



**Better
Buildings®**
U.S. DEPARTMENT OF ENERGY

**Show Me the Value:
Appraising Green**
Better Buildings Summit
May 10, 2016

Agenda

- 3:45** Welcome & Introductions
- 3:50** Speaker Presentations
Discussion
- 4:30** Audience Q&A
- 5:00** Adjourn

Today's Presenters

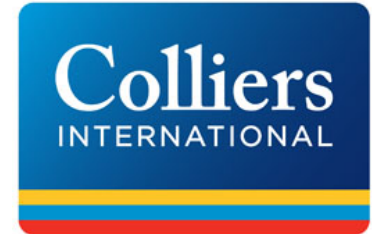
**Theddi Wright
Chappell**

**CEO,
Sustainable Values**



John K. Scott

**SVP of Real Estate
Management Services,
Colliers International**



Dave Pogue

**Global Director
of Corporate Responsibility,
CBRE**

CBRE

Devesh Nirmul

**Senior Director,
Renew Financial**



**RENEW
FINANCIAL**

Theddi Wright Chappell, Sustainable Values

The Push Pull of Energy and Property Valuation

Better Buildings Summit

May 10, 2016



Push Pull of “The Market”

- ▶ What is the role of energy in the commercial property market?

“.....the *one* factor that will have the greatest impact on the real estate sector over the next decade is *energy*.”

Michael Acton, North American Director of Research,
AEW Capital, 2015



Push Pull of Investors

- ▶ NOI is still King
- ▶ Pull of market to be more sustainable/energy efficient is met with
- ▶ Push back from investors
 - GAP in time of investment versus time of return cited as excuse not to move forward by many institutional investors



Push Pull of Risk Parameters

- ▶ What is risk of incorporating energy upgrades with no immediate returns into existing properties versus
- ▶ Holding the property for 5 to 7 years with no efficiency improvements?



How to Address These Factors

- ▶ GAP – Use life cycle cost analysis instead of quarterly valuations
- ▶ Risk – Consider downside of not upgrading property with equal weight of upside
- ▶ Review Scope of Work in valuations to see that energy efficient/sustainable strategies are being assessed



Creates the Components of Value

- ▶ “The Market” determines “Market Value”
- ▶ Investors set risk (rate) parameters they find acceptable
- ▶ Revenue performance provides income metrics

$$\text{Value} = \text{Income} / \text{Rate (Risk)}$$

- ▶ If all of these are accurate, there should be no surprises or disappointments



Energy Matters!

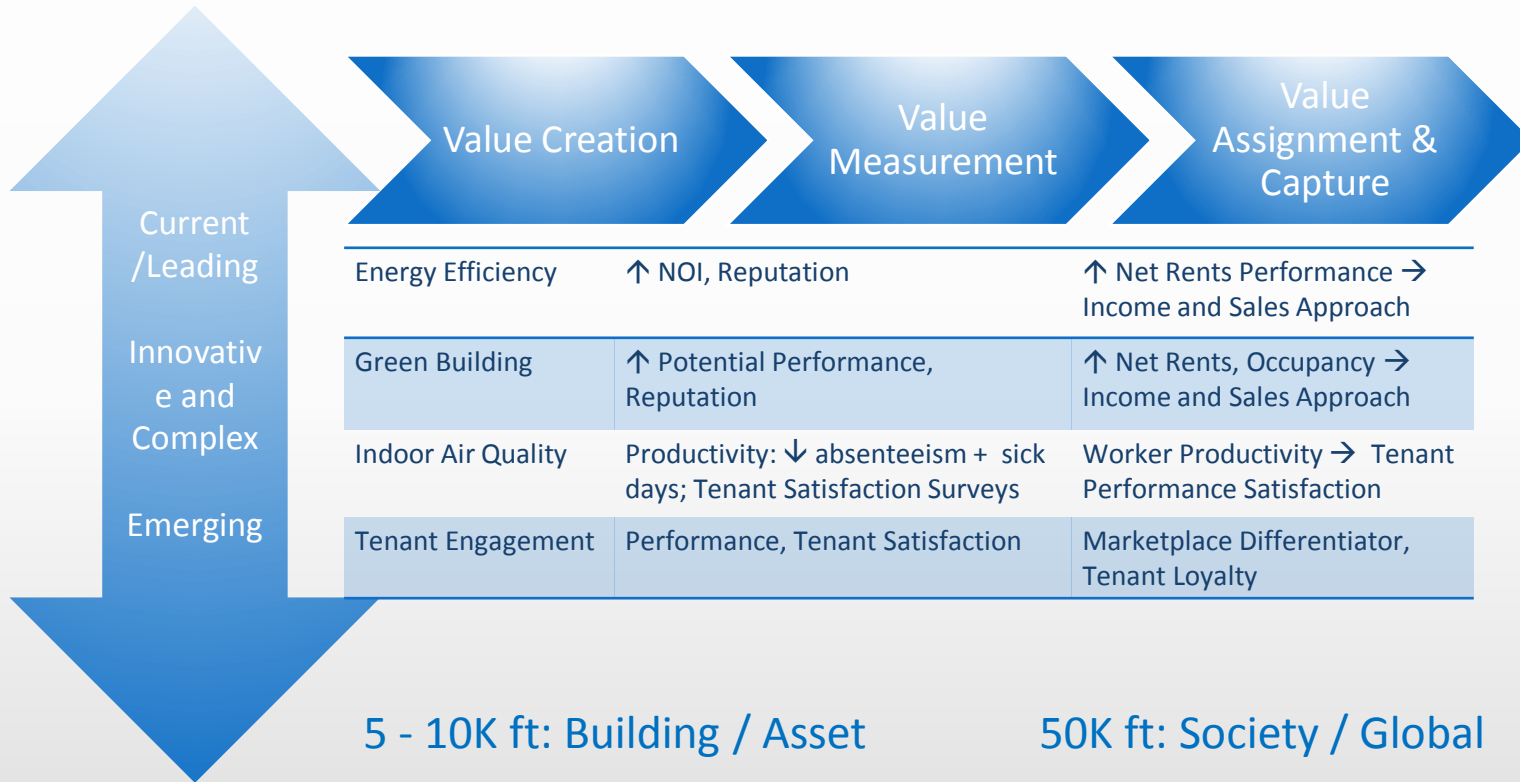
- ▶ For valuations – data is King
- ▶ Lack of empirical data has proven a challenge
- ▶ New DOE course addresses energy in the valuation process plus
- ▶ Three DOE tools:
 - Portfolio Manager
 - Asset Score
 - Buildings Performance Database



**John Scott, Colliers International and
Devesh Nirmul, Renew Financial**

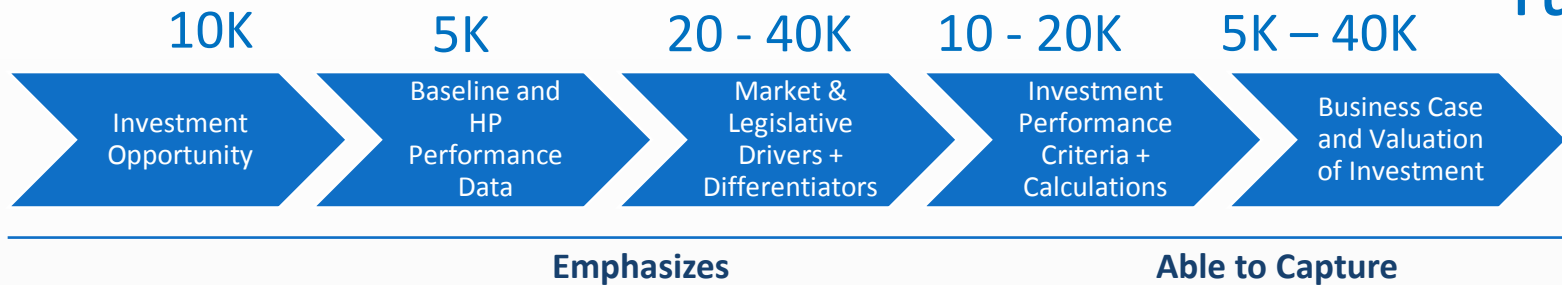
Valuation: The Sustainability Factor

50K
ft



Path to HP Valuation + Standard Valuation Approaches

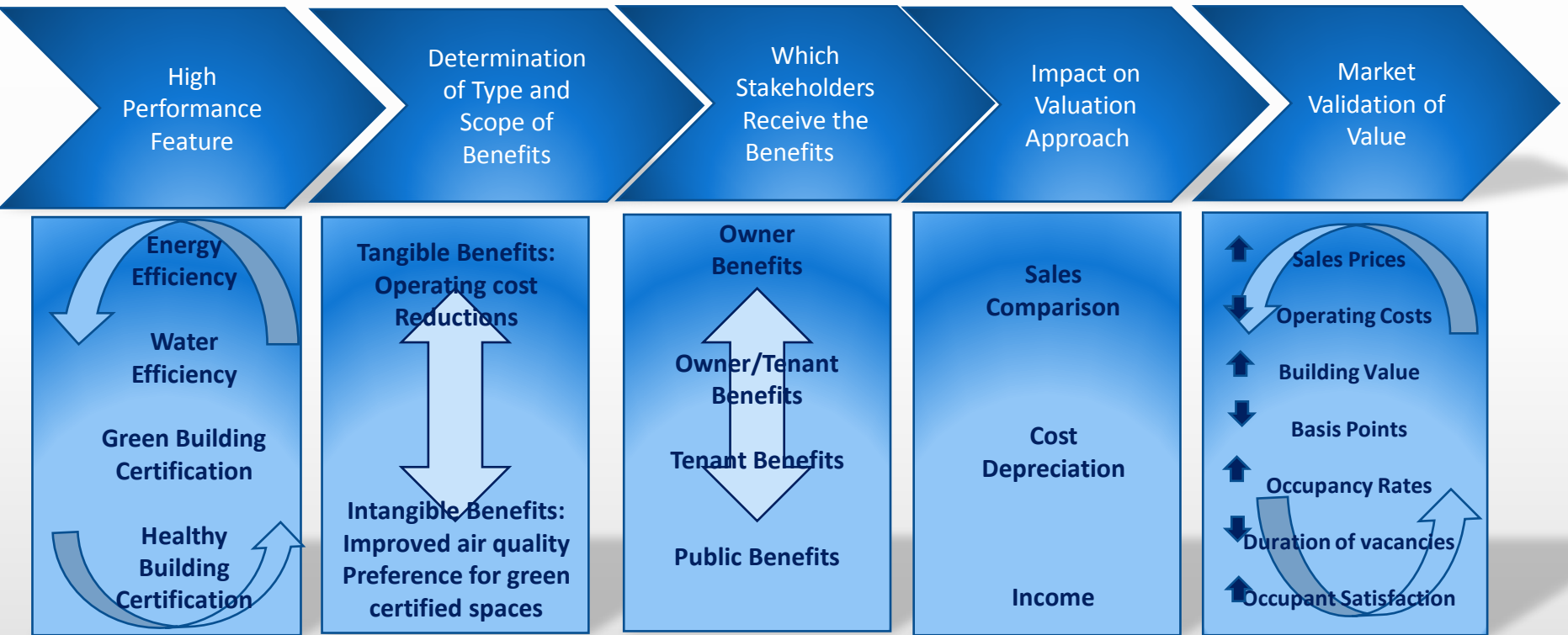
40K
ft



Income	Operating Expenses and Revenue	Energy Efficiency, Demand for Green Certified Spaces, Sustainability Dividends: DR, Storage, Renewables
Sales	Industry, Geographical and Market Preferences	Demand (H, M, L) for Green Certified Spaces
Cost Depreciation	Building and Equipment Useful Life	High-performance equipment's superiority over mediocre equivalents

What are We Valuing? How Tangible is it? Who Does it Matter to?

40K ft



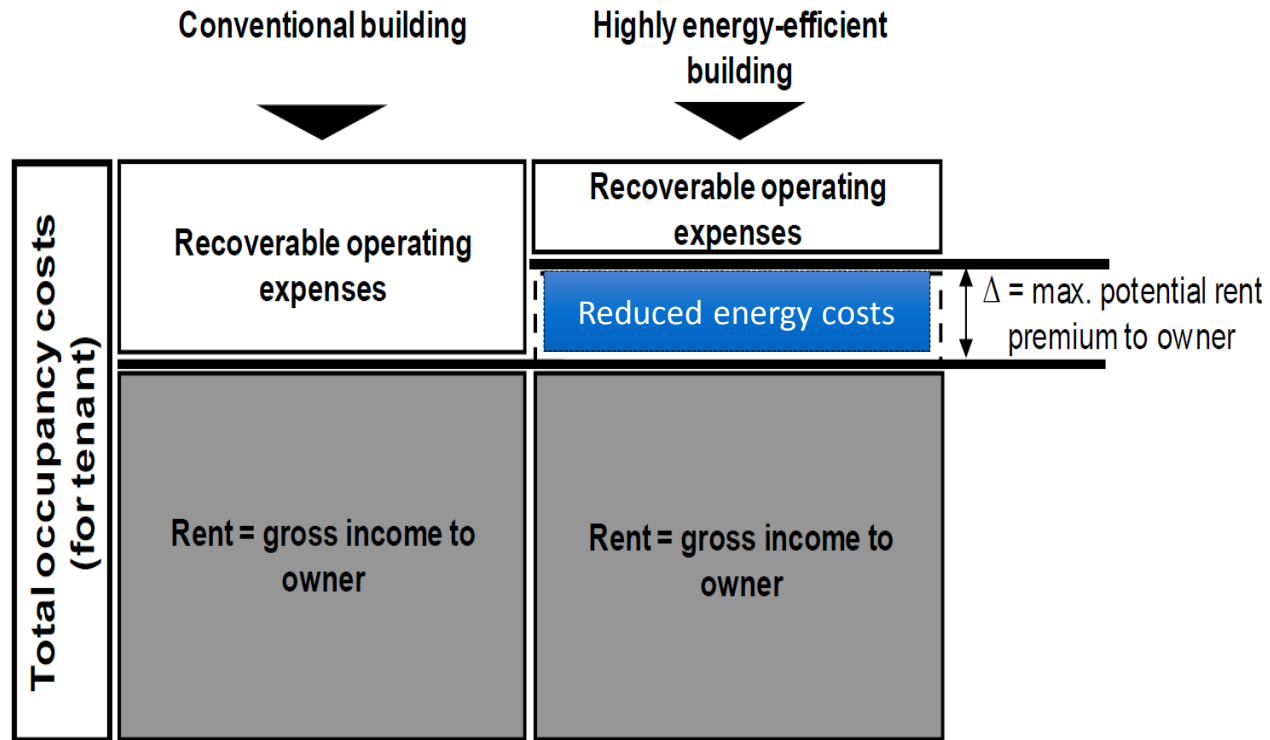
Empirical Validation of HP Value Impact on Key Performance Metrics

30K ft

Variable \ Country	USA (Mc Graw, Hill Construction 2005)	USA (Mc Graw, Hill Construction 2008)	USA (Miller et al. 2008, using CoStar Database)	USA (Fürst, McAllister, 2008, using CoStar)	USA (Eichholtz et al. 2009, using CoStar Database)	Australia (Bowman, Willis 2008)
Rental Growth for non-Green	-	-	-	-	-	-1.50%
Rent Premium for Green	3.00%	6.10%	-	-	3.00%	X
Energy Star	-	-	2.80%	-	-	
LEED	-	-	0.30%	-	-	
Energy Star/LEED	-	-	-	11.80%	-	
Effective Rent	-	-	-	-	6.00%	-
Decrease Operating Expenses	8.00-9.00%	13.60%	-	-	-	-
Reduction cap rate	-	-	-	-	-	25-50 BP
Improved ROI	13.60%	9.90%	-	-	-	-
Increase occupancy ratio	3.50%	6.40%	-	-	-	-
Market value	7.50%	10.90%	-	-	-	-
Selling price	-	-	-	-	16.00%	X
Energy Star	-	-	5.76%	10.00%	-	
LEED	-	-	9.94%	31.00%	-	
Energy Star/LEED	-	-	-	11.40%	-	

Building Level: Energy Efficiency and the Income Approach: OpEx, NOI, Cap Rates

20K ft



Source: Integration of Energy Performance and Life-Cycle Costing into Property Valuation Practice, www.immvalue.org

Building Level: Income Approach Hypothetical Scenario

10K ft

	Pre-Upgrade Value (10% cap rate)	High Performance Value (10% cap rate)	Improvement in Value
Energy Efficiency Only Scenario (Energy efficiency improvements that result in a 30% reduction in overall operating expenses)	Gross income: 150K Adjusted gross income (assuming 5% vacancy/losses): 142.5K Operating expenses: 70.0K Value: 725K	Gross income: 150K Adjusted gross income (assuming 5% vacancy/losses): 142.5K ↓ Operating expenses: 49K ↑ Value: 935K	210K
Energy Efficiency + Increased Occupancy (Increased Occupancy Rate Impacts based on tenant demand for green certified spaces)	Same as above	Gross income: 150K ↑ Adjusted gross income (assuming 3% vacancy/losses): 145.5K ↑ Operating expenses: 51K Value: 945K	220K

Know Your Unique Situation: Value Impact Assessment

5K ft

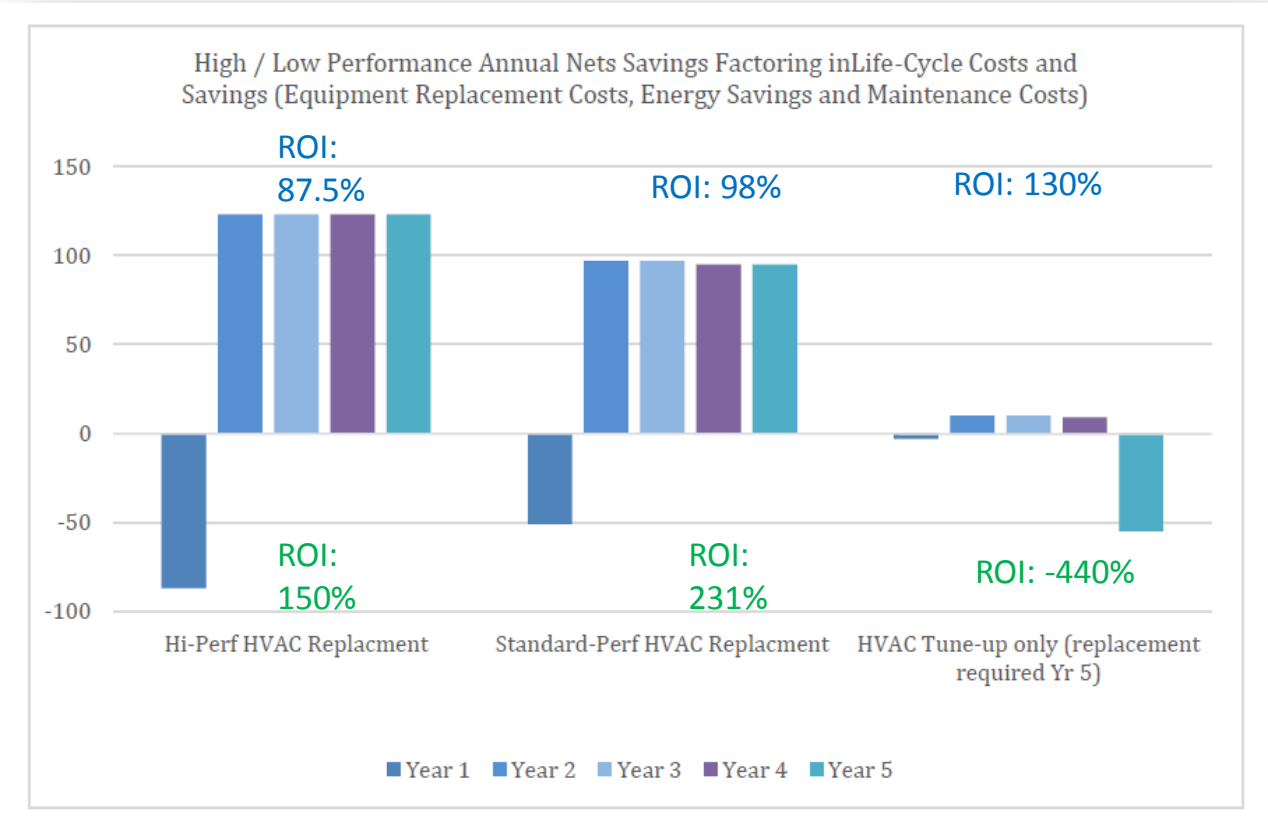
Upgrade / Value Impact Considerations	Revenue	Expenses (Energy, Water + Labor)	Gross Lease Rates	Capital Funds Required	Asset Hold Period (< 5yrs)	Asset Hold Period (> 10 yrs.)	NOI Impact
Major HVAC Equipment: 20 – 25 yr. life-cycle		↓	↓ (More competitive by minimizing operating costs)	High	No	Yes	↑
HVAC Equipment Recommissioning: 5 – 10 yr. life-cycle		↓	↓	Low/Medium	Maybe	Yes	↑
Lighting Upgrade 5 – 10 yr. life-cycle		↓	↓	Low / Medium	Yes	Yes	↑
Thermal Mass Storage Modeling + Economic Demand Response: perpetuity	↑	-	↓	Medium (market dependent)	Maybe	Yes	↑
LEED Certification					No	Yes (future demographics or tenants)	↑

Reconciling Valuation with Investment Decisions: 5K ft NPV/Discount Rate, ROI, Life-Cycle Analysis, Bundling

Asset Hold Time:

3yrs

5 yrs



Dave Pogue,
CBRE



**THE BUSINESS OF
GREEN**

and the road ahead.

Sustainability Overview

Dave Pogue

CBRE



INDUSTRY PROGRESSION

THEN (2000)

NOW (2016)

EPA ENERGY STAR®

- First label for commercial building
 - Fewer than 500 buildings
 - No cities or states with energy disclosure regulations
 - No commercial real estate firm chosen “Partner of the Year”
- More than 400,000 buildings benchmarked
 - More than 25,000 labels (500 in LA, Chicago and Washington DC)
 - Certification Nation – CBRE 406 buildings alone
 - 14 cities/states adopting disclosure laws with more pending
 - 13 real estate firms are “Partner of the Year”

LEED®

- First LEED certification launched for new construction
 - No buildings officially certified
 - No LEED AP/GA designation
- Globally recognized brand
 - 4 billion sq. ft. certified in every major global market
 - More than 220,000 LEED APs/GAs

TRANSPARENCY | REPORTING

- GRI (14 firms respond globally)
 - CDP taking shape
 - GRESB does not exist
- All but one S&P 500 firm reported to either GRI (3,500 firms) or CDP (6,000 firms)
 - GRESB has more than 700 investment funds reporting, valued at more than \$2.2 trillion

GREEN BUILDING ADOPTION INDEX

About GBAI

CHIEF OBJECTIVE:

Quantify and understand the dynamics of certified green building space in top 30 U.S. markets

LEADER:

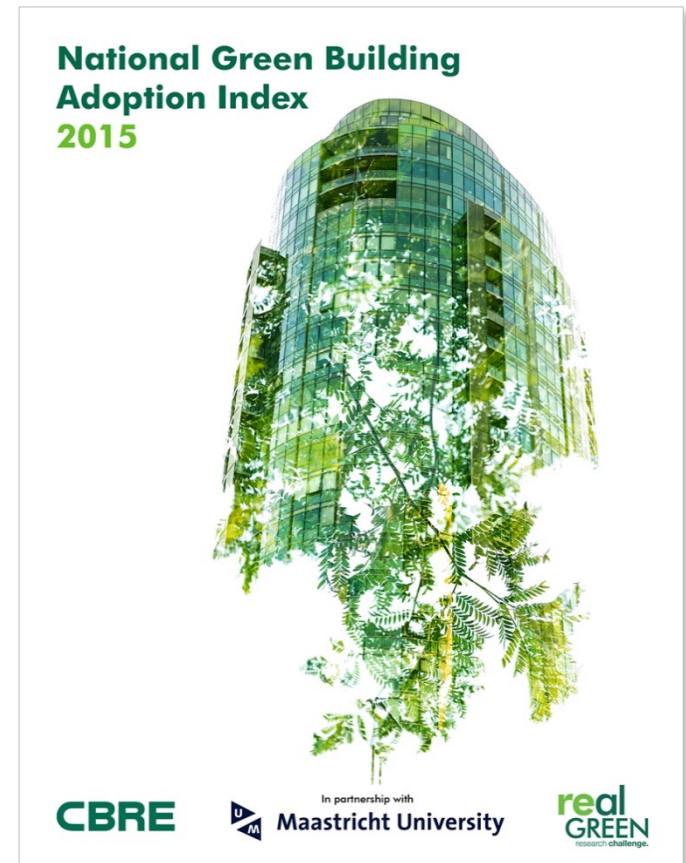
Dr. Nils Kok, Maastricht University; in collaboration with Rogier Holtermans, Maastricht University

DATA ACQUISITION:

- USGBC
- CBRE Research

TO DATE:

- 3.5 billion sq. ft.
- 34,000 buildings



GREEN BUILDING ADOPTION INDEX

Expansion

	2005	2015
Total sq. ft. of Green Buildings	5.6%	39.3%
Total # of Green Buildings	1.5%	13.2%
Total sq. ft. of ENERGY STAR Labeled	5.1%	30.3%
Total # of ENERGY STAR Labeled	1.3%	10.2%
Total sq. ft. of LEED Certified	.40%	19.4%
Total # of LEED Certified	.14%	5.1%
Total sq. ft. of LEED EB Certified	.11%	15.4%
Total # of LEED EB Certified	.03%	3.1%



GREEN BUILDING ADOPTION INDEX

Size Tranches

	Under 100K SF	100- 250K SF	250- 500K SF	500K+ SF
Total sq. ft. of Green Buildings	7.0%	26.4%	67.1%	76.0%
Total # of Green Buildings	4.5%	24.4%	54.6%	62.3%
Total sq. ft. of ENERGY STAR Labeled	5.1%	20.7%	46.8%	50.3%
Total # of ENERGY STAR Labeled	3.1%	19.2%	39.6%	43.5%
Total sq. ft. of LEED Certified	2.1%	8.8%	39.9%	50.7%
Total # of LEED Certified	1.5%	7.9%	29.0%	38.8%





Discussion

Thank you!

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