heating ☒ FWA ☐ HWBB ☐ Radiant	Amenities ☐ Woodstove(s) #	Driveway Surface
☒ Drop Stair ☐ Stairs	☐ Other Fuel Heat Pump	☐ Fireplace(s) # ☐ Fence	☒ Garage # of Cars
☐ Floor ☐ Scuttle	Cooling ☒ Central Air Conditioning	☐ Patio/Deck ☒ Porch	☐ Carport # of Cars
☐ Finished ☐ Heated	☐ Individual ☒ Other 16 Seer	☐ Pool ☐ Other	☐ Att. ☐ Det. ☐ Built-in

Appliances ☐ Refrigerator ☒ Range/Oven ☒ Dishwasher ☒ Disposal ☐ Microwave ☐ Washer/Dryer ☒ Other (describe) Energy Star Appliances

Finished area above grade contains: 6 Rooms 3 Bedrooms 2.0 Bath(s) 1,650 Square Feet of Gross Living Area Above Grade

Additional features (special energy efficient items, etc.) Energy Star House with third party rating; green features include low-E windows, non toxic pest control graywater reuse system, solar water heater, spray soybean based insulation, low VOC paint, recycled glass counter tops

Describe the condition of the property (including needed repairs, deterioration, renovations, remodeling, etc.). The proposed construction has a functional floor plan, acceptable in this market area.

Are there any physical deficiencies or adverse conditions that affect the livability, soundness, or structural integrity of the property? ☐ Yes ☒ No If Yes, describe

Does the property generally conform to the neighborhood (functional utility, style, condition, use, construction, etc.)? ☒ Yes ☐ No If No, describe The proposed construction exceeds the existing house quality when the energy and green features are considered. This house will have less maintenance cost and lower utility expenses.

Freddie Mac Form 70 March 2005 Page 1 of 6 Fannie Mae Form 1004 March 2005

Selecting Comparables

The selection of comparables is difficult in areas where there are few green or Energy Star homes. Obtaining comparables with similar-quality features, including the energy-efficient or green features, is the goal, but these comparables are not always available. If the local multiple listing service (MLS) does not have a search field for green and Energy Star homes with a rating, ask them to insert one. This will make comparable selection easier.

Remember, don't be fooled. Just because a house is called green or energy efficient does not mean it is certified, truly green, or energy efficient. Upon questioning agents on these statements, it is common to find the only energy-efficient features are the appliances. That is a far stretch from a certified Energy Star or certified green home.

Also, keep in mind that building codes have changed in the last five years. The typical green or Energy Star house is built above the standard building code. This makes it extremely important to use new construction as comparables when appraising new green or Energy Star houses. The use of ten-year-old houses compared to a new green-rated house without consideration of quality is inappropriate.

Finally, great care must be placed in using new construction as an arm's-length sale. Some builders offer package deals on speculative houses and lots. The properties are marketed by the builders' sales staff or through the MLS. This type sale would be similar to a typical arm's-length transfer. But, where the property owner hired a builder to build a green house on a lot, it would not result in an arm's-length transfer. The appraiser must use good judgment in qualifying the comparable sales.

Elements of Comparison

On the second page of the URAR, the sales comparison approach section has three line items that may require adjustments in the valuation of the high performance home: Quality of Construction, Heating/Cooling, and Energy-Efficient Items (Figure 2). If adjustments are not applied, a comment should be made as to why an adjustment has not been made.

Figure 2 Sales Comparison Approach Section of the URAR

	Sale Price	$			$ 235,000			$ 232,000			$ 255,000			
	Sale Price/Gross Liv. Area	$ sq. ft.		$ 136.23 sq. ft.			$ 148.91 sq. ft.			$ 135.28 sq. ft.				
	Data Source(s)			MLS Tax Record			MLS Tax Record			MLS Tax Record				
	Verification Source(s)			Agent			Agent			Agent				
	VALUE ADJUSTMENTS	DESCRIPTION		DESCRIPTION		+(-) $ Adjustment	DESCRIPTION		+(-) $ Adjustment	DESCRIPTION		+(-) $ Adjustment		
	Sale or Financing Concessions			Conventional None			Conventional None			Conventional None				
	Date of Sale/Time			P:4/01/XX C: 5/9/XX			P:5/05/XX C: 6/1/XX			P:3/04/XX C: 4/21/XX				
	Location	Urban		Urban			Urban			Urban				
	Leasehold/Fee Simple	Fee Simple		Fee Simple			Fee Simple			Fee Simple				
	Site	10,000 SqFt		10,000 SqFt			10,000 SqFt			10,000 SqFt				
	View	Residential		Residential			Residential			Residential				
	Design (Style)	Key West		Key West			Key West			Ranch				
	Quality of Construction	Good/Green 280 Rating		Good/CBS/Metal			Good/CBS/As Sh			Good/CBS/Metal				
	Actual Age	Proposed		New			New			New				
	Condition	New		New			New			New				
	Above Grade	Total	Bdrms	Baths	Total	Bdrms	Baths		Total	Bdrms	Baths		Total	Bdrms	Baths	
	Room Count	6	3	2.0	6	3	2.0		6	3	2.0		6	3	2.0	
	Gross Living Area	1,650 sq. ft.			1,725 sq. ft.				1,558 sq. ft.			6,900	1,885 sq. ft.			-17,625
SALES	Basement & Finished Rooms Below Grade	n/a n/a			n/a n/a				n/a n/a				n/a n/a			
	Functional Utility	Average			Average				Average				Average			
	Heating/Cooling	FWA/Central/HI Eff			FWA/Central				FWA/Central				FWA/Central			
COMPARISON	Energy Efficient Items	86.4 HERS Score			Average		8,930		Average		8,816		Average		9,690	
	Garage/Carport	Two-Garage			Two-Garage				Two-Garage				Two-Garage			
	Porch/Patio/Deck	Covered Entry/Lanai			Covered Entry/Lanai				Covered Entry/Lanai				Covered Entry/Lanai			
	Net Adjustment (Total)				☒ + ☐ -	$	8,930.00		☒ + ☐ -	$	15,716.00		☐ + ☒ -	$	-7,935.00	
APP	Adjusted Sale Price of Comparables				Net Adj. % Gross Adj. %	$	243,930		Net Adj. % Gross Adj. %	$	247,716		Net Adj. % Gross Adj. %	$	247,065	

The appraiser should carefully consider the quality and energy features of each comparable home. Do the comparable sales have the same incentives as green or Energy Star homes? Do the incentives have value and offset some of the additional costs for the features? Items that are not quantifiable may be addressed qualitatively. A discussion of the incentives, monthly energy savings, and lower maintenance items are good talking points in the analysis.

Again, appraisers should not be afraid to ask questions and require additional documentation. Not all green or energy-efficient houses have third-party ratings. That does not mean they are not green or not energy efficient. It is important for the appraiser conducting the analysis to know how to analyze a green product's value, as USPAP requires the appraiser to be competent in appraising the property type.

Measuring Contributory Value

There are a number of techniques to measure contributory value of green features, including the following:

- HERS Index rating converted into value
- Monthly energy savings × gross rent multiplier (GRM)
- Cost new or depreciated cost new
- Paired sales analysis

Notice the emphasis is on energy efficiency and not on quality. The quality issue is beyond the scope of this article. Quality issues must be carefully measured in the same manner appraisers currently measure quality differences. Qualitative analysis should include a discussion of incentives, energy savings and sustainability of green features, and compare the local building code to the green house.

Underwriters may indicate that Fannie Mae does not allow adjustments for energy-efficient features, but that is not the case. It is important, however, to have support for the energy adjustment. This is commonly done by capitalizing the energy savings (energy savings × GRM). Fannie Mae has acknowledged the role of energy-efficient items for years in its underwriting guidelines. For example, the Fannie Mae *Selling Guide* includes the following section:

> **Insulation and Energy Efficiency of the Improvements**
> An energy-efficient property is one that uses cost-effective design, materials, equipment, and site orientation to conserve nonrenewable fuels.
>
> Special energy-saving items must be recognized in the appraisal process. The nature of these items and their contribution to value will vary throughout the country because of climatic conditions and differences in utility costs.
>
> Appraisers must compare energy-efficient features of the subject property to those of comparable properties in the "sales comparison analysis" grid to ensure that the overall contribution of these items is reflected in the market value of the subject property.[9]

Cost Approach

When the cost approach is used, it should address the green features with support from a national cost service or local builder costs. Marshall & Swift's *Residential Cost Handbook* has an energy-efficient package adjustment that can be applied to the energy features. Marshall & Swift also has a new publication for green construction, the *Green Building Costs* supplement.

Green construction does not always mean higher cost to construct. Some builders report no additional cost as buyers often forego some quality features and replace them with green materials. Experienced builders often find the method used for green features result in less building time and less construction debris.

Case Study: Converting Green Built to Green Contributory Value

The following short case study uses procedures taught in the *Basic Appraisal Principles* and *Basic Appraisal Procedures* classes to support adjustments for green or energy-efficient items.

For this case study, assume Jane Cross, a builder, built an Energy Star home with a HERS Index of 64. The home also has a Green Score of 294; the Green Score is from the Florida Green Building Council (FGBC) third-party rater.[10] The anticipated monthly energy savings is $59.58 with an energy savings contributory value estimated at $8,633.60.

The house was built for the builder's own residence and a mortgage was obtained. Within three months of making mortgage payments, the owner/builder realized she was paying private mortgage insurance (PMI). Jane phoned the mortgage company to question the

9. *Selling Guide: Fannie Mae Single Family* (Fannie Mae, December 30, 2009), 513–514, available at http://www.efanniemae.com/sf/guides/ssg/.

10. The FGBC rating is based on a standard checklist of building features and components. The checklist includes the following categories: envelope, mechanicals, energy, water, lot choice, site, health, materials, disaster mitigation, and general items. At the time the case study house was built, the FGBC green ratings were 200 to 400, with the higher number indicating a house with more green features.

PMI payments. The mortgage company revealed the appraised value was not high enough to justify an 80% loan-to-value ratio. Jane was puzzled since she did not include a builder's profit and did much of the labor herself. Her estimate of market value was much higher than the appraised value.

Upon review of the appraisal, she found the energy-efficient and green features were not noted. The comparables were not similar in quality, had no energy-efficient or green features, and one was a fifteen-year-old structure. The appraiser was questioned. The response was the energy-efficient adjustment could not be supported and would not be accepted by underwriters or Fannie Mae. Therefore, these features were ignored.

Can the energy-efficient features be supported and if so, how? Yes, the energy-efficient features can be supported in the appraisal report. Several methods can be used, including gross rent multiplier analysis, paired sales analysis, and surveys.

Gross Rent Multiplier Analysis

The monthly energy savings of $59.58 can be converted into a contributory value or adjustment by using the gross rent multiplier analysis. The GRM is a relationship between monthly rent and market value. Isn't it reasonable to consider a monthly savings income attributed to the construction of the home? The property owner is anticipating a monthly savings or additional income in her pocket. Since the GRM is a good measure of income to value, why not use this method to value the energy savings? Again, this method is one tool from the appraiser toolbox and should be carefully measured with market reactions and other methods discussed in this article.

The following sales are in the same neighborhood as the subject and are similar in quality, but do not have energy-efficient or green features. The houses are one to two years old and similar in size to the subject property.

Gross Rent Multipliers

	604 Brown St.	1294 Killen St
Neighborhood	Same	Same
Price	$244,000	$253,000
Monthly rent	$1,600	$1,500
GRM	152.5	155.5

These two sales support a close range of GRMs, indicating a GRM of 154, which is the mid-range of the two. So, the value indication by GRM analysis is $59.58 monthly savings × 154 GRM, or $9,175. This indication is similar to the value contribution estimate of $8,633.60 provided on the Fannie Mae Energy Report.

Appraisers often argue the GRM is not applicable unless the properties are also green or Energy Star houses. If that is true, does it mean you cannot use a comparable unless it is green or Energy Star rated?

One of the generally accepted appraisal techniques to support adjustments is the use of the GRM. If a GRM is not available in the immediate area, search the competing neighborhood to obtain a GRM of similar quality. The use of the proxy method is also available. The proxy method uses a sale that was not rented at the time of sale and applies a rent appropriate for the sale. If you have a green property sale, estimate a rent based on rents in the market area to arrive at a GRM of a green property.

Paired Sales Analysis

Using a paired sales analysis approach, pairs of sales that are similar except for the energy-efficient or green features can be analyzed as follows.

Paired Sales Analysis

Description	1274 Killen St.	908 Silver St.
Sale date	07/XX	06/XX
Sale price	$274,000	$265,000
Living area	2,200	2,122
Garage	2-car attached	2-car attached
Energy-efficient or green features	HERS Index 64	None–code built only
Difference attributed to energy features ($274,000 – $265,000)	$9,000	

In some markets, this may not be possible if the product is new and sales are not readily available.

Survey of Builders

Five local builders are surveyed to obtain the amount they received from actual sales of new construction for energy-efficient features with third-party rater verification. The results are as follows.

Builder Survey

Best Build, Inc.	$9,500
Quality Builders of Old	$8,200
Southern Builders	$9,200
Bob and Sons, Inc.	$7,500
ABC Builders	$7,800

The survey results show a close range of value indications, with greatest weight at $8,200. However, if the market does not recognize the energy-efficient items, the cost of the items in the contracts to build may not be indications of the value. This is another tool from the appraiser toolbox, but must be measured against the market reactions and other tools mentioned in this article.

Case Study Conclusions

New construction customers may be willing to pay for the cost of the energy-efficient items and green construction, but the resale value may not reflect contributory value for these features. The appraiser must take the necessary steps to research the market and use all the tools available to arrive at a conclusion worthy of belief and that is well supported. In the case study example, the report would include the appraiser's findings from the analyses.

Study Conclusions

Summary of Value Indications for Energy Features

Fannie Mae Energy Report	$8,635.60
GRM analysis	$9,175.00
Paired sales analysis	$9,000.00
Survey of builders	$8,200.00

Incentives for Green and Energy-Efficient Features

IRS tax credit	$ 500
Utility rebate	1,500
Insurance discount (5%)	500
EEM closing cost reimbursement	1,000
Total	$3,500

The data provides four value indications for the energy-efficient items. The paired sales analysis is the most reliable approach with secondary support from the GRM and the Fannie Mae Energy Report. Strong support at $9,000 is 3.8% of the overall value of the subject property ($9,000 value for energy features/$235,000 overall value). This figure includes the high-efficiency central air, insulation, low-emittance (low-E) windows, and tankless water heater.

The incentives for the green and energy-efficient features results in $3,500 credited to the owner, not including the monthly energy savings of $59.58. The house will provide a healthier environment, a longer physical life, and lower maintenance costs due to the green construction. These incentives and monthly savings offset the additional costs of the energy features. It is logical to assume a knowledgeable buyer would consider the incentives in his or her decision making when buying a house. (However, some incentives are only for new construction or first year of ownership.)

For the subject house, the adjustment applied to the comparable sales is 3.8% on the energy-efficient features line of the URAR.

Conclusion

Appraisers are encouraged to take the time to learn the products and techniques in green construction, ensuring a new niche for their appraisal services. Taking classes on the topic and networking with green construction professionals will help increase knowledge and professionalism in these assignments and is well worth the effort.

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