



Colorado
Energy Office



The Colorado Energy Office and the Green MLS

Peter Rusin, Residential Program Associate

June 7, 2013



Vision



JOBS



SECURITY



COST

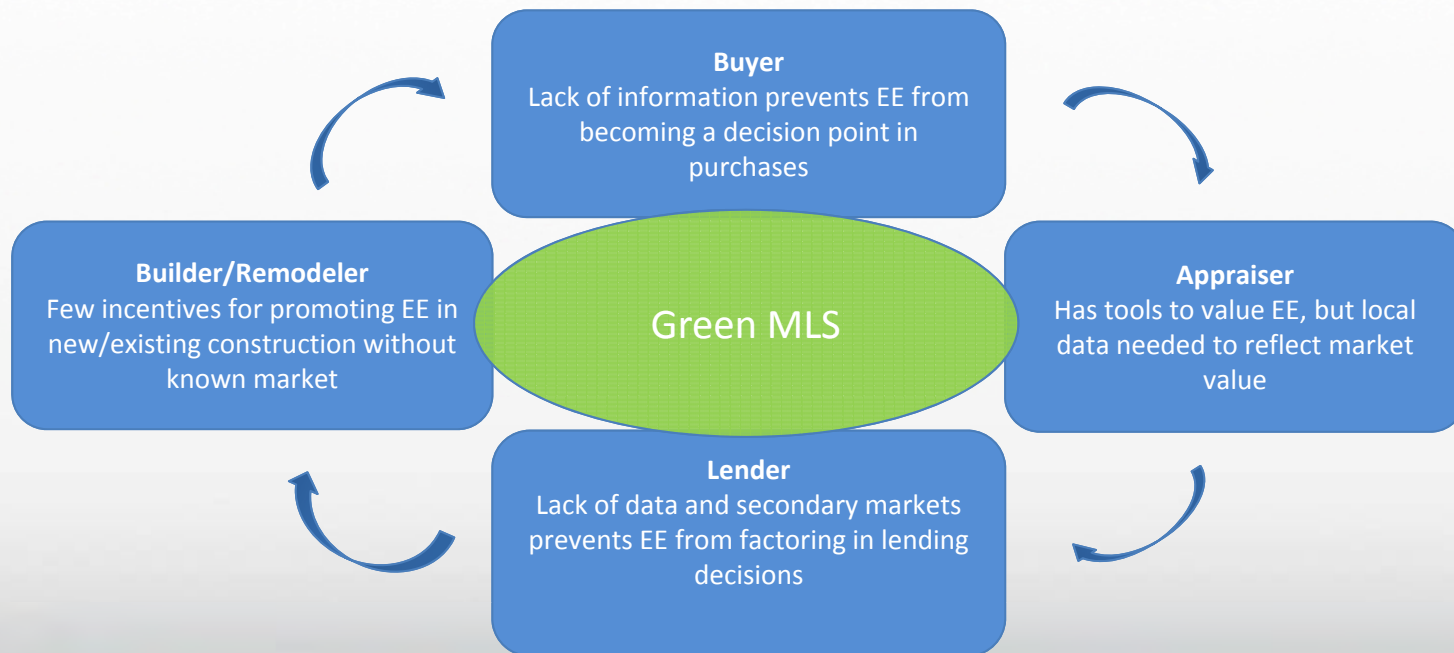


ENVIRONMENT

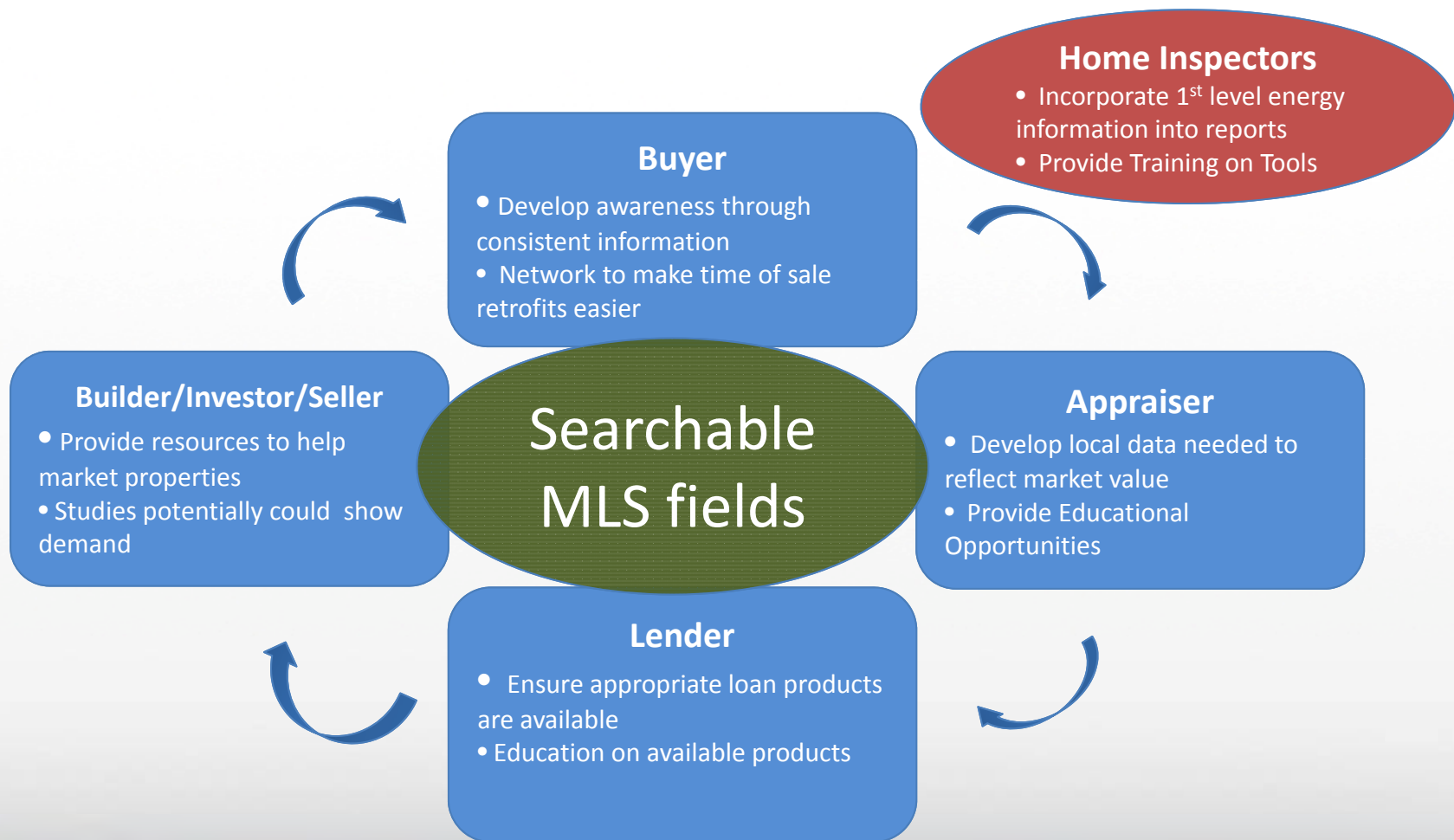
The Colorado Energy Office promotes sustainable economic development in Colorado through advancing the state's energy market and industry to create jobs, increase energy security, lower long term consumer costs, and protect our environment.

What is the Green MLS Initiative?

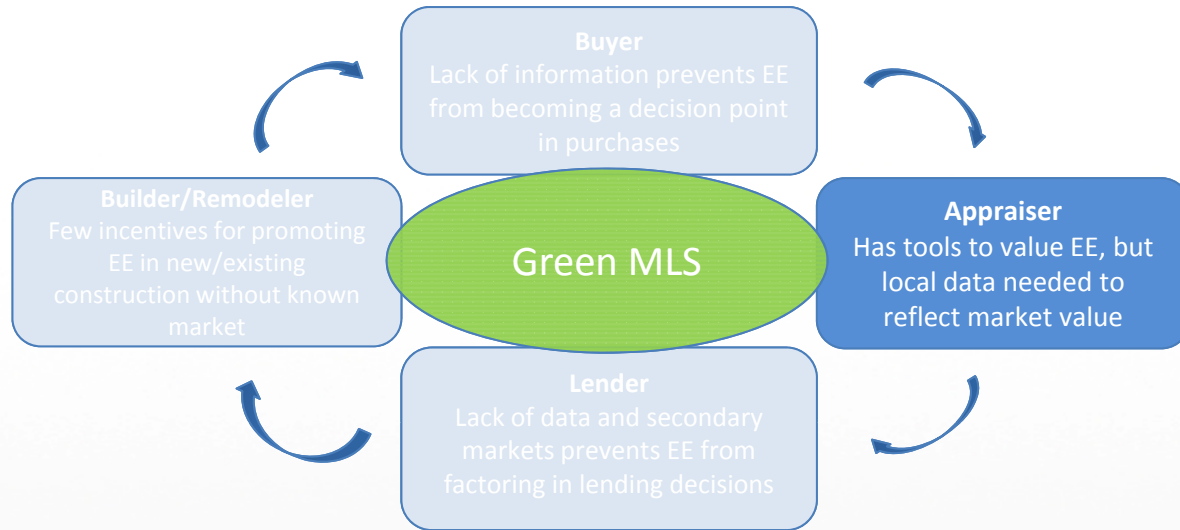
- The Green Multiple Listing Service (MLS) Initiative aims to increase the energy efficiency and the use of renewable energy at the time of sale.
- Developing searchable fields are the first step to unlock the potential value of energy efficiency (EE) in the home buying process.
- Without appropriate training and information development, the process is broken



Energy Efficiency is not just about adding fields or the Realtor®



Working with Appraisers



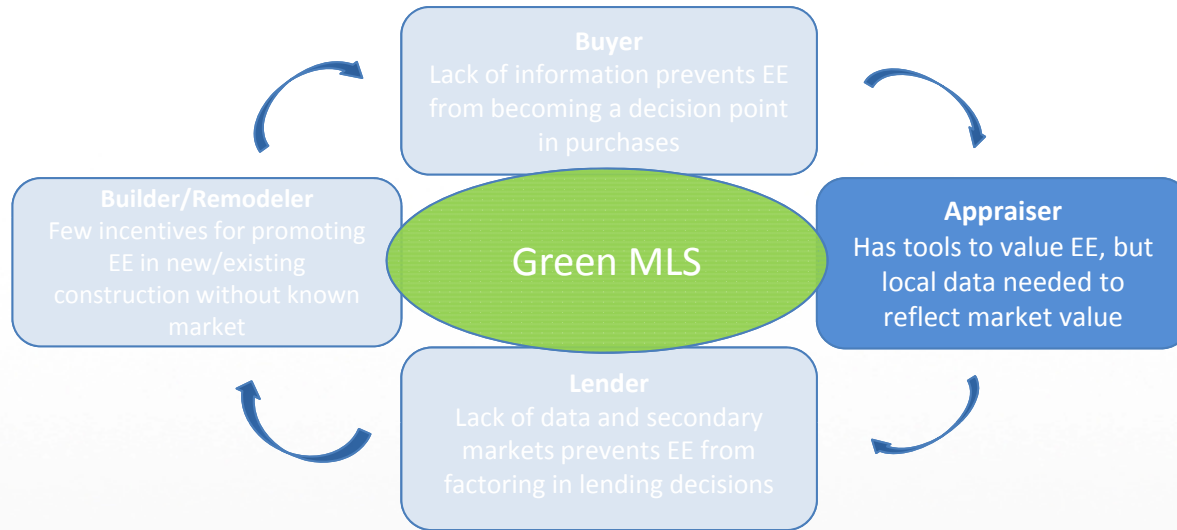
Needs:

- Use of fields to produce data points for paired sales analysis
- Market studies that provide support on an emerging trends

How are we meeting these needs?

- In August of 2012, the CEO signed a Memorandum of Understanding (MOU) with the Colorado Coalition of Appraisers (CCA) and the Colorado Chapter of the Appraisal Institute (AI) that formalized a process to develop valuation studies and promote continuing education
- The CEO provides funds for CCA and AI to bring in market appropriate education to all appraisers.
- Trained 60 appraisers on the first two modules of the AI's Green Building Valuation classes in May
- Will offer additional training opportunities in 2013 and 2014 to match the valuation studies
 - For example the CEO will subsidize AI's PV Solar class, which will include local market data

Working with Appraisers



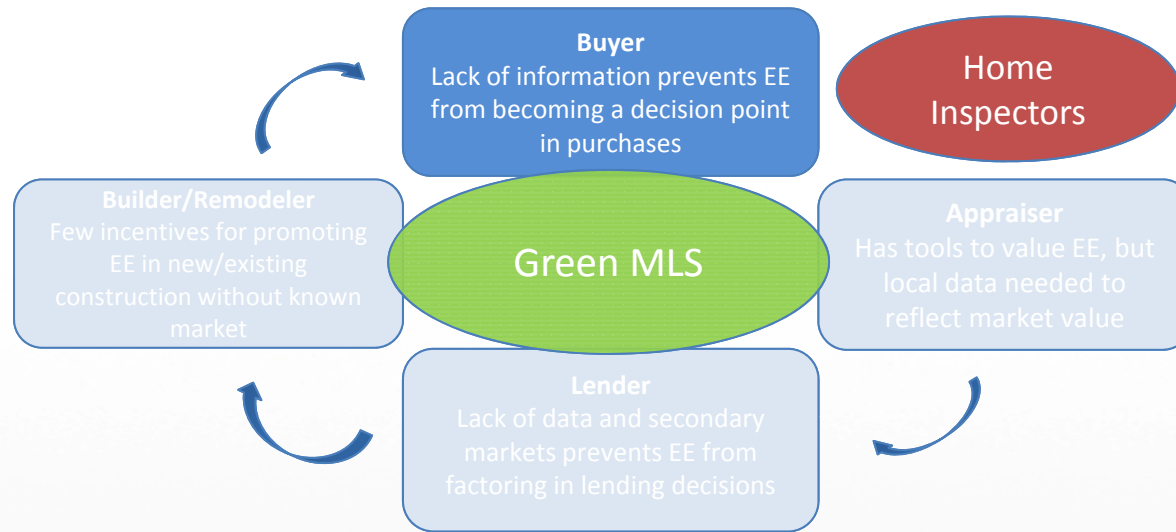
Needs:

- Use of fields to produce data points for paired sales analysis
- Market studies that provide support on an emerging trends

Providing Secondary Documentation

- As part of the MOU, the CEO has 3 AI members that serve on an Appraisal Task Force
- The Task Force provides credibility to valuation studies as they help approve the scope of work, select the appraiser, and review the work on our behalf.
- The Task Force also helps the CEO determine and properly communicate other information and resources, such as Average HERS Index Rating, that can help support appraisers.
- Working to promote a low cost 3rd party certification to fill in the information gap

Working with Buyers & Home Inspectors



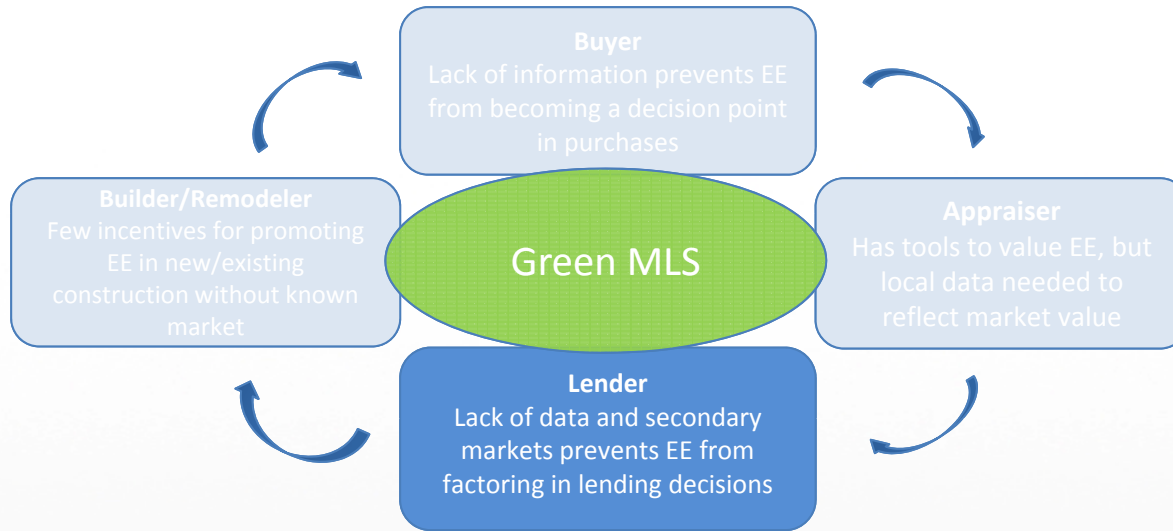
Needs:

- Provide information to make choices
- Loan Products that do not hold up the real estate transaction
- A network to make retrofit easy

How are we meeting these needs?

- The CEO is working with the three largest professional home inspector organizations in Colorado with the goal to provide 1st level energy information and solutions to the buyer included in a one page resource page
- The goal is with every furnace or hot water heater replacement that is part of the contract, having the inspector call out ENERGY STAR equipment, not just replacement.
- Testing out if inspectors can help fill 3rd party certification gap by providing a Home Energy Score before a home is listed

Working with Lenders



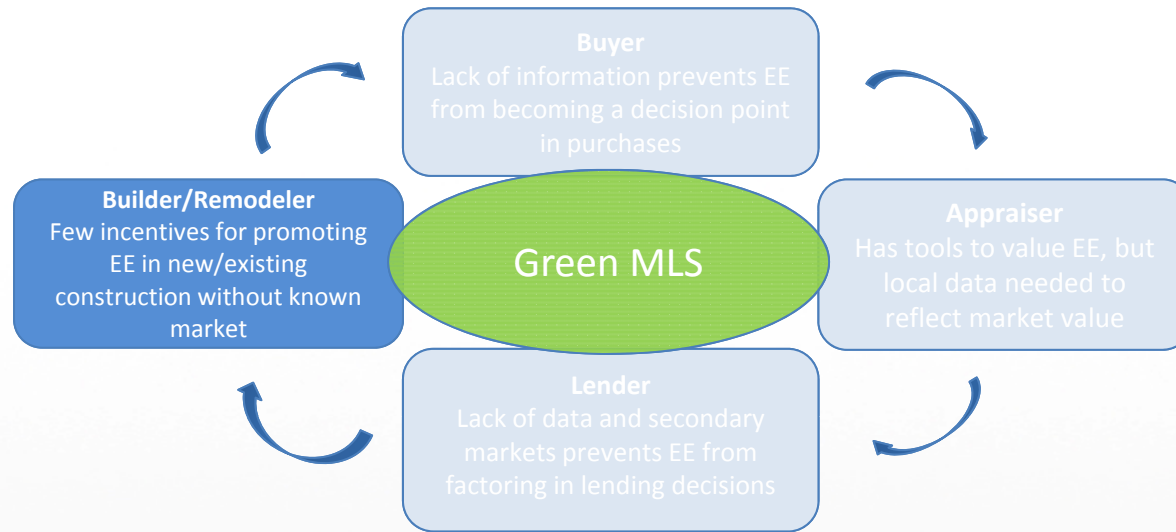
Needs:

- Incentives to offer energy efficient mortgages
- Training on energy efficiency, renewable energy, and the different programs offered around the state.
- Their initial needs are different than what we thought

How are we meeting these needs?

- The CEO is actively working with lenders, underwriters, and professional organizations to provide appropriate loan products, incentives, and education.
- The goal is to provide 3 different loan options to home buyers and consumers
 1. Low Interest unsecured loan for reactionary or smaller retrofits (>10k)
 2. Low interest secured loan for deeper retrofits
 3. Energy Saving Mortgage Incentive (can be used with an mortgage product)
- Developing education and training (potentially a designation) classes for lenders

Working with Builders & Sellers



Needs:

- Demand for energy efficient properties
- Help marketing features of the home

How are we meeting these needs?

- If valuation studies show that energy efficiency increase sales price or reduces days on market, the market should react appropriately.
- Continued promotion of the high performing buildings to developers with a potential tie into consumer incentives to increase the demand.
- Providing forms (green addendum) and resources to help sell homes for early adopters.

Contact Us

Colorado Energy Office (CEO)

State of Colorado

John W. Hickenlooper, Governor

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Denver, Colorado 80203

www.colorado.gov/energy



The Colorado Energy Office



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CEO Subject Matter Experts

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303-866-2343



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

The appraiser hereby certifies that the information provided within this addendum:

- has been considered in the appraiser's development of the appraisal of the subject property only for the client and intended user(s) identified in the appraisal report and only for the intended use stated in the report.
- is not provided by the appraiser for any other purpose and should not be relied upon by parties other than those identified by the appraiser as the client or intended user(s) in the report.
- is the result of the appraiser's routine inspection of and inquiries about the subject property's green and energy efficient features. Extraordinary assumption: Data provided herein is assumed to be accurate and if found to be in error could alter the appraiser's opinions or conclusions.
- is not made as a representation or as a warranty as to the efficiency, quality, function, operability, reliability or cost savings of the reported items or of the subject property in general, and this addendum should not be relied upon for such assessments.

Green Building: The practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's lifecycle from siting to design, construction, operation, maintenance, renovation, and deconstruction. This practice expands and complements the classic building design concerns of economy, utility, durability, and comfort.¹ High Performance building and green building are often used interchangeably.

Six Elements of Green Building: A green building has attributes that fall into the six elements of green building known as (1) site, (2) water, (3) energy, (4) materials, (5) indoor air quality, and (6) maintenance and operation. A Green Building will be energy efficient but an energy efficient building is not synonymous with Green Building.

Green Features

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

Certification	Year Certified:	Certifying Organization: <input type="checkbox"/> Home Innovation Research Labs (ICC-700) <input type="checkbox"/> USGBC (LEED) <input type="checkbox"/> Other:	<input type="checkbox"/> Verification Reviewed on site	<input type="checkbox"/> Certification attached to this report
	Rating	Score:	<input type="checkbox"/> LEED Certified: <input type="checkbox"/> LEED Silver <input type="checkbox"/> LEED Gold <input type="checkbox"/> LEED Platinum	
<input type="checkbox"/> ICC-700 <i>National Green Building Standard</i> Certified: <input type="checkbox"/> Bronze <input type="checkbox"/> Silver <input type="checkbox"/> Gold <input type="checkbox"/> Emerald				
Green Certifying Organization URL (website)				
Additions	Explain any additions or changes made to the structure since it was certified:			
	Do changes require recertification to verify rating is still applicable? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Comments Attach the rating worksheet that provides the ratings for each element to provide a better understanding of the features. The worksheet will assist in comparing the subject to sales rated by different organizations.	If a property is built green but not formally certified, it still deserves proper description and analysis to value the features. The market analysis is of the structure's physical, economic, and locational attributes and not an analysis of its label alone.			

The objective of this Addendum is to standardize the communication of the high performing features of residential properties. Identifying the features not found on the 1004 form provides a basis for comparable selection and analysis of the features. Builders, contractors, homeowners, and third party verifiers are encouraged to complete this Addendum and present to appraisers, agents, lenders, and homeowners.

¹ U.S. Environmental Protection Agency at www.epa.gov/greenbuildings/pubs/about.htm.

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	<input type="checkbox"/> Leased <input type="checkbox"/> Owned	Array #2	<input type="checkbox"/> Leased <input type="checkbox"/> Owned	Description	Solar Thermal Water Heating System
kW (size)					If Active System - type	<input type="checkbox"/> Direct <input type="checkbox"/> Indirect
Manufacturer of Panels					If Passive System - type	<input type="checkbox"/> Integral collector <input type="checkbox"/> Thermosyphon
Warranty on Panels					Storage Tank Size	# Gallons:
Age of Panels					Collector Type	<input type="checkbox"/> Flat-Plat Collector <input type="checkbox"/> Integral Collector <input type="checkbox"/> Evacuated-Tube Solar
Energy Production kWh per Array						
Source for Energy Production Estimate					Back-Up System	<input type="checkbox"/> Conventional Water Htr <input type="checkbox"/> Tankless On Demand <input type="checkbox"/> Tankless Heat Pump
Location (Roof, Ground, Etc.)					Age of System	
Tilt/Slope for Array					Warranty Term	
Azimuth per Array					Manufacturer	
Age of Inverter(s)					Solar Energy Factor (SEF) (Rating range 1 to 11 - higher number is more efficient)	
Manufacturer						
Warranty Term						
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. If leased, provide the lease terms.) A free online tool and manual for valuing the energy production of the Solar PV System is available at www.pvvalue.com Download the PV Value™ Manual for explanation of the solar terms on this form and inputs used in the PV Value Tool.	Discuss source of information and define other renewable energy sources, such as wind, hydropower, biomass power, etc.					

*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 #:	

Location - Site			
The following items are considered within the appraised value of the subject property:			
Walk Score	Score:	Source: (Example: http://www.walkscore.com)	
Public Transportation	<input type="checkbox"/> Bus - Distance: Blocks	<input type="checkbox"/> Train - Distance: Blocks	<input type="checkbox"/> Subway - Distance: Blocks
Site	Orientation - front faces: <input type="checkbox"/> East/West <input type="checkbox"/> North/South		Landscaping: <input type="checkbox"/> Water Efficient <input type="checkbox"/> 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 (For example www.dsireusa.org)	
Comments Incentives offset cost and should be reported in the cost approach section of the report. Incentives are typically not a sales comparison approach concession since they do not transfer with the property.	

Completed by: _____ Title: _____ Date: _____
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Client:		Client File #:	
Subject Property:		Appraisal File #:	

Residential Green and Energy Efficient Addendum Glossary and Resources

ICC-700 National Green Building Standard (NGBS): An ANSI-approved residential green building standard developed by the National Association of Home Builders (NAHB) and the International Code Council (ICC). It is applicable to single and multifamily projects, renovations and additions and residential land development. To comply, all buildings must incorporate sustainable lot development techniques and address energy, water & material resource efficiency and indoor environmental quality. Also, all owners must be educated about building operation and maintenance. Certification to the NGBS is provided by the **Home Innovation Research Labs**. <http://www.nahb.org/page.aspx/generic/sectionID=2510> or <http://www.homeinnovation.com/>

LEED: Leadership in Energy and Environmental Design is redefining the way we think about the places where we live, work and learn. As an internationally recognized mark of excellence, LEED provides building owners and operators with a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988>

Energy Star®: ENERGY STAR certified new homes must meet strict energy efficiency guidelines set by the U.S. Environmental Protection Agency. These homes are independently verified to be at least 15% more energy efficient than homes built to the 2009 International Energy Conservation Code (IECC), and feature additional measures that deliver a total energy efficiency improvement of up to 30 percent compared to typical new homes and even more compared to most resale homes. http://www.energystar.gov/index.cfm?c=new_homes.hm_index

Home Energy Score (HES): The Home Energy Score is similar to a vehicle's mile-per-gallon rating. The Home Energy Score allows homeowners to compare the energy performance of their homes to other homes in the area. It also provides homeowners with suggestions for improving their homes' efficiency.

The process starts with a home energy assessor collecting energy information during a brief home walk-through. The assessor then scores the home on a scale of 1 to 10, with a score of 10 indicating that the home has excellent energy performance. A score of 1 indicates that the home needs extensive energy improvements. In addition to providing the score, the home energy assessor provides the homeowner with a list of recommended energy improvements and the associated cost savings estimates. http://www1.eere.energy.gov/buildings/residential/hes_index.html

HERS Index: The Home Energy Rating System (HERS) Index is the Industry Standard by which a home's energy efficiency is measured. It's also the nationally recognized system for inspecting and calculating a home's energy performance. <http://www.resnet.us/hers-index> This Index is assessed by a qualified third party certifier based on the physical characteristics of the house. The energy estimates from this assessment may vary depending on the lifestyle of the occupants, increasing utility expenses, and changes in the maintenance or characteristics of the energy features.

Building Envelope: The building envelope is everything that separates the building's interior from the exterior. This includes the foundation, exterior walls, roof, doors and windows.

Geothermal: A geothermal heat pump uses the constant below ground temperature of soil or water to heat and cool your home. <http://energy.gov/energysaver/articles/geothermal-heat-pumps>

Low-E: Low emittance indicates a coating is added to the glass surface. The coating allows visible light to pass through the glass while stopping the radiant heat energy from the sun and heat sources in the building from passing through the glass. Approximately 40% of the sun's harmful ultra violet rays are blocked and insulation enhanced.

Whole Building Ventilation System: A whole building ventilation system assists in a controlled movement of air in tight envelope construction and may include air-purifying systems. Whole building ventilation equipment is often a part of the forced air heating or cooling systems.

Energy Recovery Ventilation System: Often called Heat Recovery Ventilators (HRV). These systems replenish the indoor air without wasting all the energy already used to heat the indoor air. In some climates, these systems are also used to handle water vapor in the incoming air.

Passive Solar: Passive solar is technology for using sunlight to light and heat buildings with no circulating fluid or energy conversion system. <http://redc.nrel.gov/solar/glossary> A complete passive solar building design has the following five elements: (1) aperture (collector) (2) absorber (3) thermal mass (4) distribution (5) control. <http://www.nrel.gov/docs/fy01osti/27954.pdf>

SEER: Seasonal energy efficiency ratio - The higher the SEER rating, the more energy efficient the equipment is. A higher SEER can result in lower energy costs. http://www.energystar.gov/index.cfm?c=tax_credits.tx_definitions&dts=ssps.mcs.seer.eer

Water Sense: EPA released its Final Version 1.1 WaterSense New Home Specification. This specification will be effective January 1, 2013 and establishes the criteria for new homes labeled under the WaterSense program and is applicable to newly constructed single-family and multi-family homes. http://www.epa.gov/watersense/new_homes/homes_final.html

Water Heaters: Solar, Heat Pump, Tankless On Demand or Tankless Coil water heaters are described at the following location: <http://energy.gov/energysaver/articles/solar-water-heaters>.

Green Certifying Organizations: A partial list of organizations can be found at: <http://www.usgbc.org/ShowFile.aspx?DocumentID=2001>

HERS Insulation Installed Rating: Rating 1 is the best with 3 the lowest rating. http://www.resnet.us/standards/Enhancements_to_National_Rating_Standards.pdf

SAVE Act: The SAVE Act is proposed legislation to improve the accuracy of mortgage underwriting used by federal mortgage agencies by ensuring that energy costs are included in the underwriting process. <http://www.imt.org/finance-and-leasing/save-act>

Valuation of Sustainable Buildings Professional Development Program

Courses:

- Introduction to Green Buildings: Principles & Concepts
- Case Studies in Appraising Green Residential Buildings
- Case Studies in Appraising Green Commercial Buildings
- Residential and Commercial Valuation of Solar

Course Descriptions:

Introduction to Green Buildings: Principles & Concepts

This one-day introduction course focuses on the evolution of green buildings, the concept of sustainability in buildings, and the principles, practices, and components that distinguish sustainable from traditional buildings.

Upon completion of the course, participants should be able to:

- Recognize competency and USPAP implications of appraising green buildings.
- Understand the evolution of green buildings.
- Understand the six elements of green building.
- Identify benefits and costs of green buildings.
- Recognize the green building certification and ratings programs for energy conservation and sustainability.
- Understand the primary areas of green reporting.
- Understand highest and best use implications.
- Consider the three approaches to value in context of green buildings.

Note. This course is in the *Valuation of Sustainable Buildings* Professional Development Program. For a list of **FAQs**, which includes information regarding the courses you'll need to successfully complete the program, [click here](#).



This course is approved for GBCI CE Hours by the USGBC.

Recommended Text

The Dictionary of Real Estate Appraisal, 5th ed. ▶

Appraising Residential Properties, 4th ed. ▶

The Appraisal of Real Estate, 13th ed. ▶

An Introduction to Green Homes ▶

Required

HP-12C Calculator

Appraisal Institute Hours

8 (including 1-hour exam)

Who Should Enroll

Appraisers, lenders, underwriters, public officials, architects, designers, attorneys, property tax assessors, builders, AMCs

Case Studies in Appraising Green Residential Buildings

This one-day course introduces participants to valuation methods for appraising the high performance house. Participants learn the appraisal procedures for valuing green residential properties to assist in supporting an opinion of value. The course focuses on the valuation process in different appraisal problems encountered in appraising green properties. The valuation process is examined as it applies in each of the three approaches to value.

In-depth case studies will help participants develop their problem-solving skills in this new building technology. The case studies represent the real estate market in 2009-2010, and the problems and discussion questions are based on real-life examples provided by builders, real estate agents and appraisers.

Upon completion of the course, participants will be able to:

- Develop ways to assess potential contributory value of green or energy efficient items.
- Identify the GRM analysis as a tool for supporting adjustments for green buildings.
- Identify the use of paired analysis to support adjustments for green buildings.
- Identify the issues requiring careful verification of comparables for green buildings.
- Develop the three approaches to value in context of green buildings.

Note. This course is in the *Valuation of Sustainable Buildings* Professional Development Program. For a list of **FAQs**, which includes information regarding the courses you'll need to successfully complete the program, [click here](#).



This course is approved for GBCI CE Hours by the USGBC.

Recommended Text

The Dictionary of Real Estate Appraisal, 5th ed. ▶

Appraising Residential Properties, 4th ed. ▶

The Appraisal of Real Estate, 13th ed. ▶

An Introduction to Green Homes ▶

Valuation by Comparison: Residential Analysis and Logic ▶

Required

HP-12C Calculator

Appraisal Institute Hours

8 (including 1-hour exam)

Who Should Enroll

Appraisers, lenders, underwriters, public officials, architects, designers, attorneys, property tax assessors, builders, AMCs

Case Studies in Appraising Green Commercial Buildings

As governmental mandates continue to filter down to all local communities, and buyers, sellers, developers and financiers of real estate market assess the importance of energy efficiency and sustainability, it is imperative that appraisers become familiar with the concepts of green building. This course provides practical application of techniques available to commercial appraisers.

Beginning with a brief review of green principles and concepts, the course focuses on in-depth commercial case studies that explore techniques for valuation. Participants should increase their knowledge of commercial green projects and become familiar with numerous resources to help them document the appraisal process.

Upon completion of the course, participants should be able to:

- Identify and analyze the differences in green buildings and practices and traditional construction and how these differences may or may not impact asset value.
- Identify how the community, market, and highest and best use analysis of a green building may be conducted and reported.
- Identify how the property description and analysis portion of the appraisal assignment of a green building may be conducted and reported.
- Identify the life cycle cost analysis as a tool for the comparison of building performance standards and specifications. (Develop ways to assess potential contributory value of green or energy efficient or other related components, features or systems.)
- Apply the three approaches to value in context of green buildings.

Note. This course is in the [Valuation of Sustainable Buildings](#) Professional Development Program. For a list of **FAQs**, which includes information regarding the courses you'll need to successfully complete the program, [click here](#).



This course is approved for GBCI CE Hours by the USGBC.

Recommended

- Microsoft Excel
- Laptop computer

Appraisal Institute Hours

15 (includes 1-hour exam)

Who Should Enroll

Commercial appraisers, underwriters, appraisal reviewers, real estate agents/brokers, and quality control personnel.

Residential and Commercial Valuation of Solar

As the US continues to search for energy alternatives, properties improved with solar PV (photovoltaic) are becoming more common, creating demand for appraisers trained in properly valuing solar PV. Encountering a solar photovoltaic (PV) system could present a valuation problem that you may not be prepared to solve. As an appraiser appraising green properties, it is inevitable that you will encounter solar PV. Even for those who don't specialize in green properties, the likelihood that you will encounter solar PV in your practice is increasing. This hands-on course introduces you to solar terminology, and through real-life examples and case studies, on both residential and commercial properties, shows you how to solve solar-related valuation problems. This course will focus on solar PV most commonly encountered in commercial and residential appraisal/consulting assignments. It will not focus on utility-scale solar (solar farms), solar thermal, or other forms of on-site renewable energy generation.

Upon completion of the course, participants should be able to:

- Comprehend the solar PV language.
- Identify and understand the documents and data necessary to value PV solar systems.
- Describe, understand, and analyze solar PV components and their relevance to market valuation.
- Develop a credible value opinion using tools, worksheets, and resources provided in the course.
- Recognize potential valuation problems, including USPAP and lender underwriter concerns.

Note. This course is in the [Valuation of Sustainable Buildings](#) Professional Development Program. For a list of **FAQs**, which includes information regarding the courses you'll need to successfully complete the program, [click here](#).



This course is approved for 15 GBCI CE Hours by the USGBC.

Required: HP-12C calculator (needed for exam)

Recommended: Laptop with Microsoft Excel and Adobe Reader installed

Appraisal Institute Hours

15 (includes 1-hour exam). To receive credit, participants must attend 100% of the program.

Who Should Enroll

Appraisers, assessors, underwriters, lenders, builders, real estate agents, quality control personnel, architects, engineers, solar installers.

Other Green Education Programs

Seminar:

Residential Green Description Made Easy

Green appraisers are finding themselves in an elite group. Having the knowledge to produce a credible report on an unusual property type is what gives them a competitive edge. As new construction increases around the country, all residential appraisers will wish they were green appraisers who have information about high performance home features and know how to report it! By focusing specifically on the description of green and energy efficient residential properties, you will learn how to write more concisely, report facts more accurately, and produce a meaningful green report.

Are you looking for ways to write more concisely, report facts more accurately, and produce a meaningful green report? Attend the *Residential Green Description Made Easy*, a 4-hour seminar that focuses specifically on the description of green and energy efficient residential properties, to learn new techniques on “writing green.” And get yourself prepared for future diversification...maybe even a new path in your current career!

Appraisers, builders, lenders, Realtors, brokers and retrofit contractors will all benefit from this seminar. At the end of this seminar, participants will be able to identify:

- Terms relating to green buildings
- Green construction trends
- Six elements of green building
- Support documents needed for green buildings
- The more familiar National Ratings Programs
- An organized way to describe green using the Residential Green and Energy Efficient Addendum
- Ways to improve green data
- Ways to become more informed and competent

Type

Residential

Equipment Required

HP-12C calculator

Classroom Hours

4.0