



Valuation of Green Buildings

- Anybody can win unless there happens to be a second entry. "-- *George Ade*



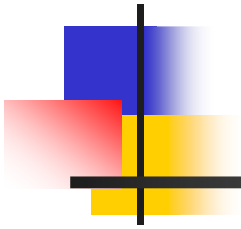
Valuation of Green Buildings

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Alternative Title



Don't LEED Us Astray

Is this a Green Building?





Conclusions

- Go for it
- Lack of Data
- Does green really matter?
- Lots of desire to be green, but lots of confusion as to what is green.
- Conflict in agreement
- The advocates, the industry, the skeptics and the tax person



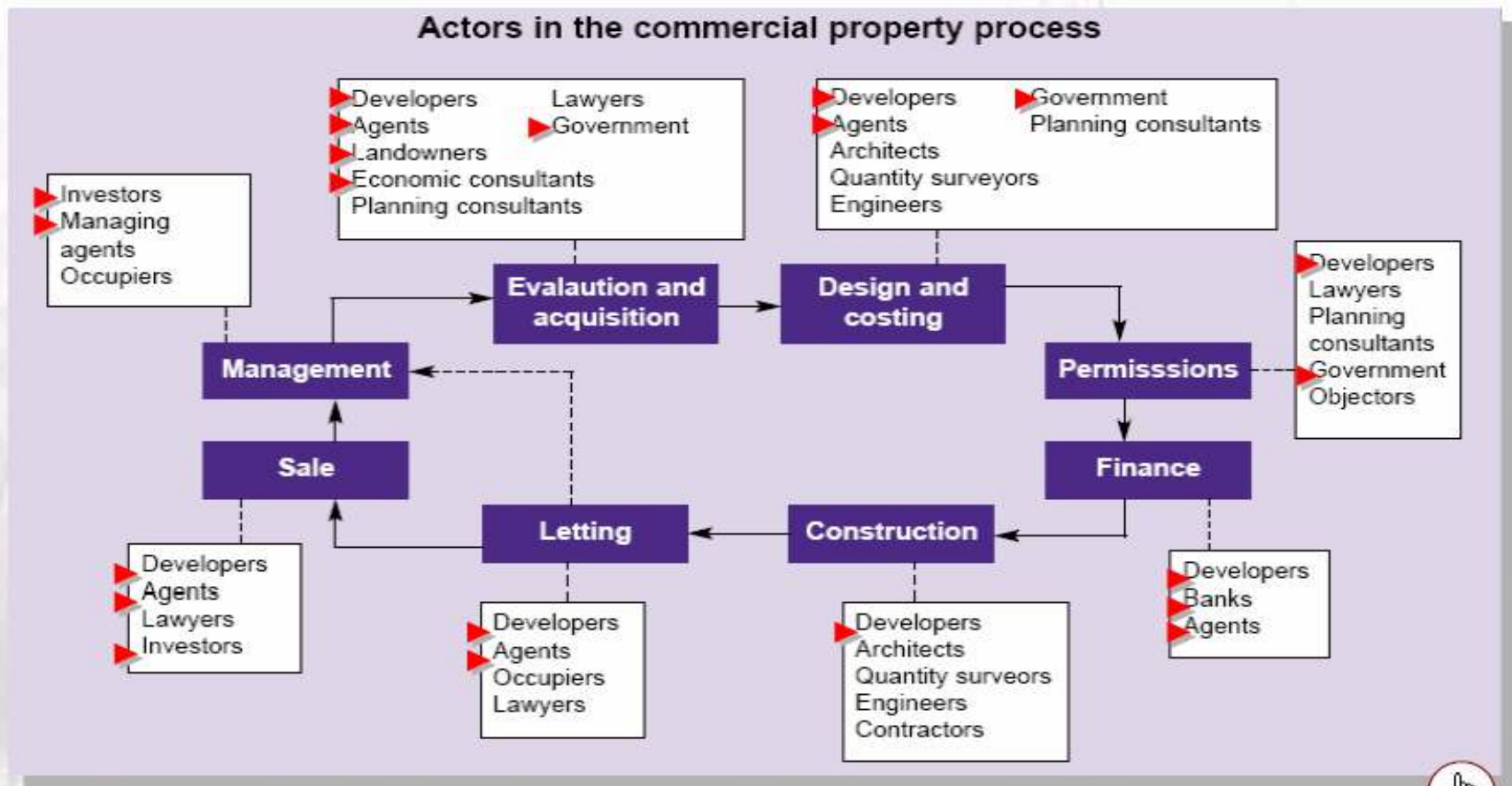
Virginia is neither in the top 10 or the bottom 10 of green offices.

- DC GREENEST
- OR
- VT
- WA
- CO
- MA
- ME
- NH
- IL
- CA

- OK BROWNEST
- LA
- WV
- SD
- MS
- ND
- AL
- KY
- IN
- NE

Miller, Norm, Does Green Still Pay Off?

Who Cares About Value?



Source: [Sustainability and the built environment - an agenda for action](#), RICS Foundation, October 2004





Are we ready to value green?

Green building is still an emerging idea, and appraisers and assessors alike are given the difficult task of navigating its effects on value.

1. green building defined
2. look at studies that isolate its effects on various metrics, and
3. draw conclusions relating to its place in the world of real estate valuation.



Professionals perhaps slow on developing appraisal rules???

- **Royal Institute of Chartered Surveyors**—valuation issues
- **Appraisal Institute**—valuation issues, training
- **National Association of Realtors**—sustainability curriculum
- **North American Commission for Environmental Cooperation**—policy, finance
- **Vancouver Valuation Accord**—valuation and regulatory issues



Coming to a CE place soon???

- Appraisal Institute
- Date TBD Roanoke, VA (location TBD)

"Energy Performance and Property Value"

Virginia Commonwealth Chapter of the Appraisal Institute

AI and state appraisal c-ed credit



Appraisal Institute---online.

- **Syllabus**

Module 1: What Does Green Building Mean?

Module 2: Green Building Programs

Module 3: LEED for Homes

Module 4: Green Building Products

Module 5: Green Remodeling

Module 6: Appraisal Considerations



Fannie, Freddie, EPA and DOE and Appraisal Foundation making the rules as we speak.

- No current nationwide acceptance for appraisers to include green features in a home's valuation
- HR 2336 Freddie and Fanny must develop new energy efficient lending programs
- HR 2454 EPA would establish a building energy performance labeling program

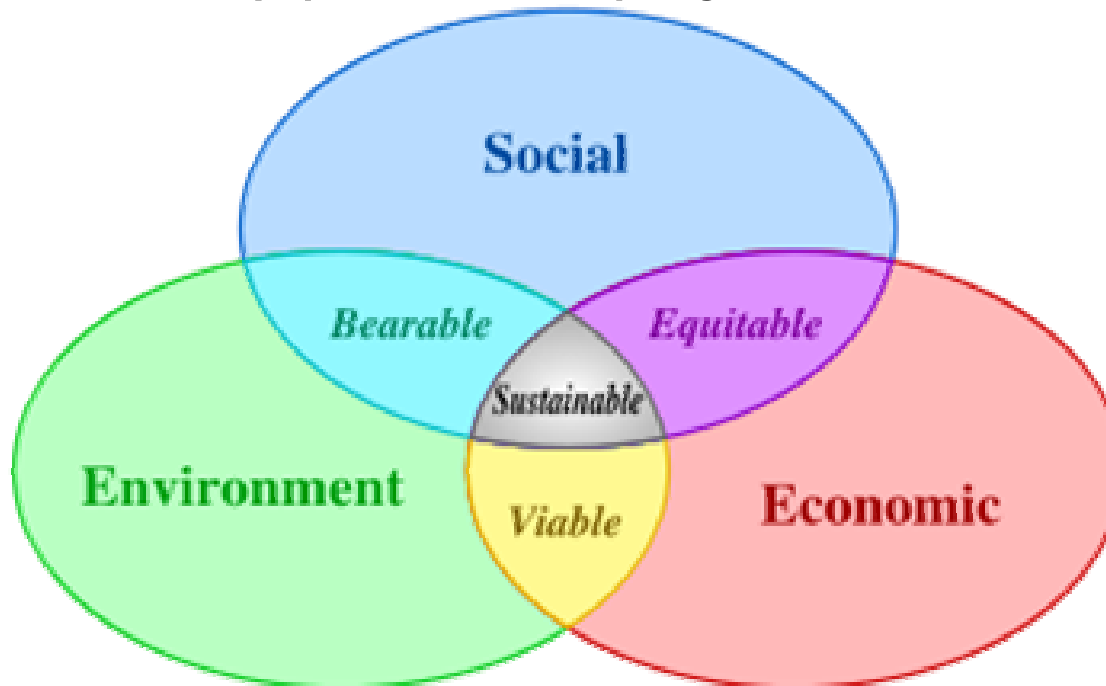


What is green?

- Who says what is green?
- Does it matter?
- Pornography, Sustainability and Green

Triple Bottom Line

- Balancing the sometimes competing forces that come to bear on any process or project results in sustainability



- Source: Johann Dreo Courtesy of Google



Certifications

- Builder 2030
- Certified Residential Green Appraiser (CRGA)
- Sustainable Homes Professional (SHP)
- Earth Advantage Broker Certification (S.T.A.R.)—Virginia
- And many more
- LEED



LEED – Leadership in Energy and Environmental Design

- Sustainable site development
 - Water efficiency
 - Energy efficiency
 - Use and reuse of materials and resources
 - Indoor environmental quality; and
 - Innovation and design
- Jennifer Pitts and Thomas O. Jackson, PhD, MAI. "Green Buildings: Valuation Issues and Perspectives."



Green Building Criteria

- **Energy Efficiency:** Reduce use of energy, especially non-renewable;
- **Resource Use Efficiency:** Water, materials, and waste stream reduction;
- **Site Efficiency:** Location specific characteristics such as proximity to transit and infill development; and
- **Quality of the Interior Environment:** Such as day lighting, low VOCemitting materials, and green cleaning.



Applying Green

- What are the benefits of green building?
- Do they outweigh the incremental costs?
- If so, how can these benefits be quantified when valuing green buildings?
- An examination of the most relevant empirical studies provide a first step toward answering these questions.



Dresden

- In fact, establishing the financial benefits of green building and making sure they're accounted for in a building's appraisal is one of the more significant challenges facing the industry today

- Dresden Do Building Appraisers Understand the Value of Green?
<http://blog.builddirect.com/greenbuilding/the-measuring-the-green/>



What the studies say

Table 1. Comparison of Results from the Empirical Studies on Green Buildings

	Fuerst & McAllister (2008)	Eicholtz, Kok & Quigley (2008)	Miller, Spivey & Florance (2008)	Wiley, Benefield & Johnson (2008)	Miller & Pogue (2009)
Rent per sq. ft.					
Green Buildings		\$29.80			\$30.54
Energy Star	\$29.34		\$30.50		
LEED™	\$27.07		\$42.15		
Control Sample	\$24.68 (entire sample)	\$28.16	\$28.00	\$26.48 (entire sample)	\$27.00

Steven H. Ott, Richard Buttimer. 2010. Valuation of Green Buildings: The Effect of Green on NOI

What the studies say

Occupancy Rate

Green Buildings		88.99%		83.40%
Energy Star	88.40% (median)		91.5%	+10.18% (regression result)
LEED™	88.40% (median)		92.0%	+16.20% (regression result)
Control Sample	86.06% (entire sample median)	81.35%	87.8%	82.80%



What the studies say

Rent Differential (regression results)

LEED™ Rent Differential %	+9.2%	+4.4%	+15.16%
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Energy Star Rent Differential %	+11.6%	+8.9%	+7.34%
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Value Per Sq Ft (regression result)

LEED™ per sq. ft.	+31.4%	+9.9%	+\$129.18
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Energy Star per sq. ft.	+10.3%	+5.3%	+\$29.71
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Positive impact of green retro

	Before Green Retrofit and Certification (\$ per sq foot)	After Green Retrofit and Certification (\$ per sq foot)
Rental Income	\$25.00	\$26.25
Energy Costs	3.00	2.70
Other Operating Expenses	5.00	5.00
Net Operating Income	\$17.00	\$18.55
Capex incl. TI and LC	1.70	1.53
Economic Cash Flow	\$15.30	\$17.02
Market Economic Cap Rate	7.5% cap rate	7.25% cap rate
Value per sq. foot	\$204.00	\$234.76

Steven H. Ott, Richard Buttimer. 2010. Valuation of Green Buildings: The Effect of Green on NOI



The Green Effect on NOI

The “Green” Effect on NOI

The standard tool for valuing a commercial building is net operating income (NOI). This is basically the operating cash flow generated by the building, and is defined as follows:

$$\begin{array}{r} \text{Potential Gross Income} \\ - \text{Vacancy \& Collection Loss} \\ + \text{Tenant Reimbursements} \\ + \text{Miscellaneous Income} \\ \hline = \text{Effective Gross Income} \\ - \text{Operating Expenses} \\ \hline = \text{Net Operating Income (NOI or Nominal Cash Flow)} \end{array}$$

Steven H. Ott, Richard Buttner. 2010. Valuation of Green Buildings: The Effect of Green on NOI



Dept. of Energy & Appraisal Institute Partnership

- Improve commercial bldg efficiency 20% by 2020
- Commercial Buildings use 20% of all energy US
- Future---develop same for residential
 - 95 out of 128 Million homes need energy efficiency.

- <http://www.ecohomemagazine.com/news/2011/06-june/new-partnership-provides-appraisers-with-green-valuation-tools.aspx>



Green is worth more

- Based upon the available literature, it would appear that green buildings should be able to generate higher net operating income compared to conventional buildings.
- They tend to have higher rental rates, lower vacancy rates, lower energy costs, lower turnover of tenants and similar nonenergy operating expenses.
- Given higher NOI at the same or lower levels of risk, green buildings will have higher overall valuations than nongreen buildings.

Value Impact of Green Buildings

Improved working environment	Reduced building operating costs	Reduced facilities maintenance costs	Greater capital cost
▼	▼	▼	▼
Greater demand for space	Lower operating expenditure	Lower operating and/or capital expenditure	Causes lower initial return on capital
▼	▼	▼	▼
Higher rents, less vacancies	Increases the net income	Increases net income or decreases capital	▼
▼	▼	▼	▼
Positive impact on value	Positive impact on value	Positive impact on value	Negative impact on value

Value Impact of Environmentally Efficient Buildings

Source: Boyd (2006)

Influences of value---green buildings.

Valuation Variable	Impact Summary	Impact Detail (impact on green building compared to standard building)
Income/rent	Expected higher rental growth	Expected increased tenant demand leading to rent premium based on: <ul style="list-style-type: none"> - energy efficient building, reduction in carbon and other emissions; and - improved indoor environment quality, employee productivity.
Outgoings	Expected lower outgoings growth	Expected lower outgoings growth: <ul style="list-style-type: none"> - reduced energy costs: electricity and gas; - reduced water and sewerage costs; - lower repair and maintenance costs due to the use of more durable, low maintenance materials; - reduced cleaning and waste management costs due to recycling; and - reduced legal and insurance costs as green buildings reduce the risk of health and liability claims.
Vacancy Rate	Expected lower vacancy rate	Expected increased tenant demand.
Capitalization and Discount Rate	Expected lower capitalization and discount rate	Expected lower risk exposure of green buildings in terms of: <ul style="list-style-type: none"> - higher expected rental growth; - lower vacancy rate; - lower outgoings growth; and - lower obsolescence.
Overall	Expected higher valuation for green buildings	

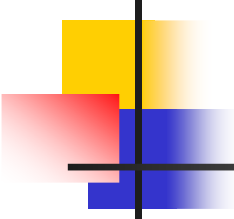
Influences on the Value of Green Buildings
 Source: Chaiwatanatorn (2006)
Table 3



Green Value Barriers

- “Costs more to build green”
- Occupant awareness & education
- Knowledge, research and resources not widespread
- What Green means is not widely understood
- Steep learning curve
- Construction companies lack experience
- Perception of risk amongst developers, lenders
- Not seen as a business benefit & paradigm shift
- Shortage of professionals with suitable experience
- Incentives questionable
- Savings/benefits unlinked from the investor/landlord
- Leases don’t take account of green issues
- Insufficient understanding of value & appraisal
- Outdated regulations

Chris Corps MRICS President, Asset Strategies Let.



Green Value Conclusions: The Main Value Benefits

- Lower operation/maintenance costs
- Energy & resource savings
- Grants, subsidies, inducements, etc.
- Attract tenants faster (i.e. absorption)
- Higher rents, investment/sale value
- Lower turnover/vacancy
- Reduced fitting-out costs (i.e. TI's)
- Lower internal move costs (i.e. churn)
- Increased productivity
- Faster, better public process
- Improved risk, marketability



Green Value Overall Conclusions

- There is a relationship between the market value of a real estate asset, its green features and related performance.
- Contradiction, myth and fact proliferate
 - Value assertions from unqualified sources are unhelpful, foster distrust
- Financial conclusions
 - Green buildings enhance value
 - The real estate sector is barely engaged but pivotal to success
- Green buildings should:
 - Involve the financial and real estate sectors
 - Focus on the green business case
 - Focus on informing users

Chris Corps MRICS President, Asset Strategies Let.



Green Building---preplanning— logic way to build

- Lower operating cost
- Better indoor air quality
- Plenty of day light
- More comfortable space
- Less damaging environmental footprint

=Higher value.



Green Building--- benefits

- Owner
- Occupants
- Community
- Appraisers
- Lenders



Will the green building trend continue?

- Market demand
 - Cost of energy
 - Right thing to do
- Federal Mandates? State Mandates?
 - Cap and Trade
- Incentives?
 - Lower interest rate mortgages
 - Higher loan to value ratio
 - IRS Tax credits?
 - Real Estate Tax Discount
 - Expedited building permit



But long term impact of Green Buildings?---Parker 2008

- Elements of green buildings will become embodied in building codes and standards. As this happens all new buildings will be built in such a way as to be considered “green” by today’s standards.
- As a result of this, one might expect that any extra benefit that accrues to today’s green buildings might subside over time.
- That is, new buildings will not so much earn a premium for being built as a green building, but rather there would be a penalty in the market associated with new buildings that were not built to green standards.



Runde and Thoyre

- *Green Premium Data of Limited Use to Appraisers*
- For appraisers, the distinction between a green premium and a brown discount can prove meaningful.
- While they both describe the delta in rent between a subject property's rent/value and market rent/value, each of them require different circumstances in order to exist.

Runde, Timothy P & Stacey Thoyre. 2010 "Integrating Sustainability and Green Building into the Appraisal Process." *The Journal of Sustainable Real Estate. Vol. 2 No.1 pp. 221-248*



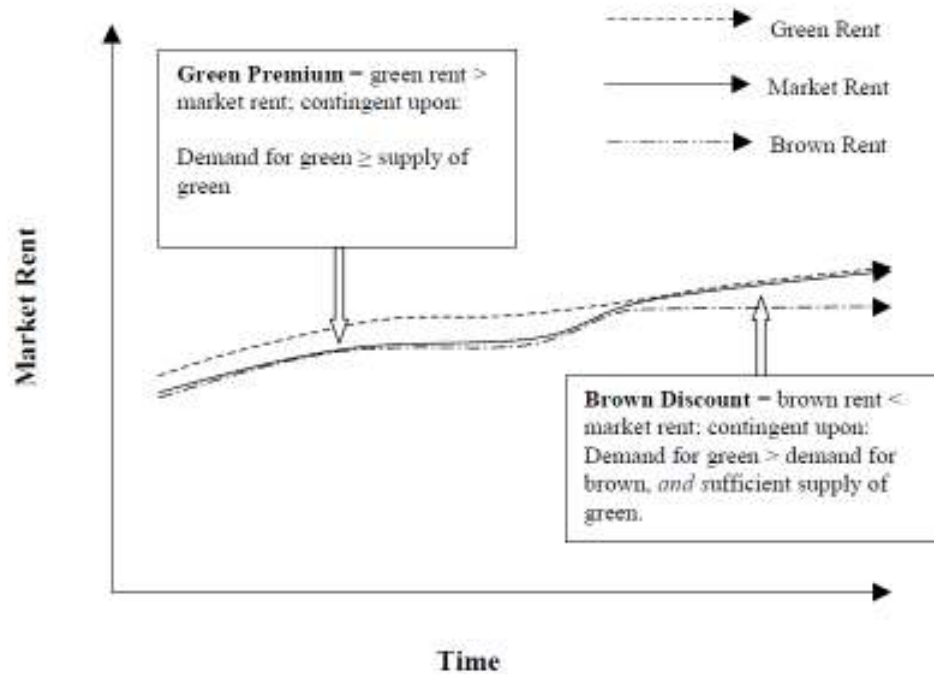
Runde and Thoyre

- If a market is currently showing a green rent premium, the premium is likely to evaporate once green becomes the new market standard.
- If DCF modeling or direct capitalization is used, this point is especially relevant as the current (premium) rent will last only as long as the subject outperforms the market.

Runde, Timothy P & Stacey Thoyre. 2010 "Integrating Sustainability and Green Building into the Appraisal Process." *The Journal of Sustainable Real Estate*. Vol. 2 No.1 pp. 221-248

Integrating Sustainability and Green Building into the Appraisal Process

Exhibit 1 | Green Premium vs. Brown Discount



Graph assumes that both the supply of, and the demand for, green building space are increasing over time.

Runde, Timothy P & Stacey Thoyre. 2010 "Integrating Sustainability and Green Building into the Appraisal Process." *The Journal of Sustainable Real Estate*. Vol. 2 No.1 pp. 221-248



Greening of Real Estate...but will owners have remorse?

- **Green, or sustainable, buildings are designed and built on environmentally friendly principles.**
- **Green initiatives by municipalities, corporations, universities and even neighborhoods have raised the profile of sustainability.**
- **The U.S. is catching up with international trends, bringing important opportunities and an expanded role for appraisers.**



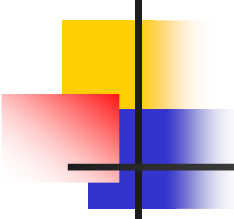
SmartMarket report

- For real estate investors, the reduced costs of green properties can increase rents and building values.
- McGraw-Hill's *2006 SmartMarket Report* states that buildings renovated to meet green standards can bring 3% higher occupancy rates and a 7.5% increase in a building's value.
- Although green buildings cost, on average, only 2% to 3% more to build, they are estimated to use an average of 25% to 30% less energy than conventional buildings



It's the right thing to do

- Green building is good for the environment and economy
- Green is the moral thing to do
- Green will increase property taxes on commercial space



Green buildings are thought to deliver the following added value:

- Operating costs decreased by 8% to 9%;
 - Building values increased by 7.5%;
 - Return on Investment (ROI) improved by 6.6%;
 - Occupancy ratio increased by 3.5%; and
 - Rent ratio increased by 3%.
- Scott R. Muldavin. 2010. Value Beyond Cost Savings: How to Underwrite Sustainable Properties



What does an environmental friendly house cost.

- 2003 environmentally-friendly home could expect to pay a premium of 11% to 25%, depending on how green
- 2008 just 3% to 5%
 - Jim Amorin, vice president for the Appraisal Institute



Greening of Real Estate...but will owners have remorse?

- **Appraisers need to understand and communicate green performance differences for such appraisal reports to be effective.**
- **Sustainable buildings have a triple bottom line: economic, environmental and social.**
- **Green buildings are leasing well above the market norm.**
- http://www.green-appraisal.com/files/Green_Article.pdf



Green and it is still growing

- The U.S. Green Building Council estimated the green building industry--an area that was rarely heard of a decade ago--to be worth around \$12 billion for 2007.
- While sustainable construction is one of the fastest-growing segments of the commercial building industry, only a small percentage of buildings going up are actually green.
- The buildings that do meet green standards save significantly on energy costs, a benefit that is likely to become more attractive as the cost of non-renewable energy sources continues to increase.



Positive impact of green design

- Assume an existing office building is retrofitted using green design principles and is then certified.
- As a result, rents are assumed to increase by 5%, energy costs decrease by 10% and capex is expected to decline by 10%.
- Cap rates for green certified buildings are assumed to result in a 25 basis point reduction..

Steven H. Ott, Richard Buttimer. 2010. Valuation of Green Buildings: The Effect of Green on NOI



Can green data be found?

- Role of green MLS
- RS Means/ Marshall & Swift



2007 Oregon and Washington MLS went green

- First in the country to incorporate environmental check boxes on their input forms.
- This allowed appraisers to identify homes with green and/or energy efficient features when searching for comparables.
- Importantly it also allowed sales data between environmentally certified and non-certified homes to be compared and premiums that were being paid by consumers to be identified.

North Left Coast---green MLS Virginia????

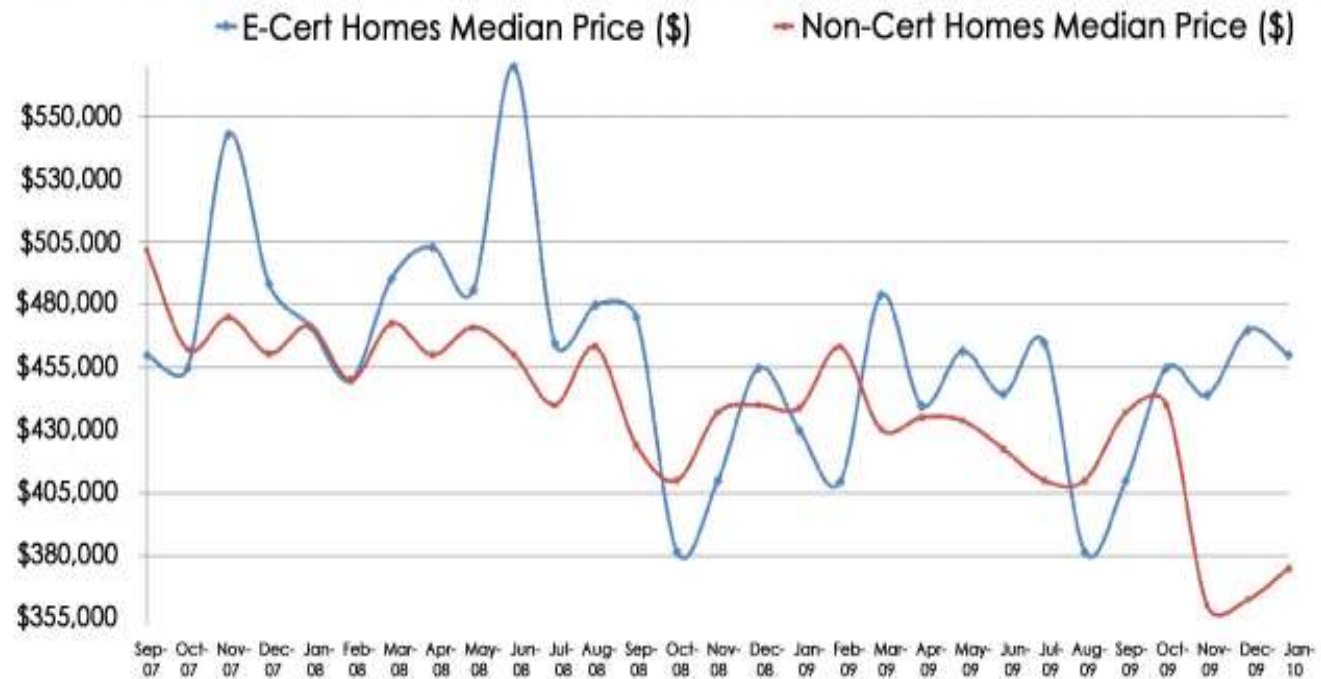
VALUE FOR GREEN HOMES



■ GreenWorks Realty

Certified Environmental Houses should have a higher appraisal value???

Environmentally Certified & Non-Certified New Homes Sales - King County



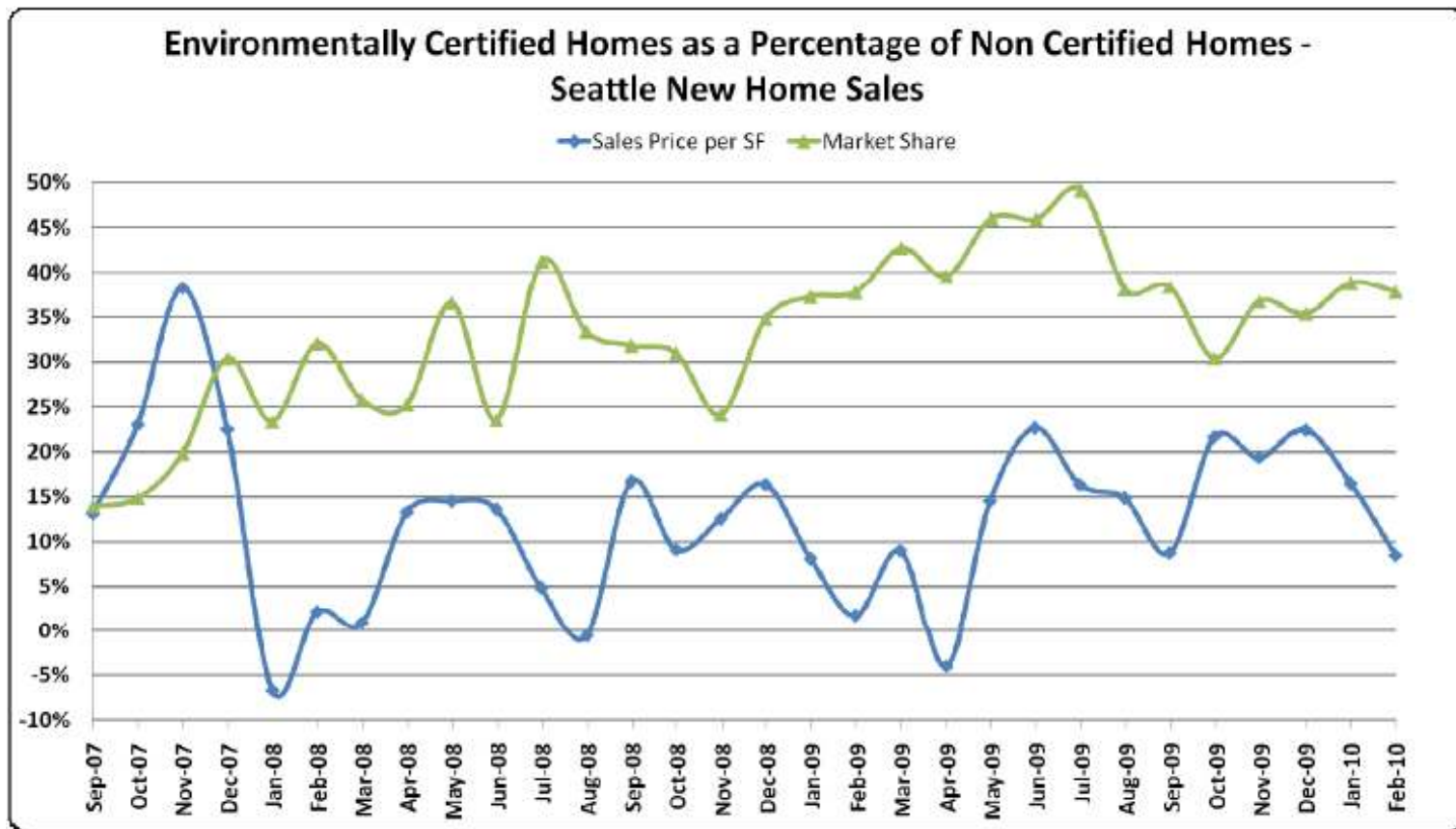
Research and report by GreenWorks Realty (www.greenworksrealty.com)
Raw data from NWMLS



Certified Environmental Houses should have a higher appraisal value???

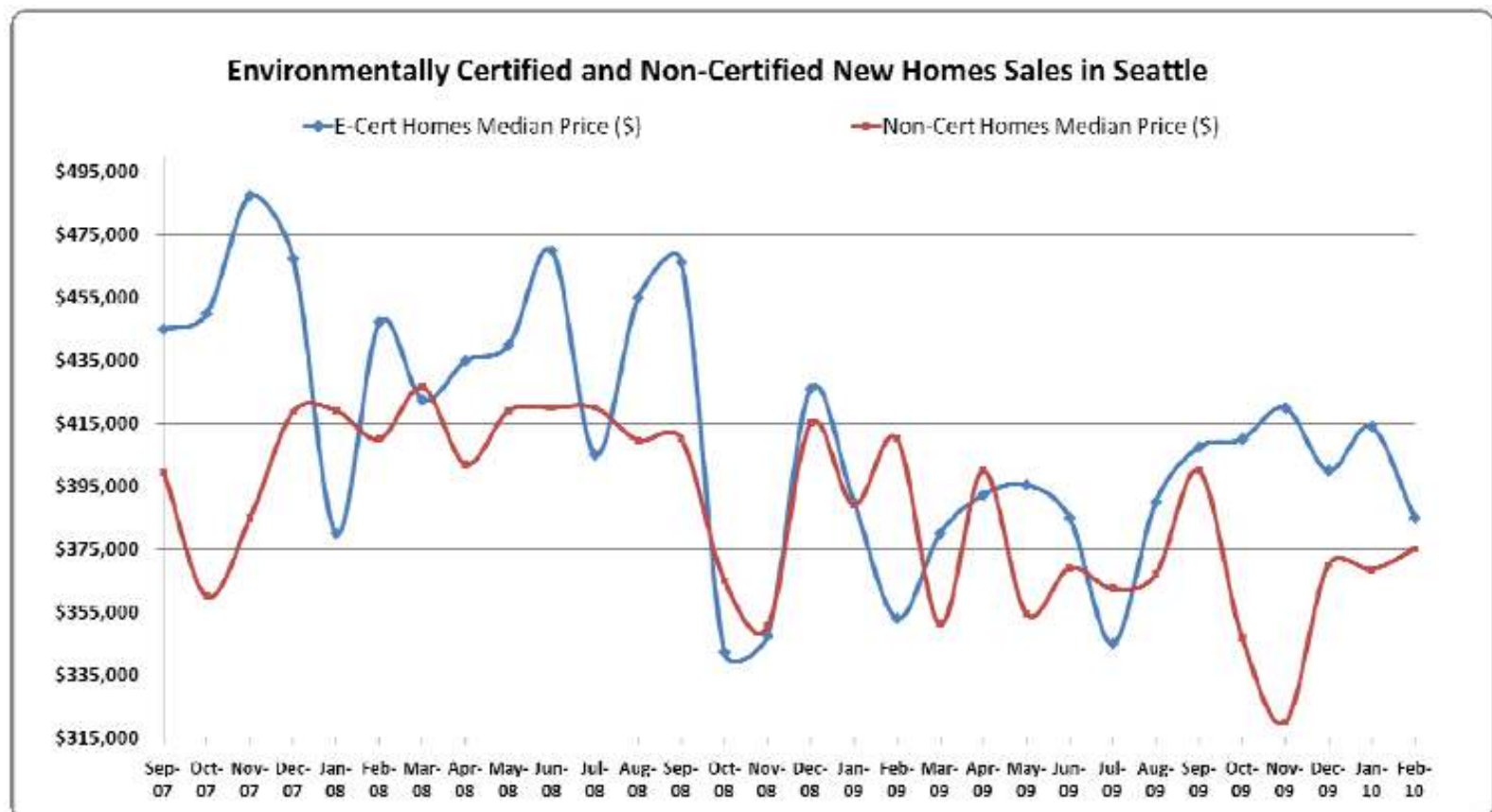
	Non Certified	Certified Homes	% Diff
# of homes sold	2,041	1,034	33.6%
Median Square Ft	1,542	1,459	-5.4%
Median Sold Price	\$ 392,500	\$ 405,402	3.3%
Median Days on Mrkt	50	38	-24.0%
Price/SF	\$ 255	\$ 278	9.2%

Certified Environmental Houses should have a higher appraisal value???



■ GreenWorks Realty

Certified Environmental Houses should have a higher appraisal value???



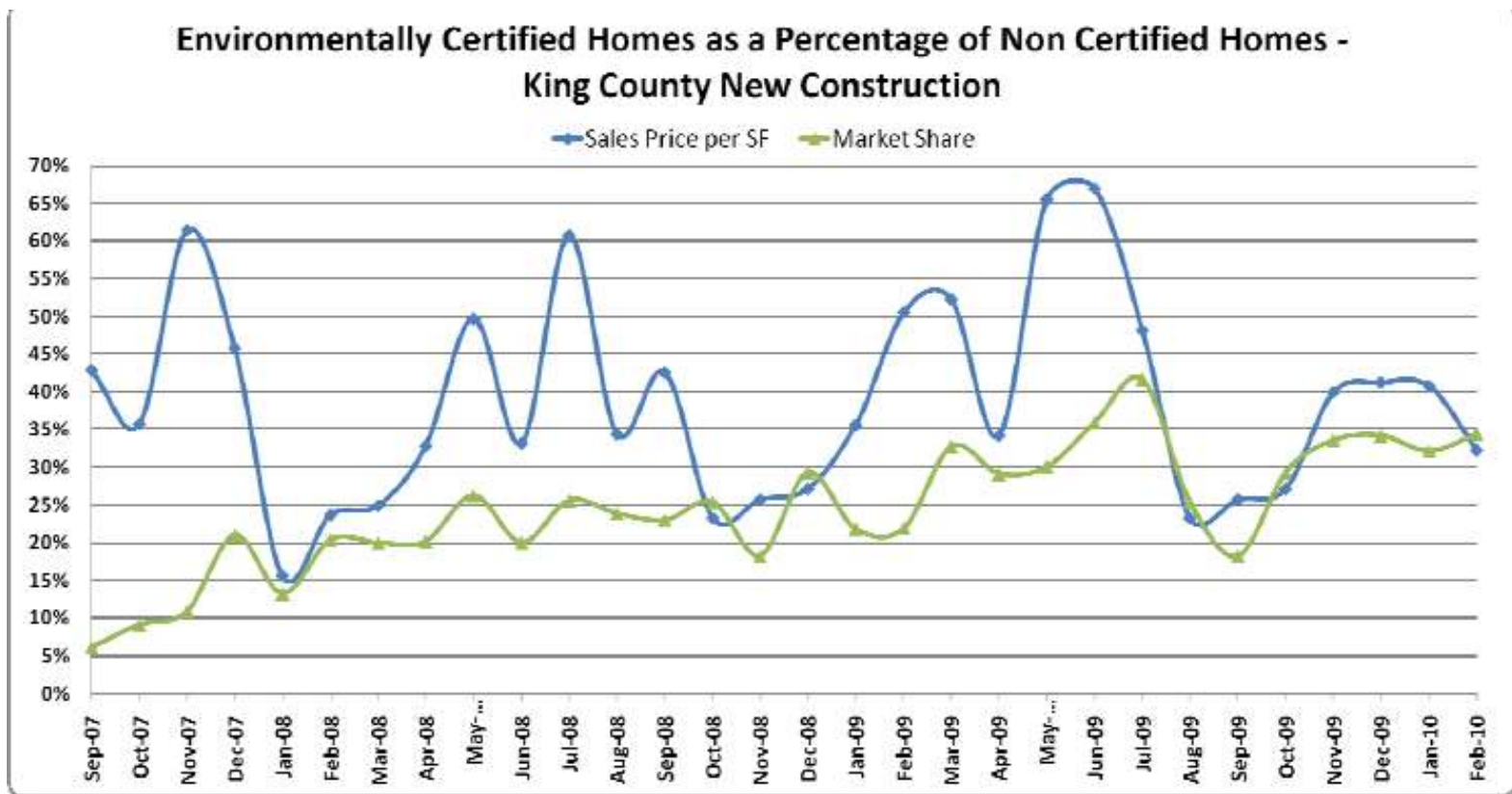
■ GreenWorks Realty



Certified Environmental Houses should have a higher appraisal value???

	Non Certified	Certified Homes	% Diff
# of homes sold	5,904	2,024	25.5%
Median Square Ft	2,370	1,809	-23.7%
Median Sold Price	\$ 440,000	\$ 464,925	5.7%
Median Days on Mrkt	60	56	-6.7%
Price/SF	\$ 186	\$ 257	38.4%

Certified Environmental Houses should have a higher appraisal value???



■ GreenWorks Realty



Certified Environmental Houses should have a higher appraisal value???

City of Seattle 3rd Party Cert	Non Certified	Certified Homes	% Diff
# of homes sold	2,041	136	6.2%
Median Square Ft	1,542	1,403	-9.0%
Median Sold Price	\$ 392,500	\$ 435,519	11.0%
Median Days on Mrkt	50	44	-12.0%
Price/SF	\$ 255	\$ 310	22.0%



Environmentally certified homes in King County, from November 2009 through February 2010

- **37% of the new home market, sold for \$85,550 more per home, and were 9.8% smaller in size.**
- **sell for 22% more per square foot in 12% less time and make up 6% of the market.**

■ worksrealty.com/e-cert_report/Feb%202010%20GreenWorks%20Realty%20ECert%20Report.pdf



Environmentally certified new homes in King County

- **sell for \$71 more per square foot in 7% less time and make up 26% of the market**
- **sell for 9.2% more per square foot in 24% less time and make up 34% of the market**

- worksrealty.com/e-cert_report/Feb%202010%20GreenWorks%20Realty%20ECert%20Report.pdf



Seattle Single Family Homes Built 2007 or Later Certified Built Green, Energy Star, and LEED For Homes

GreenWorks realty reports that green buildings sell 22% more quickly and for 8.5 % more per square foot than similar, traditional buildings.



Appraisal Institute President Jim Amarin

- “The green building industry is expected to value between \$19 billion and \$38 billion by 2010.
- It’s vital for appraisers and other industry professionals to understand the importance of this sector of the market going forward.”



The True Believers

- Build green, and your employees will be healthier, happier, and more productive! Build green, and you will use less water and energy, benefit your local environment, and promote global environmental responsibility!
- Build green, and you will save money over the long term



What the constituents are saying.

- cost vs. value.
- Even though it may cost more to build an energy efficient house it may not sell for more.



Singapore---retrofitting commercial buildings

- 10 percent savings in operating cost
- 2 percent increase in capital value
- 17 percent in building's energy consumption
- Cost--0.5 per cent for retail and 1 per cent for offices.

<http://www.channelnewsasia.com/stories/singaporebusinessnews/view/1153548/1/.html>



Dept. of Energy & Appraisal Institute Partnership

- Develop information and educational tools--- data base
- Based on USPAP
- help appraisers appropriately include energy performance and sustainability in valuations
- Future--state appraisal boards to require green and energy certification?



The future of (Green) Valuation?

Possible Outputs of an Economic Appraisal or Evaluation

- Business cases (either Preliminary, Outline or Full) consisting of:
 - Strategic Case;
 - Economic Case (or Option Appraisal);
 - Financial Case (or Affordability);
 - Commercial Case;
 - Programmer;
 - Project Management Case (or Achievability).

Chris Corps MRICS President, Asset Strategies Let.



The future of (Green) Valuation?

Possible Outputs of an Economic Appraisal or Evaluation

Regulatory Impact Assessment

Health Impact Assessment

Environmental Appraisal

Health and Safety Impact appraisal

Consumer Impact Assessment

Integrated Policy Appraisal (IPA)

Evaluation and audit reports

Chris Corps MRICS President, Asset Strategies Let.



Valuation Methodologies

Main approaches:

- Direct Comparison Approach: Difficult or impossible to properly adjust
- Income Approach: Most suitable but difficult to use
- Cost Approach: Potentially harmful to correct life cycle valuation
- Alternate Approaches: Triple Bottom Line, Full Cost Accounting, etc.

Standards:

- IVS, USPAP, CUSPAP, Red Book, etc.
 - Not being used properly
- Accounting standards problems
 - “Special Purpose Asset” problematic
 - Cost approaches problematic
 - 2010: IFRS change to market value

Chris Corps MRICS President, Asset Strategies Let.

Standard on Mass Appraisal of Real Property

IAAO International Association of Assessing

Officers 2011

- All Three approaches to value are modeled for mass Appraisal Std 4.1
- The cost approach is more reliable for new structures of standard materials, design, and workmanship. Std 4.2
- No Green or Sustainability in the Standards or Glossary

Commercial and Industrial

Property Standard on Mass Appraisal of Real Property IAAO

International Association of Assessing Officers 2011

- The income approach is the most appropriate method...
- Direct sales comparison models...large jurisdictions with sufficient sales.
- When sufficient supply of sales data and income data is not available, the cost approach should be applied. Std 4.6.3



Income Capitalization

- Asset value = NOI/ Income cap
- If NOI goes up, the value goes up.

Example. 100,000 NOI/ 10% = \$1 Mil



Income Capitalization and energy savings

Now \$40,000 investment to save \$10,000

$110,000 \text{ NOI} / 10\% = \$ 1.1 \text{ Mill}$

\$40,000 increases capital by 100,000

AND AN INCREASE IN PROPERTY TAX.



A Catch 22

- Does energy efficiency equate to higher value?
- Does the market generally recognize energy efficiency as added asset value?
- Do appraisers have knowledge or interest to determine NOI based on energy savings?
- Does USPAP require determination?



Catch 22

- With energy efficiency, indoor air quality, can extra rent be gained in a tight market?
- Higher building value and higher property tax?
- Will an NOI-energy equation have an impact on property tax?
- Will some governmental units offer green building/ energy tax credits to encourage energy efficiency?



The First RSMeans Green Cost Data book published 2011

- Up to date information on LEED and Green Globes building rating systems criteria
- On-site environmental remediation costs
- City Cost Indexes and Location Factors covering over 930 three-digit zip codes in the U.S. and selected locations in Canada



The First RSMeans Green Cost Data book published 2011

- A wide array of green building products and systems—from
 - high efficiency heating, cooling,
 - electrical and plumbing,
 - photovoltaic panels, green roofs,
 - wind power,
 - high performance glass and more



Marshall & Swift Green Building Cost

- Marshall & Swift approach incorporates values that are inclusive of all expenses owners will face when building and restoring properties.
- Marshall & Swift includes the many hidden “soft costs” that may not be readily apparent.
- Marshall & Swift’s solution enables appraisers to calculate replacement costs for Green buildings, for Green additions, and for individual Green items.

Green MLS Tool Kit



- Green MLS is one solution for three different problems. Green MLS:
- Helps buyers quickly find green homes
- Makes it easy to fully promote the special features of a green home
- Supports apples-to-apples comparison when it is time to appraise a green home
- http://www.greenresourcecouncil.org/greening_the_mls.cfm



Valuing green and/or energy efficient homes

- Market may not have comparables or easy method of identifying
- MLS's are not all up to date



Value: Not Always Understood

- Example 1: USGBC
 - “Using the income-capitalization method: asset value = net operating income (NOI) divided by the capitalization rate (return). If the cap rate is 7%, divide the reduction in annual operating costs by 7% to calculate the increase in the building’s asset value”
- But: This is almost never true
 - Nobody pays the benefit in perpetuity!
 - Requires gross lease
 - Gross leases can *increase* energy consumption
 - Net leases separate capital investment from the benefit

Chris Corps MRICS President, Asset Strategies Let.



Value: Not Always Understood

- Example 2: Institute for Market Transformation
“According to the National Research Council, 60 to 85 percent of a building’s real costs are related to operations; the initial construction cost is 10 percent or less.
As the largest single operating expense in typical commercial buildings, energy costs are typically an important factor in building value.”
- Is your energy bill *really* larger than rent or mortgage?
 - Example shows *less than one year’s energy savings* paid by the buyer
 - Contradicts USGBC

Chris Corps MRICS President, Asset Strategies Let.

An Inconvenient Value

By Rese Fox / Deloitte Financial Advisory Services LLP

- When a LEED-certified building, a new type of product, enters into the appraisal equation, the appraisal industry developed three sources to support their value opinions:



An Inconvenient Value

By [Rese Fox / Deloitte Financial Advisory Services LLP](#)

- 1) analyzing and adjusting recent sales of comparable buildings (the sales comparison approach);
- 2) estimating the price of building components and accrued depreciation (the cost approach); and
- 3) using potential revenue and expenses to calculate an expected income and investment payback (the income capitalization approach).



Runde and Thoyre

The questions relevant to appraisers and those concerned with valuation are:

In what ways does sustainability impact market value?

And how does one identify it, measure it, and price the impact?

Runde, Timothy P & Stacey Thoyre. 2010 "Integrating Sustainability and Green Building into the Appraisal Process." *The Journal of Sustainable Real Estate. Vol. 2 No.1 pp. 221-248*



Integrating Sustainability and Green Building into the Appraisal Process

- 70% of commercial real estate executives cite sustainability as a critical business issue
- 89% consider it in their real estate decisions (CoreNet, JLL, 2009).



Integrating Sustainability and Green Building into the Appraisal Process

- The questions relevant to appraisers and those concerned with valuation are:
 - In what ways does sustainability impact market value?
 - And how does one identify it, measure it, and price the impact?



Integrating Sustainability and Green Building into the Appraisal Process

- Most of the literature to date seeks to identify the “green premium” or “business case” for properties that possess green features.
- While these studies are useful in developing policy and for portfolio-level decisions about whether or where to invest, they lack the specificity and market sensitivity necessary to be useful in supporting adjustments to the comparables or the yield rates in a typical appraisal assignment.



Runde and Thoyre

- *Limitations of a DCF-Based Valuation Approach*

Runde, Timothy P & Stacey Thoyre. 2010 "Integrating Sustainability and Green Building into the Appraisal Process." *The Journal of Sustainable Real Estate*. Vol. 2 No.1 pp. 221-248



Does Green Valuation Require Special Appraisal Knowledge

- Appraisal Institute---Says Yes



James Finlay

Commercial Real Estate Appraisal Manger, Wells Fargo *US*

*Green Building Council's Commercial
Real Estate Update – Spring 2010*

- There is no different or "special" appraisal process to value a LEED high-performance office building.
- In fact, the discounted cash flow (DCF) is both the most common market value financial analysis tool and a perfect vehicle to clearly show the various value impacts of high performance design.



Techniques to Extract and Support Adjustments for Energy-Efficient Items

- Sales Comparison—Paired Data Set
- Income and Expense—GRM
- Cost and Depreciation
- Buyer Interviews

Valuation by Comparison”, Appraisal Logic, Mark Ratterman, MAI,SRA, Appraisal Institute



Valuation Issues

It is the appraiser's job to determine whether a building with green features is more valuable in its market than a conventional building.

An appraiser should ask whether the market recognizes the value of a sustainable building.

This is currently a challenge to appraisers, because this field is relatively new, and market data on this topic is limited.

Jennifer Pitts and Thomas O. Jackson, PhD, MAI. "Green Buildings: Valuation Issues and Perspectives.



Sales Comparison

The sales comparison approach is appropriate for valuing a green building, but comparable properties may be difficult to find.

Adjustments will have to be made to account for the differences between the subject and other green properties, just as adjustments are made for other property characteristics.

Jennifer Pitts and Thomas O. Jackson, PhD, MAI. "Green Buildings: Valuation Issues and Perspectives.



Comparables

Some believe that green buildings are different enough to be considered a semi-specialized class, like hotels or golf courses.

When the availability of green comparables is limited, it may be appropriate for appraisers to employ the methods they use for other specialty property types.

- Jennifer Pitts and Thomas O. Jackson, PhD, MAI. "Green Buildings: Valuation Issues and Perspectives.



Cost approach

Appraisers can determine the reproduction or replacement cost of a green building, and then estimate depreciation.

However, certain forms of accrued depreciation may be lower for green improvements than for conventional ones.

Green buildings are built with more durable, low-maintenance materials, and therefore may have longer economic lives.

Jennifer Pitts and Thomas O. Jackson, PhD, MAI. "Green Buildings: Valuation Issues and Perspectives.



Cost approach

Buyers in some markets may not be willing to pay the full cost of green amenities that already exist in a building. In this case, an adjustment would have to be made.

A major drawback to using the cost approach in valuing green buildings is that this approach may ignore the benefits of green building features and the effects these benefits have on asset value.

Jennifer Pitts and Thomas O. Jackson, PhD, MAI. "Green Buildings: Valuation Issues and Perspectives.



Income Capitalization

If green design features reduce operating costs such as energy costs, water costs, maintenance and repairs, and legal and insurance costs.

These cost reductions increase net operating income.

Jennifer Pitts and Thomas O. Jackson. "Green Buildings: Valuation Issues and Perspectives.



Income Capitalization

More controversial is the effect of green design on market rent and vacancies.

In some markets, green spaces may rent or sell quicker and/or at higher rates than spaces in conventional structures. Capitalization may also be affected.

A major challenge in utilizing this approach is that rent comps and market data may be difficult to find, due to the low number of green investment properties and the reluctance of owners/developers to share financial data.

Unknown



Discounted Cash Flow

The debate on the valuation of green buildings has identified discounted cash flow to be the optimal method of valuation for green buildings as it facilitates cash flow transparency through the use of various rental rates, outgoings rates, growth rates, leasing/lease renewal/vacancy rates and capital expenditure allowances.

Reed and Wilkinson (2007), Green Building Council of Australia (2008)



Discounted Cash Flow

The use of discounted cash flow for the valuation of green buildings also allows adjustment for:

- a lower discount rate to reflect less risk;
- a lower reversionary yield to reflect less risk;
- possibly higher maintenance costs for specialized sustainable equipment (e.g: cleaning);
- higher capital costs (e.g: photovoltaic cells); and
- potentially higher levels of obsolescence after a 10 year period (i.e.: if building does not have the latest technology or if its sustainable technology is out of date).



Discounted Cash Flow

The reverse may be applied to non-green buildings with an allowance for the inability to retain tenants, use of a lower rental growth rate and/or a higher outgoings growth rate, use of a higher discount rate due to more risk and so forth.

Accordingly, the impact of depreciation of non-green buildings may be explicitly considered in a discounted cash flow valuation.



Discounted Cash Flow

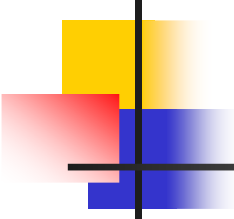
The shift in the green building valuation debate may, therefore, be contended to have moved from a focus on growth for green buildings to a focus on risk for non-green buildings.

The increasing impact of depreciation on the value of non-green buildings may be expected to come under much greater focus which, effectively, means the rationale for assumptions underlying discounted cash flows will also come under much greater focus.



Rating Systems can help

- Rating systems can be a reasonable guide for the appraiser in determining whether the subject (or comparable) is green, especially if the subject's green features can be verified and performance audited
 - A green label is not enough
 - Closely analyze green features even in brown buildings
 - Not all rating system are equal



Examples of market surveys that could prove useful to the appraiser.

- **Surveys of corporate real estate executives related to sustainability**
- **National surveys that contain local market data**
- **Local Surveys**



Sources of information for appraiser

- *Property Owners.* On the other hand, the voluntary sustainability-related actions of property owners, particularly landlords who operate primarily for financial gain, are the strongest indicator of a market uptake of sustainability



Sources of information for appraiser

- *End Users.* End users include tenants, owner-occupants, and their customers and clients



Appraisal Documents Necessary:

- HERS Rating – Estimate of Rating Expected on Completion. The appraisal should be subject to this estimated rating at or above the estimate.
- Construction Costs – Breakdown of costs – A breakdown of additional costs relating to Green and Energy Efficient Items.
- If LEEDS or Green Rating – Provide approximate rating expected. Appraisal should be subject to this rating at a minimum.



Appraisal Documents Necessary:

- Blue Prints – detailed with attention to the energy efficient and Green products noted.
- Detailed specifications – Address energy efficient and Green construction products.
- Incentives – Provide a list of incentives that might include rebates from the Power Company, IRS, lender or local sources. Appraiser should address the incentives in the report.



Appraisal Documents Necessary:

- Comparing the local building code and the subject product is invaluable in documenting an appraisal to the lender and supporting the additional costs in the cost approach.
- Provide the lender and appraiser with this comparison.



When confirming lease comparables:

- Are tenants requesting LEED-certified space in this market?
- In the past year, what percentage of tenants would you say request LEED space?
- Is that more or less than the prior year?
- What type of tenants are they? Fortune 500? “Green” companies? Government? Non-profits? Other?
- Do they tend to be large or small tenants?

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When confirming lease comparables:

- Have you leased any space recently involving LEED space or where LEED was a tenant requirement?
- How did that impact the leasing process?
- Is there any measurable difference in rent for green or LEED space in your market? If yes, can you give me an example?
- Do you have any evidence that LEED buildings lease faster?

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When confirming lease comparables:

- Is there an example you can think of where LEED certification caused the tenant to choose the LEED building over another, non-LEED building?
- Do tenants differentiate between the different levels of LEED, such as Certified versus Silver versus Gold? Will tenants pay more for a higher LEED rating?
- Is LEED a deal maker or a deal breaker?

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When confirming lease comparables:

- How would you say LEED affects marketability of space in this market, or is there no effect?
- Are landlords using green leases? Are tenants asking for them?

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When confirming sales comparables:

- In your experience, do investors consider green ratings like LEED in the purchase decision? What about ENERGY STAR? What about owner-users? If so, how is it considered?
- Or do buyers simply view it as a “value added” feature (upside)?

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When confirming sales comparables:

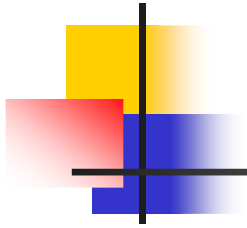
- Does it depend on the type of buyer? If so, how?
- What is the appeal of LEED to investors: the label effect (“green” the portfolio), enhanced marketability leading to rent premium or faster absorption, cost savings due to energy efficiency, or “future proofing” (delayed obsolescence)?

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Conclusion

- Green is here to stay
- Use of traditional tools with refinement
- It maybe come the norm with discounts for non green house/ commercial property





Greenwashing---do not trust and verify

- *Greenwashing is any green or environmental claim that is unsubstantiated, unverifiable, or inconsistent with the principle of sustainability*