

# Sustainable Property Performance and Financial Analysis

17th International Land Policy Forum  
October 28th, 2010

**Scott R. Muldavin, CRE, FRICS**

Executive Director

Green Building Finance Consortium

[smuldavin@muldavin.com](mailto:smuldavin@muldavin.com)

# Acknowledgement and Thanks

---

- **Japan Association of Real Estate Appraisal**
- **Sumitomo Trust & Banking** (Masato Ito)
- **University of Tokyo** (Dr. Tomonari Yashiro)
- **Japan Real Estate Institute**
- **Japan Sustainable Building Consortium**

Special Thanks for the Leadership and Gracious  
Hosting of my visit to Tokyo to:

**Ministry of Land, Infrastructure, Transport  
and Tourism** (Yoshino Kozakai)

# My Plan For Today

---

- I. Introduce the GBFC**
- II. Why Sustainable Properties Should be More Valuable**
- III. A New Way to think about Sustainable Property Performance**
- IV. GBFC's Six-Step Process for Sustainable Property Financial Analysis**
- V. Reflections on the Future of Sustainable Property Investment**

# My Plan For Today

---

## **I. Introduce the GBFC**

**II. Why Sustainable Properties Should be More Valuable**

**III. A New Way to think about Sustainable Property Performance**

**IV. GBFC's Six-Step Process for Sustainable Property Financial Analysis**

**V. Reflections on the Future of Sustainable Property Investment**

# GBFC Mission

---

**Enable private investors to evaluate sustainable property investment from a financial perspective.**

1. Refine valuation and underwriting methods & practices (**Develop Content**)
2. Widely communicate the results of our work (**Accelerate Adoption**)

# GBFC Focus

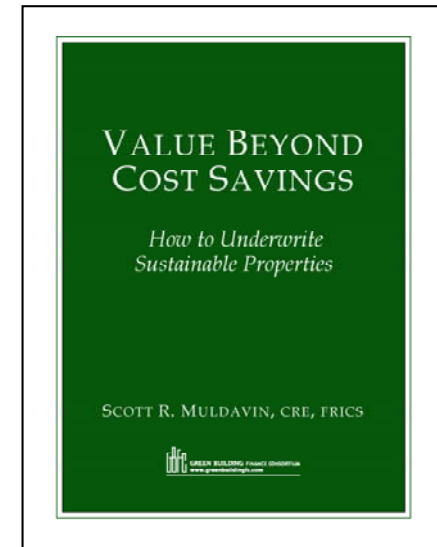
---

1. Capital Provider--Independence
2. Commercial & Multi-family
3. Focus on Methods and Practice
4. Property Specific Focus
5. Full Underwriting Process
6. Value Beyond Cost Savings

# GBFC: Work Completed

---

1. Book
2. Expanded Chapters
3. Research Library
4. Special Reports-Articles
5. Industry Links
6. Presentations



# GBFC: Work Underway

---

## **Global Sustainable Property Valuation and Finance Education Initiative**



# My Plan For Today

---

**I. Introduce the GBFC**

**II. Why Sustainable Properties Should be More Valuable**

**III. A New Way to think about Sustainable Property Performance**

**IV. GBFC's Six-Step Process for Sustainable Property Financial Analysis**

**V. Reflections on the Future of Sustainable Property Investment**

# What Type of Value?

---

Public Value

Enterprise Value

Investment Value

**Market Value**

“The most probable price... for which the... property should sell... in a competitive market....”

*(The Appraisal of Real Estate, Appraisal Institute, 12th Edition)*

# Value Beyond Cost Savings

## Energy Costs Only Part of Value

---

Resource Use

**Energy Costs**  
**Water Costs**

Regulator Demand

**Regulatory Compliance**  
**Entitlement Benefits**  
**Tax Benefits**  
**Financial Incentives**

Space User Demand

**Rents**  
**Occupancy**  
**Absorption**  
**Tenant Retention**

Investor Demand

**Capitalization Rates**  
**Discount Rates**

# Value Beyond Cost Savings

## Demand Increase Drives Value

---

Resource Use

**Energy Costs**  
**Water Costs**

Regulator Demand

**National Laws**  
**Prefecture Mandates/Incentives**  
**Municipal Mandates/ Incentives**

Space User Demand

**Governments**  
**Private Companies—Commitments**  
**Private Companies—Direct Ties**  
**Other Evidence—surveys, RFP's**

Investor Demand

**Greenprint Foundation**  
**Investor Commitments**  
**Professional Association Focus**

# General Case For Premium Value: The "Hypothesis"

---

1. Development costs
2. Regulator demand up
3. Space user demand up
4. Investor demand up
5. Operating expenses down
6. Capital expense down
7. "Net" risks positive



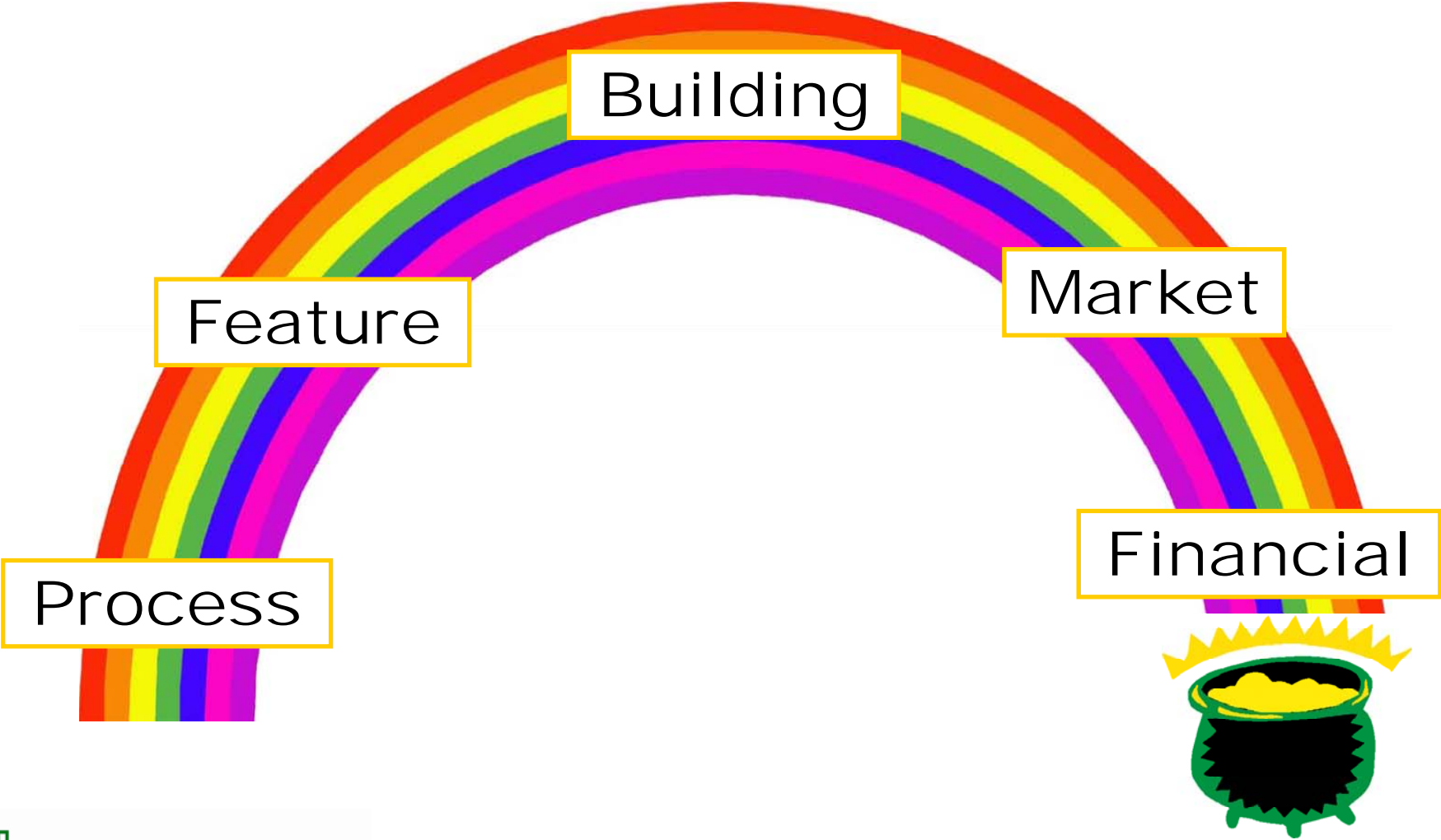
# My Plan For Today

---

- I. Introduce the GBFC**
- II. Why Sustainable Properties Should be More Valuable**
- III. A New Way to think about Sustainable Property Performance**
- IV. GBFC's Six-Step Process for Sustainable Property Financial Analysis**
- V. Reflections on the Future of Sustainable Property Investment**

# New Performance Framework to Support Valuation

---



# Process and Feature Performance: Energy Savings

---

- |                          |             |
|--------------------------|-------------|
| 1. Commissioning--       | 13% to 16 % |
| 2. Cool roofs--          | 2.3% to 46% |
| 3. Lighting Strategies-- | 60%         |
| 4. Occupancy Sensors--   | 25% to 50%  |
| 5. Under Floor Air--     | 15%         |

**Risk Mitigation Most Critical to Value**



# Building Performance

---

1. Development costs
2. Resource use
- 3. Occupant performance**
4. Location/access
5. Sustainability level
6. Flexibility/Durability
7. Public benefits

# Occupant Performance

---

## Individual

- Health
- Productivity
- Satisfaction

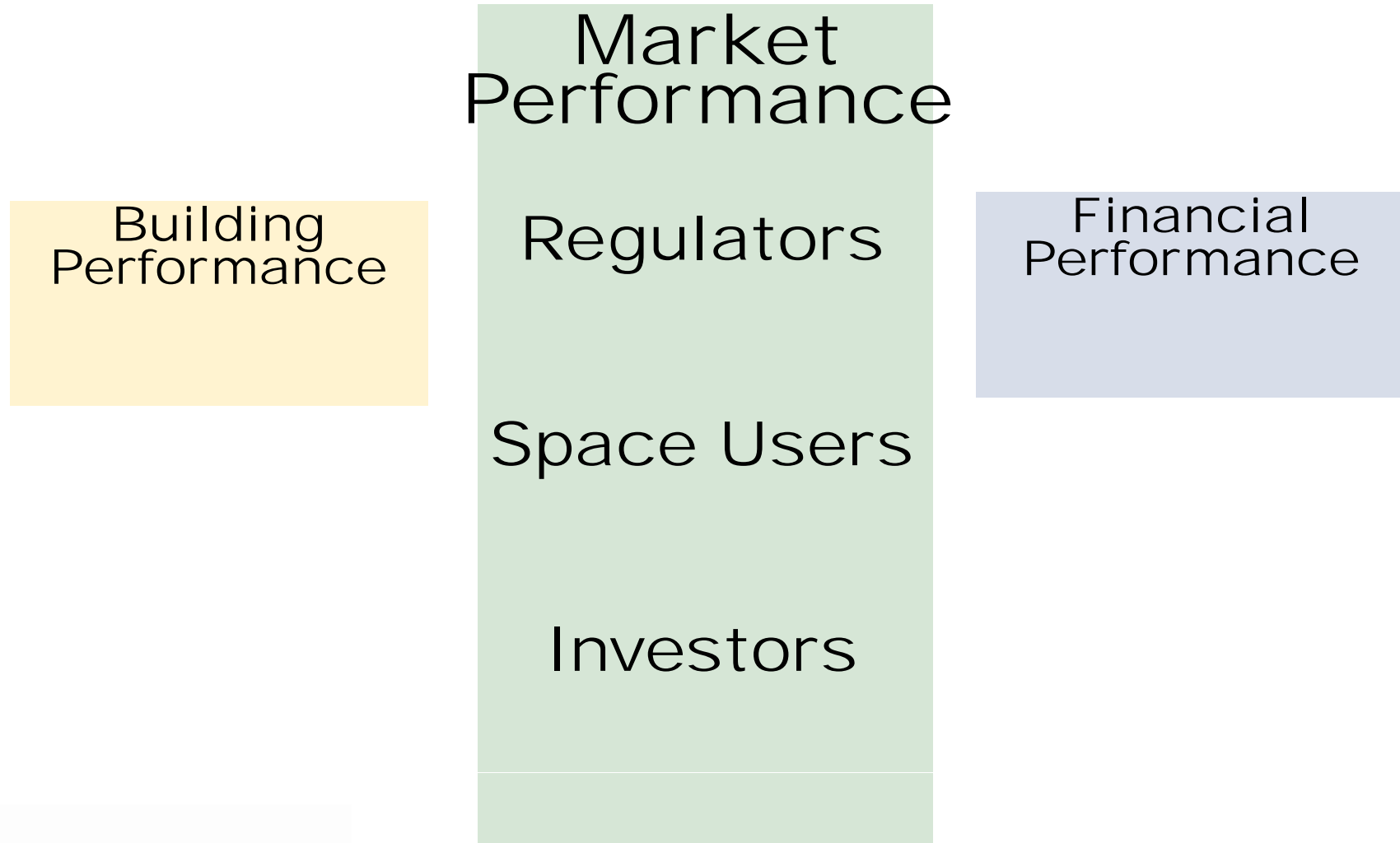
## Enterprise

- Reduction in Resource Use
- Improved Reputation/Leadership
- Compliance: Internal/External
- Reduced Risk to Future Earnings

# Market Performance

## The "Missing Link"

---



# Market Performance: Four Key Types of Evidence

---

- 1. Expert Based Financial Analyses**
2. Statistics/Modeling Based Financial Analyses
3. Surveys and Market Research
4. Foundational Background and Theory

# Examples of Expert-Based Financial Analyses

---

1. **“Do Green Buildings Make Dollars and Sense?”**

Norm Miller and David Pogue, USD-BMC Working Paper 09-11, Draft

2. **“High Performance Green Building: What’s It Worth?”**

Theddi Wright Chappell, Chris Corps, May 2009;

3. **“Green Value: Green Buildings, Growing Assets”**

Royal Institute of Chartered Surveyors, Canada, 2005, Oct. 2005;

# Summary of Expert-Based Conclusions

---

- **Faster absorption**
  - Achieve competitive rents—sometimes higher
  - Competitive lease terms
- **Reduced tenant turnover**
- **Higher occupancies**
  - Reduced operating and maintenance costs
  - Attract superior subsidies
  - Achieve high or moderately high tenant satisfaction

# My Plan For Today

---

- I. Introduce the GBFC**
- II. Why Sustainable Properties Should be More Valuable**
- III. A New Way to think about Sustainable Property Performance**
- IV. GBFC's Six-Step Process for Sustainable Property Financial Analysis**
- V. Reflections on the Future of Sustainable Property Investment**

# Must Consider DCF Model: At Least Conceptually

---

- 1. Income Approach**—Discounted Cash Flow (DCF)
- 2. Sales Comparison Approach**
- 3. Cost Approach**



# DCF: The Finlay 14

## Revenue

- Contract rental rates and other lease terms
- Market rental rates:
  - Ground floor retail \$1.50/SF NNN
  - Office: floors 2-5 \$2.50/SF FSG
  - Office: floors 6-10 \$2.60/SF FSG
  - Office: floors 11-15 \$2.85/SF FSG
  - Office: floors 16-19 \$3.00/SF FSG
  - Office: floors 20-23 \$3.20/SF FSG
- Annual rent growth
  - Year 1 3.0%
  - Year 2 6.0%
  - Year 3 5.5%
  - Year 4 5.0%
  - Years 6-10 4.0%
- Vacancy and collection loss 5.0%
- Office lease terms and other assumptions - new and renewing tenants
  - Lease term 5 years
  - Free rent - 0 months
  - Annual rent escalations 3.5%
  - Downtime between tenants 9 mos
  - Renewal probability 65.0%
- Reserved parking \$225/space
- Unreserved parking \$190/space
- Annual parking revenue growth 5.0%

## Leasing Expenses & Capital Reserve

- Leasing expenses
  - New tenants/2<sup>nd</sup> gen. Space \$ 15/SF
  - Renewing tenants \$ 10/SF
  - Shell space \$ 55/SF
- Leasing commissions
  - New leases 4.0%
  - Renewing leases 2.0%
- Capital reserves \$ 0.35/SF

## Investor Tax

Ordinary income marginal tax rate	35.0%
Capital gains tax rate	15.0%
Cost recovery recapture tax rate	25.0%
Allocation of cost basis to improvements	80.0%

## Expense

	Year 1
• Janitorial	\$222,572
• Porter	72,816
• Window cleaning	44,625
• Supplies	42,483
• Trash removal	28,150
• Fire & life safety supplies	31,760
• Repairs & maintenance	505,807
• Tools & equipment	13,500
• Utilities	
– Electricity	647,633
– Gas	43,883
– Chilled water	588,000
– Water & sewer	21,787
• Security	209,200
• Landscape contract	23,200
• Administrative	259,890
• Advertising & promotion	25,900
• Real estate taxes	2,376,310
• Non-reimbursable expenses	37,670
• Insurance	188,000
• Management fee - 2.0% of Effective Gross Income	
– Growth factor for real estate taxes	2.5%
• Growth factor for other expenses	3.0%

## Property Acquisition & Disposition

- Property acquisition inputs
  - Purchase price \$110.0 million
  - Closing costs 1.75% of purchase price
  - Loan fee 0.75% of loan amount
  - Total acquisitions costs \$112.5 million
- Property disposition inputs
  - Residual capitalization rate 8.5%
  - Broker's fee and closing costs 2.0% of sales price

## Financing

Loan amount	\$73.0 million
Loan-to-value	65.0%
Interest rate	7.5%
Loan term	10 years
Amortization schedule	25 years
Loan points	1.0%
Annual debt service	\$8.5 million



# Must Follow Six Distinct Steps

1. Select Financial Model



4. Evaluate Financial Implications of Costs/Benefits



2. Evaluate Property "Sustainability"

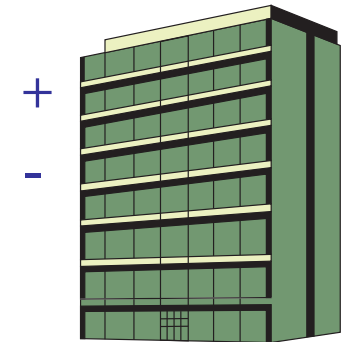
5. Determine Financial Model Inputs



3. Assess Costs/ Benefits of "Sustainability"



6. Risk Analysis and Presentation (RAP)



# Step 1: Select Financial Models

---

1. Traditional Sustainability Financial Analysis

2. Traditional Real Estate Financial Analysis

**3. Sustainability Sub-Financial Analysis**

4. Public Benefits Analysis

# Sustainability Sub-Financial Analysis

---

1. Comparative First Cost Analysis
2. DCF Lease-Based Cost-Benefit Allocation Models
3. Sustainability Options Analysis
4. **Churn Cost Savings Analysis**
5. Productivity Benefits Analysis
6. **Health Cost Savings Analysis**
7. Government/Utility Incentives and Rebates Analysis
8. **Enterprise Value Analysis**
9. ENERGY STAR Financial Value Calculator
10. Risk Analysis and Presentation (RAP)

## Step 2: Evaluate Property Sustainability

---

**“Does not matter what I think!”**

- Regulators
- Space Users
- Investors

# Step 3: Assess Costs-Benefits of Property Sustainability

---

- Comprehensive assessment
- Positive and negative risks
- Key role in financial analysis and risk mitigation
- Intermediate step—must organize intelligently

# Step 4: Evaluate Influence of “Net” Sustainability Costs-Benefits on DCF Inputs

---

1. Development Costs
2. Development Risks
3. **Space User Demand**
4. Operating Costs
5. Building Operations
6. Cash Flow Risks
7. Public Benefits
8. Investor Demand

# Step 5: Determine Financial Inputs- Integrate With Non-Sustainable Factors

---

## Space User Demand

1. Rental cost
2. Retention of key staff
3. Lease flexibility
4. Space efficiency
5. Higher quality environment
6. Occupational flexibility
7. Proximity to public transport
8. Proximity to clients/competitors
9. Higher building profile
10. Energy efficiency



Source: Knight Frank - Central London Occupiers – 100 Firms, 40,000 Employees, 10 Million Sq Ft, 20+ Year Presence



## Step 6: Improved RAP Key

---

- **Clarity — Logically Consistent**
- **Comprehensive — Good and Bad**
- **Process and Feature Focus**
- **Sensitivity Analysis**
- **Multiple Scenario Analysis**
- **Risk Mitigation — Surety, Legal, etc.**

# My Plan For Today

---

- I. Introduce the GBFC**
- II. Why Sustainable Properties Should be More Valuable**
- III. A New Way to think about Sustainable Property Performance**
- IV. GBFC's Six Step Process for Sustainable Property Financial Analysis**
- V. Reflections on the Future of Sustainable Property Investment**

# Reflections on the Future of Sustainable Property Investment

---

1. Importance of carbon will grow
2. New properties will be sustainable
3. Green leases will become the norm
4. Risk and capital stack complexity key to financing market growth
5. Leases and capital budget schedules will moderate growth of deep retrofits
6. Acquisitions and Dispositions will strategically rebalance portfolios

# Conclusion

---

**“Every science begins as  
philosophy and ends as art”**

Will Durant—*The Story of Philosophy*, 1926