2012 Appraisal Institute Annual Meeting
Aug. 1–3
Loews Coronado Bay Hotel
San Diego, CA
appraisalinstitute.org/aiconnect
Cracking the Code on Green Building Rating Systems

Speakers:
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Tenaya Asan, Build It Green

August 1, 2012
LEED ≈ 1 billion SF in United States
  • SF’s Class A office in CBD > 50% LEED certified as of 2011

> 1 million Energy Star homes

McGraw Hill (2012) estimates 90% of homes to incorporate green technologies by 2016

% of conventional buildings with value-impacting green features = ????
  • May be the biggest risk of being overlooked

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Keep in Mind

➢ Do labels matter?

➢ What makes a building “green”?
Section One

RATING SYSTEM BASICS
Do Rating Systems Matter?

- Does market care about it?

- What’s behind the label?
Basic Structure of Rating Systems

- **Energy vs. Sustainability ratings**
  - Single vs. multiple performance metrics
  - Are energy-rated buildings always green?

- **Sustainability ratings systems**
  - Points awarded in 5 basic categories
    - Water Efficiency
    - Energy Efficiency
    - Resource Efficiency
    - Interior Environmental Quality (IEQ)
    - Community Connectivity/Site Selection

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Advantages/Disadvantages

Advantages:

• Can highlight areas of value impacts that might otherwise be missed; ex BMS, VFD
• Can inform where to focus and what documentation to request

Disadvantages:

• Rating systems are not equal
• Apples to apples comparisons not possible even with same system and same level of certification
Section Two

COMMERCIAL RATING SYSTEMS
What is LEED?

- Leadership
- Energy
- Environmental
- Design

Mission statement: “To transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life.”

USGBC is an NGO not a government entity
LEED Rating Systems

- New Construction & Major Renovation (NC)
- Core & Shell (CS)
- Existing Buildings Operation and Maintenance (EBOM)
- Commercial Interiors (CI)
- Schools
- Retail
- Healthcare
- Homes
- Neighborhood Development (ND)
LEED Credit Categories

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Innovation
- Regional Priority (new to v3 2009)
LEED Award Levels

Platinum
Gold
Silver
Certified

# of points earned

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LEED Plaque
Deciphering LEED Terminology

- **Registered**

- **certified** – small “c” - met requirements at one of four award levels

- **Certified** – first caps “C” - one of the four award levels (ex: LEED-certified at the Certified level)

- **Accredited**
What does a scorecard look like?

Check for this info first:

• Certified at what level or still in process?
• Which track?
• Which version?
Apples and Oranges

Bldg A – Multi-tenant Office – LEED Silver (EBOM)

• Point breakdown
  – SS: 4 (of 12)
  – EA: 16 (of 30)
  – WE: 6 (of 10)
  – MR: 7 (of 14)
  – IAQ: 13 (of 24)
  – Innovation: 2 (of 7)

• Actual performance
• Occupancy – 85%
• Value Impact +

Bldg B – Speculative Office – LEED Silver (Core & Shell)

• Point breakdown
  – SS: 9 (of 15)
  – EA: 5 (of 14)
  – WE: 3 (of 5)
  – MR: 2 (of 11)
  – IAQ: 7 (of 12)
  – Innovation: 5 (of 5)

• Modeled performance
• Occupancy - vacant
• Value Impact ?

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Section Three

IDENTIFYING GREEN FEATURES
AND
GAUGING MARKET VALUE IMPACTS
Think Green Features Not Just Green Labels

➢ Green buildings easy to miss

➢ Value impact of green buildings are largely dependent on their green features and the degree to which the market values them

➢ Brown buildings can have green features with substantive market value impact
Valuing Green Requires Appraisers to...

- Learn to recognize the influence of a new market fundamental (sustainability)

- Understand a new set of property characteristics (green features)
Key Aspects of Sustainability Valuation Model (SVM)

- Helps identify and measure ways sustainability impacts market value
- Helps price that impact
- Can accommodate change in market SO and subject’s “greenness” over time

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Relevant Market POV Is Key

Market is the first word in value

Who are the market participants?
- Tenants?
- Investors?
- Owner/users?

Is market SO or NSO?
• Few regulations

• Green-up limited to compliance

• Few or no green buildings beyond those mandated (e.g., gov’t buildings)

• Limited or no evidence of sustainability uptake in community

• Survey data indicates regional area is brown

• Many regulations, incentives

• Voluntary green-up by landlords

• Green buildings common

• “Prius effect”; triple waste stream; farmers’ markets; solar panels on homes

• Regional area scores high on green uptake

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Sustainability Valuation Model (SVM)

- **Step 1**
  - Determine sustainability orientation (SO) of the market

- **Step 2**
  - Categorize subject - NSO or SO; green vs. brown

- **Step 3**
  - Monitor over time
SO = Sustainability-Oriented; NSO = Not Sustainability-Oriented

Brown in an NSO Market  Green in an NSO Market
Brown in an SO Market   Green in an SO Market

SUBJECT
PROPERTY

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Gauging Potential for Bottom-Line Value Impacts

- Analyze green features - not just green labels - based on quadrant in SVM matrix
- Who pays? Who benefits? Who owns the system and is it operational?
- 4 key tests for impacts/features:
  - Measureable?
  - Durable?
  - Part of the real property?
  - Will buyer/user value it?
- Consider direct and indirect value impacts
Direct Value Impacts

Features that affect income stream or can be directly demonstrated via sales comps

- Rents
- Vacancy/down time between leases
- ↓ Energy, water/sewer, trash costs
- ↓ insurance costs
- ↓ TI costs on turnover (UFAD, open floor plan vs. POs)
- ↓ cost of ownership

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Indirect Value Impacts

Features that affect marketability and risk

• ↓ down time
• Not getting crossed off the tour list - ↑ marketability
• ↓ obsolescence risk exposure (no brown discount)
• Greater income growth or keeping pace with market and inflation
• Label effect
• Fulfills company’s sustainability goals
Case Study A - Vallejo

Don’t miss green features in brown buildings

Apply Key Tests to Solar PV:
- Durability?
- Part of the Real Property?
Case Study B – San Francisco Office
LEED Core & Shell
Greywater System

Are all green features operational?
Variable-Frequency Drives (VFD)

Why do VFDs likely impact value?

How do I know if the subject has one?

Always ask to speak to the building engineer

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How can a BMS system impact value?

- Continuous commissioning

Use caution when basing value projections on modeled performance
Case Study C – Pleasanton office
LEED “surprise”

Do green buildings look different than brown buildings?

Don’t assume your client will tell you about green features
Water Efficiency Features

Water conservation at Dahlin Group
As part of our Silver LEED (Leadership in Energy and Environmental Design) certification, we have installed this waterless urinal, which saves as much as 40,000 gallons of potable water per year, and along with the automatic lavatories, the reduced flow aerators on bathroom and kitchen taps and the dual-flush toilets, we reduce our water consumption by 30% compared to a typical office building of this size.

Why doesn’t the waterless urinal smell?
The secret is in the cartridge at the bottom, which is shaped to act as a funnel. The combination of non-stick, non-porous materials of construction and the funnel-shape of the cartridge ensure all urine passes into the cartridge and through a unique sealant liquid that floats on top of the liquid beneath it.

This pleasant smelling sealant liquid provides an airtight barrier between urine and the restroom to prevent odors from escaping the drain, but allows urine to pass through because it is lighter than water. Urine immediately penetrates the sealant liquid and flows to the drain. Urine sediment is collected by the cartridge, leaving an odor-free environment, clean pipes and absolutely no water waste.

The cartridge also features a sealing ring to provide an airtight barrier between the cartridge and the housing. The only maintenance required is routine cleaning of the fixture and an easy change of the cartridge, performed approximately three to four times per year.

What can and can’t be put in this urinal?
It is very important that only urine be placed in the urinal. The sealant fluid is not designed to accept anything else. Beverages and cleaning fluids will destroy the fluid and allow removed by hand. Please help us maintain the integrity of the sealant.

Lightbulb moment!

Water efficiency upgrades can have substantive value impacts, even in brown buildings.

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Daylighting & Lighting Controls

How can you tell the difference between daylighting and a normal window line?

Why might it matter?
Transit Proximity

Why is it important to review the LEED Scorecard?

Transit (BART) Station

Subject

Which key test applies here?
- Will buyer/user value it?

Whether and to what degree a green feature has value depends on whether the specific market values that feature.
Section Four

RESIDENTIAL RATING SYSTEMS
In This Section We Will Cover

➢ Residential Green Labels
  • Energy vs Green Labels
  • Value of a Label

➢ Under the Hood of a Green Label
  • Energy Efficiency
  • Indoor Air Quality
  • Water Conservation
  • Resource Conservation
  • Community Benefits

➢ GreenPoint Rated Label
Residential Consumer Labels

- Set a standard
- Third party verification
- Quality assurance
- Based on research and industry expertise
Common Energy and Green Labels

- **Energy Efficiency Home Labels**
  - New Homes: ENERGY STAR Homes
  - Existing Homes:
    - California Home Energy Rating (HERS II)
    - DOE Home Energy Score

- **Green Home Labels**
  - LEED for Homes
  - National Green Building Standard (NAHB)
  - GreenPoint Rated

- **Product Labels**
Value of Green Home Labels

- Valuable marketing tool for Real Estate Professionals to identify and assess a verified green home
- Defines a green home based on credible green standards, creating consumer confidence
- Includes third party verification or contractor assessment
Under the Hood of a Green Label

Energy Efficiency and Renewables

Indoor Air Quality / Health

Water Conservation / Indoor and Outdoor

Resource Conservation / Sustainable Materials

Community Design / Land and Site Use
Energy Efficiency

Energy efficient homes are typically:
- Less drafty
- More comfortable
- Quieter
- Have lower utility bills
- Lower demand on power grid
- Have lower environmental impact
Energy Efficient Upgrades

➢ Thermal Envelope
  • High insulation values
  • Radiant barrier
  • Low-E window

➢ Renewable (Solar) energy

➢ Equipment
  • 90% Efficiency Furnace
  • SEER 13+ AC
  • Sealed air ducts

➢ ENERGY STAR appliances

➢ Efficient lighting and controls
Energy Performance Assessment

- Anticipated energy use (design)
- Actual energy use (utility bills)
- Energy Score
Steps in an Energy Assessment

- Interview
- Site Inspection
- Shell Leakage
- Mechanical Systems
- Distribution Systems
- Appliances and Lighting
- Utility Bill Data Analysis
- Energy Modeling
- Combustion Safety Testing
- Moisture and IAQ
- Health and Safety Issues
- Client Report
Indoor Air Quality

- Indoor Air = 10X more polluted than outdoor air (EPA)
- 40 % of children will develop respiratory disease in part due to chemicals in their homes (New England Journal of Medicine)
- Commonly used adhesives, paints, and floor finishes contain compounds that are known to cause cancer or trigger asthma.
- Poor ventilation = excessive dust and mold = adverse health effects
Indoor Air Quality: The Basics

 ➤ **Eliminate**
  • Materials that emit toxins
  • Dust and other pollutants

 ➤ **Ventilate**
  • Kitchen exhaust
  • Bathroom moisture
  • Whole house

 ➤ **Filtrate**
Indoor Air Quality Upgrades

- Low-emitting products
  - carpets and flooring
  - insulation
- Tight air ducts
- MERV 6+ filter

- ENERGY STAR bath fans
- Range hood to outdoors
- Sealed-front fireplaces
- Tight building envelope
Water Conservation

Water efficient homes typically:
- Use less water for domestic and irrigation
- Use less energy for hot water use
- Save on utility bills
- Perform better in periods of water shortage and cost increases
Water Efficiency

Average Residential Water Use

- Clothes Washers: 22%
- Toilets: 27%
- Showers: 17%
- Faucets: 16%
-Leaks: 14%
-Other: 2%
-Dishwashers: 1%
-Baths: 2%

19% of electricity and 32% of gas in CA is used for water purposes (pump, heat, clean)
Water Efficiency Upgrades: Indoor

- High Efficiency Toilet: Dual Flush (.8/ 1.28 gpf)
- Faucets: Low flow aerators (.5 or 1 gpm)
- Showerheads: Low flow shower heads (1.5 to 2.0 gpm)
- WaterSense clothes & dishwashers
- Insulated pipes (R-3 or better)
- FIX LEAKS!
Water Efficiency Upgrades: Outdoor

- Weather based irrigation control system
- Efficient irrigation
- Hydrozoning (plants grouped by water needs)
- Low Water Plant Pallet
- Reduced Turf
- Mulching soil
What Makes a Green Home?

Resource Conservation

Resource efficient homes typically:

• Are more durable (less maintenance and rehab)
• Use less virgin materials (more recycled content)
• Use more efficient materials (composite woods)
• Reduced waste during construction
• Designed for ongoing domestic waste reduction
Resource Conservation

Follow The Three R’s

Reduce
Reuse
Recycle
Resource Conservation Upgrades

- Divert waste during construction
- Recycle and compost at home
- Use recycled content materials

- Use environmentally preferable products
- Use durable products
  - Siding and Roofing
  - Bathroom
What Makes a Green Home?

Community Design

Quality of Life Enhancements
• Health – walk and bike friendly, proximity to services, nature and recreation
• Family – proximity to services = reduced commute time
• Safety – visible home entries
• Community - social gathering spaces, front porches

Environmentally Friendly
• Higher density + proximity to service + proximity to transportation = reduction of green house gas emissions from cars
Community Design

What is your Walk Score?
GreenPoint Rated

HOW CAN YOU TELL IF A HOME’S BEAUTY IS MORE THAN SKIN DEEP?
About GreenPoint Rated

- List of Best Green Practices
- Credible yet accessible entry point
- Five environmental categories
  - Energy
  - Indoor Air Quality
  - Water Conservation
  - Resource Conservation
  - Community Design
- Minimum threshold of overall point
- Open ended to accommodate the greenest of builders
- Basic health, safety, and integrity prerequisites for EH
- Trained and Certified GreenPoint Raters
Two Labels Minimum Points Threshold

Elements Label
- Small remodels
- 25 minimum points, capped at 49 points

Whole House Label
- Comprehensive remodel
- 50 minimum points
# GreenPoint Rated Minimums

<table>
<thead>
<tr>
<th>Category</th>
<th>Min Pts</th>
<th>Whole House</th>
<th>Available Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy</strong></td>
<td>8</td>
<td>20</td>
<td>76+</td>
</tr>
<tr>
<td><strong>IAQ/Health</strong></td>
<td>2</td>
<td>5</td>
<td>43</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>4</td>
<td>8</td>
<td>38</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td>2</td>
<td>6</td>
<td>87</td>
</tr>
<tr>
<td><strong>Community</strong></td>
<td>0</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td><strong>Additional pts.</strong></td>
<td>9</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>25</td>
<td>50</td>
<td>290</td>
</tr>
<tr>
<td><strong>Point Cap</strong></td>
<td>49</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

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# Suite of Tools

www.builditgreen.org/greenpoint-rated

## Download the Checklist and Score your own home!

---

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Address</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Plan A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Home is located in a Built Area Setting with Utilities in Place</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2. Compact Development &amp; House Site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Density of 10 Projects per Block (lower unit counts)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3. Pedestrian and Bicycle Access &amp; Alternative Transportation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. On Site Pedestrian Access (enrollment of neighborhood service)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TERR</td>
<td>1. Day Care</td>
<td>2. Community Center</td>
</tr>
<tr>
<td>10. Convenience Store &amp; Micro-Market &amp; Produce Sold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TERR 2</td>
<td>1. Bike</td>
<td>2. Place of Worship</td>
</tr>
<tr>
<td>4. Access to a Dedicated Pedestrian Path from Public Space (or Pedestrian Access within 1000 feet)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5. Location of the Following Traffic Calming Strategies Installation:</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>a. Designated bike lanes are present on roadways;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Dedicated bike lanes are present on sidewalks;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Bike parking is available;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Bike parking is available off-street;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Who Are the GreenPoint Raters?

• **Certified GreenPoint Raters**
  – Contractors
    – Remodeling Contractors
    – BPI Contractors
  – Third Party Consultants

• **Basic Credential Requirements**
  – Building Performance Experience
  – Prior building industry & green building experience
  – Must pass written & field exams
GreenPoint Rated Administration

Managed by Build It Green

➢ California-focused, non-profit organization promoting residential green construction
➢ Offers training and certifications
➢ Performs quality assurance
GreenPoint Rated: Getting Started

Find a Rater:

GreenPoint Rated Hotline
• [www.GreenPointRated.com](http://www.GreenPointRated.com)
• [greenpointrated@builditgreen.org](mailto:greenpointrated@builditgreen.org)
• 510-590-3360 x 604

Training Hotline
• [Training@BuildItGreen.org](mailto:Training@BuildItGreen.org)
• 510-590-3360 x 603
Section Five

RESIDENTIAL VALUATION
CONSIDERATIONS
AND
CONCLUSION
Residential vs. commercial valuation issues

- Use same general methodology (determine market SO, apply 4 key tests, look for direct and indirect impacts)
- Use GRM for EE and water savings; onsite power generation
- Importance of knowing market SO – will buyer or occupant use and value it? Not the same as whether the agent thinks they will
Using Study Data

- Not all studies are created equal
  - Is methodology sound?
  - How large is the data set?
  - Are properties similar?
  - How does the data set compare to the subject?

- Consider the source/funding for study
- Peer-reviewed publications vs. white papers
- If you don’t understand it, don’t use it!
Key Documentation to Obtain

- Scorecard if subject has green label
- Historical utilities
  - Disaggregate when possible
- Cost of any green upgrades
- Contact rater/consultant
- Copy of performance assessment

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What makes a building “green”? 

Must meet 3 criteria: 

1) commonly accepted set of features based on the principle of sustainability; 

2) features must be independently verifiable; 

3) Modeled performance must be verifiable by actual results
Action Steps

- Market is the first word in value
- Check your bias at the door
- Think green features not just green labels
- Trust, but verify
- Stay current
For More Info on How to Value Green Buildings:
“Integrating Sustainability & Green Building into the Appraisal Process” in The Journal of Sustainable Real Estate, Volume 2

http://tinyurl.com/JOSRE-appraisal