DO GREEN BUILDINGS Make Dollars & Sense?

An analysis of operating costs, worker productivity and the benefits of LEED[®] certification in a commercial office portfolio

Green Building Study ver. 2.0

BURNHAM – MOORES





BOGIEN BUILDINGS MAKE Dollars & Sense



Moderator

David L. Pogue, LEED[®] AP[®] National Director, Sustainability CB Richard Ellis, Inc.

Presenters

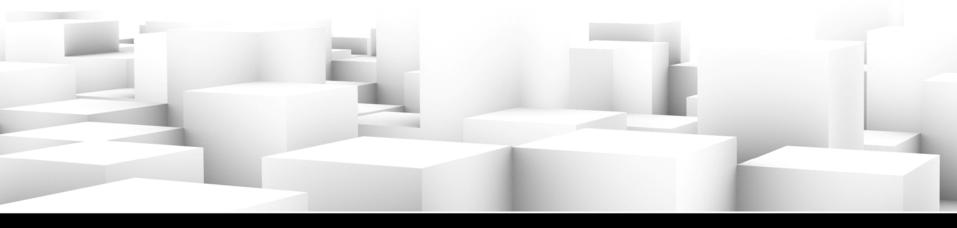
Charles C. Tu, Ph.D.

Mulvihill Professor of Commercial Real Estate

Burnham-Moores Center for Real Estate University of San Diego Harvey M. Bernstein, F.ASCE, LEED[®] AP[®]

Vice President, Global Thought Leadership & Business Development

McGraw-Hill Construction

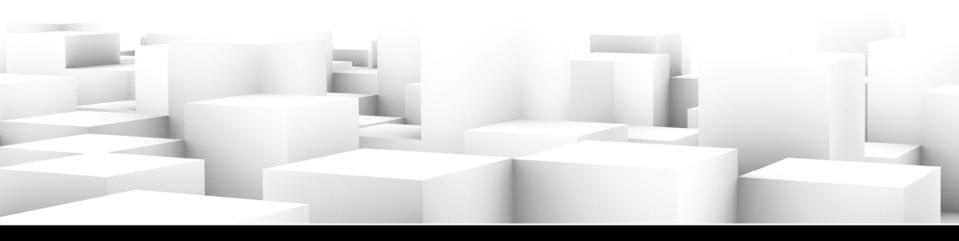


about us | survey | white paper | faq | contact us © 2010 CB Richard Ellis/Burnham-Moores Center for Real Estate



The Study

David L. Pogue, LEED AP CB Richard Ellis



about us | survey | white paper | faq | contact us © 2010 CB Richard Ellis/Burnham-Moores Center for Real Estate

BOGEREN BUILDINGS MAKE Dollars & Sense



David L. Pogue

Results

Reduced long-term costs, improved health benefits and higher productivity

Evidence Is Stacking Up

Doing Well By Doing Good? Green Office Buildings Eicholtz, Kok and Quigley; Greening of Corporate America SmartMarket Report McGraw-Hill Construction; **Do Green Buildings Make Dollars and Sense?** CB Richard Ellis/Burnham-Moores Center for Real Estate (University of San Diego); **Pricing Sustainability** Fuerst, Franz and Patrick McAllister; **Does Green Pay Off?** Miller, Spivey and Florance; Green Design and the Market for **Commercial Office Space** Wiley, Benefield and Johnson; Urban Green Council Study prepared for the UGC by **Davis Langdon; Why Do Companies Rent Green?** choltz, Piet, Kok and Quigley; **Socially Responsible** Property Investment Ellison, Sayce and Smith; **Estimates of Improved Productivity and Health** from Better Indoor Environments Fisk and Rosenfeld



Data Points:

Development USD (2009-10) McGraw-Hill (2010)

Survey Set CBRE-managed office space

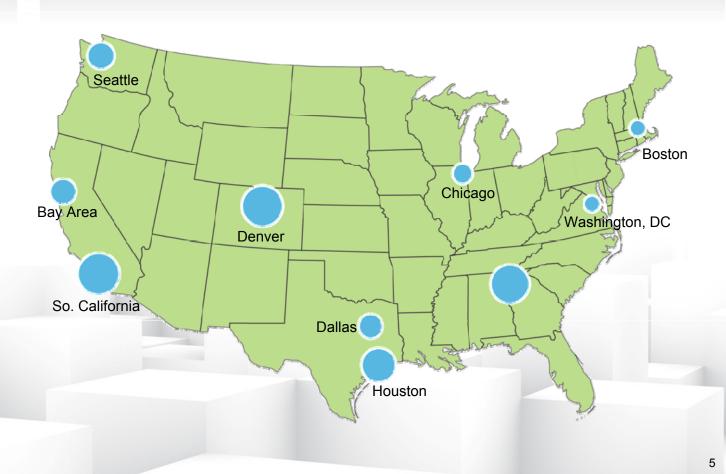
156 Buildings Nationwide

588 Tenants of 2,500 surveyed

52,506,624 SF Rentable Space

Avg. 88 ENERGY STAR

Survey Locations



David L. Pogue

BOGREEN BUILDINGS MAKE BOOLAAS SEASE Green Buildings



Tenants in green buildings claim higher productivity levels and fewer sick days

Separate metering impacts energy savings

Rental rates higher and occupancy equal to/better than overall market

2010 Findings

Higher occupancy and rental rates Postive influence on employees Interesting insights on LEEDI REALESTATE Building Management & OCCUPANT STUDY

David L. Pogue

Bogilars & Sense



David L. Pogue

Insight:

"We must prioritize greening our cities, and cost is not the barrier some have made it out to be." Urban Green Council Study (2009)

Powerful Forces

Attitudes + Business Practices

have pushed the green building movement forward



GREENBUILD 2010 / Chicago, IL

BOGEREN BUILDINGS MAKE Dollars & Sense



Attitudes & Behavior

Perceptions of Green Space by Tenants and Occupants in a Large CBRE Managed Real Estate Portfolio

Charles Tu, Ph.D.

University of San Diego



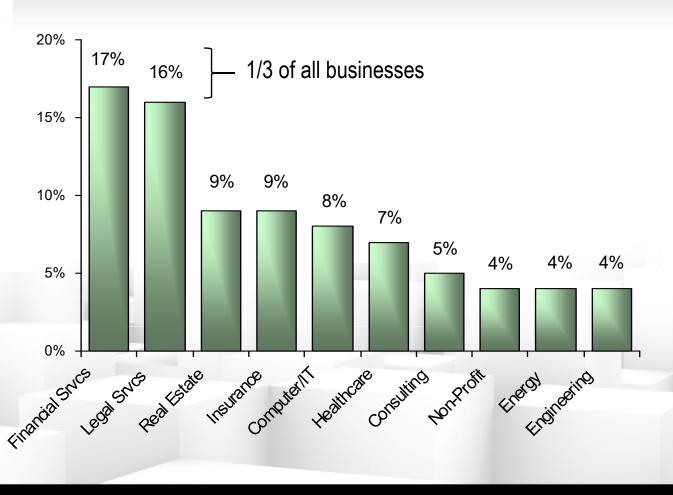


Reveal:

Financial and Legal Services comprised 33% of sample

Top 10 industries represent 82% of the total sample

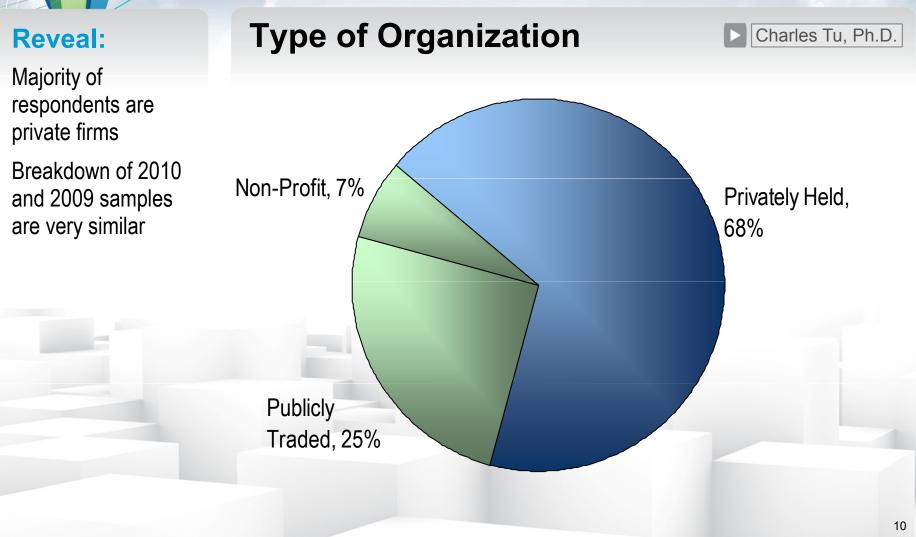
Type of Business



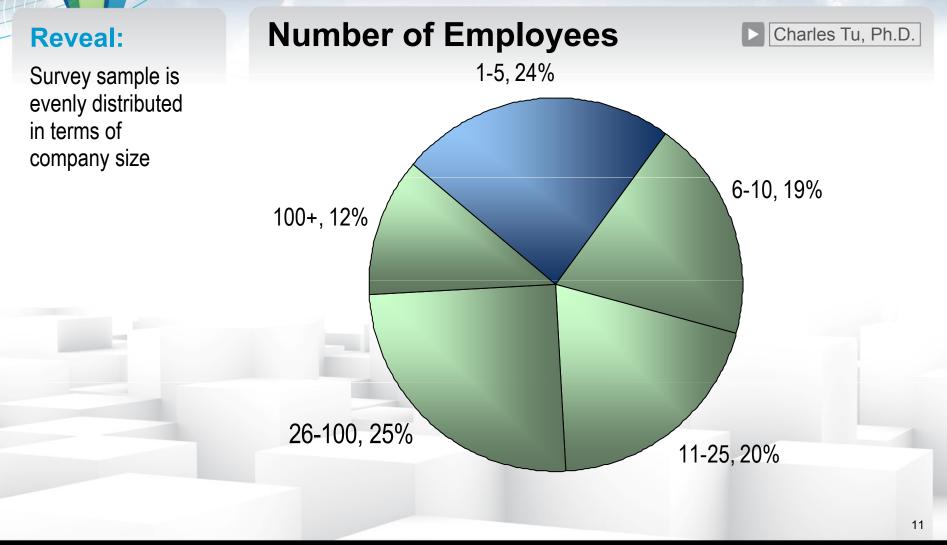
9

Charles Tu, Ph.D.

BOGREN BUILDINGS MAKE DOBLASS & SENSE UCUPANT STUDY



BOGREN BUILDINGS MAKE DOBLASS & SENSE CCUPANT STUDY



BOGIES BUILDINGS MAKE Dollars & Sense



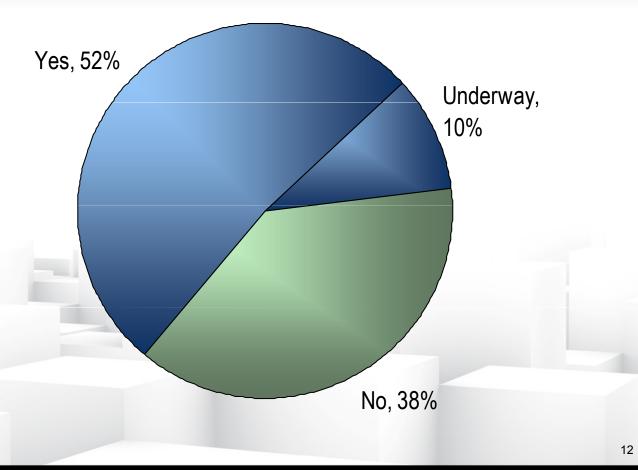
Charles Tu, Ph.D.

Reveal:

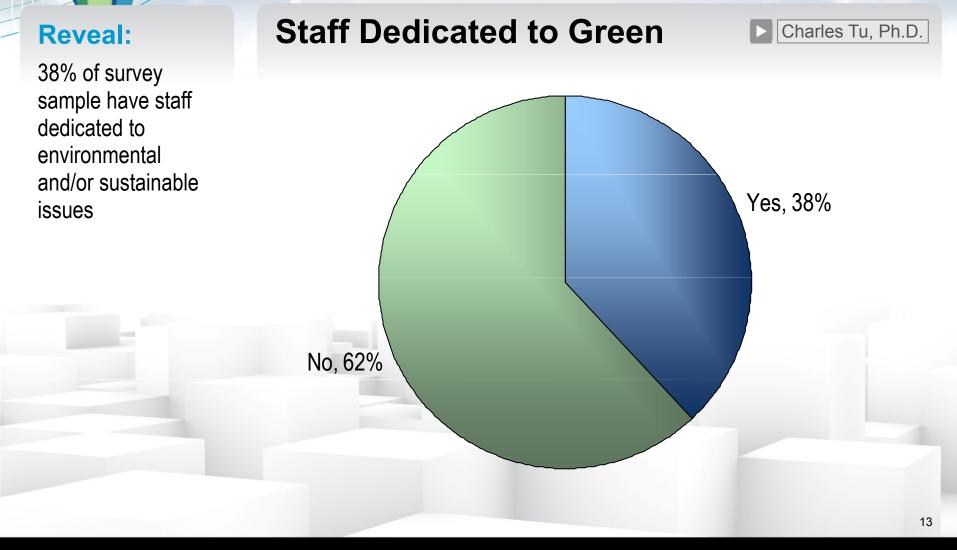
At time of survey:

- Approx. 1/2 of respondents in LEED buildings
- 10% undergoing LEED certification process

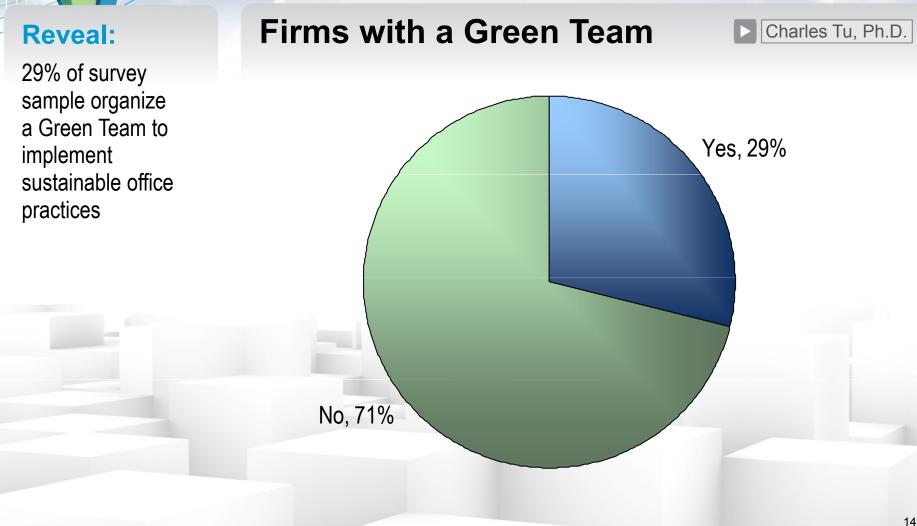




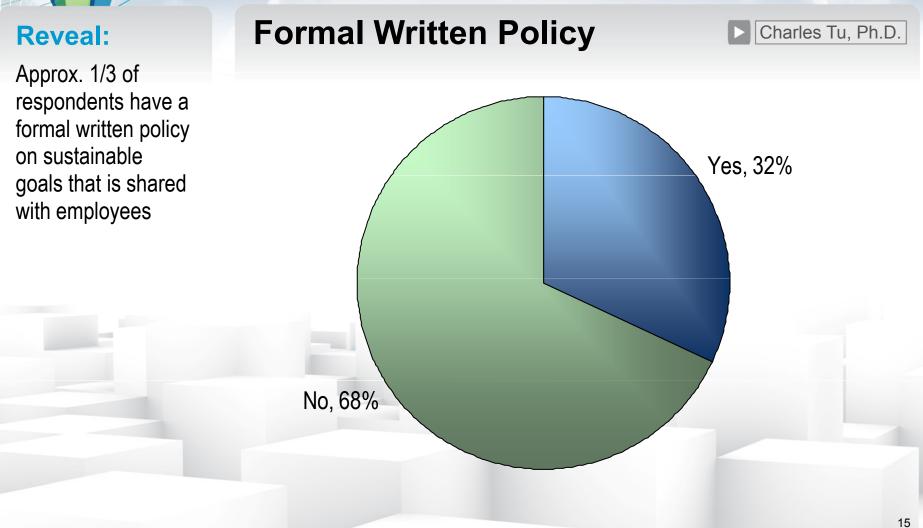
BOGREN BUILDINGS MAKE DODIDATS & SENSE UNIT MARGEMENT & COUPANT STUDY



BOGREN BUILDINGS MAKE DODIDATS & SENSE BUILDINGS MAKE DODIDATS & SENSE BUILDINGS MAKE BUILDINGS MAKE DOCUPANT STUDY



BOGREN BUDDINGS MAKE DODIDATS & SENSE UNIT MARAGEMENT & COUPANT STUDY



BOGILARS & SENSE



Charles Tu, Ph.D.

Reveal:

About 3/4 of those with a written policy also share it with clients

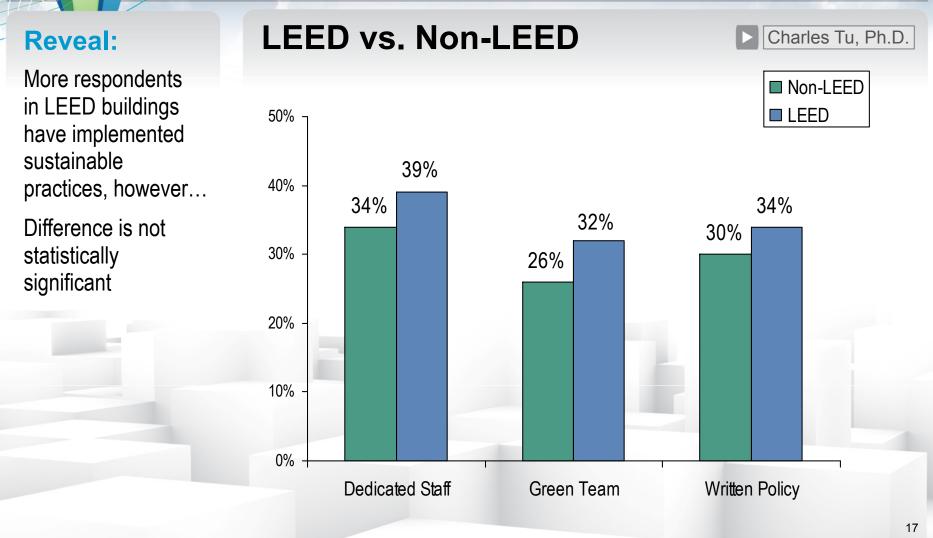
Overall, more than 1/2 of survey respondents have implemented sustainable practices

Policy Shared with Clients

No, 27% Yes, 73%

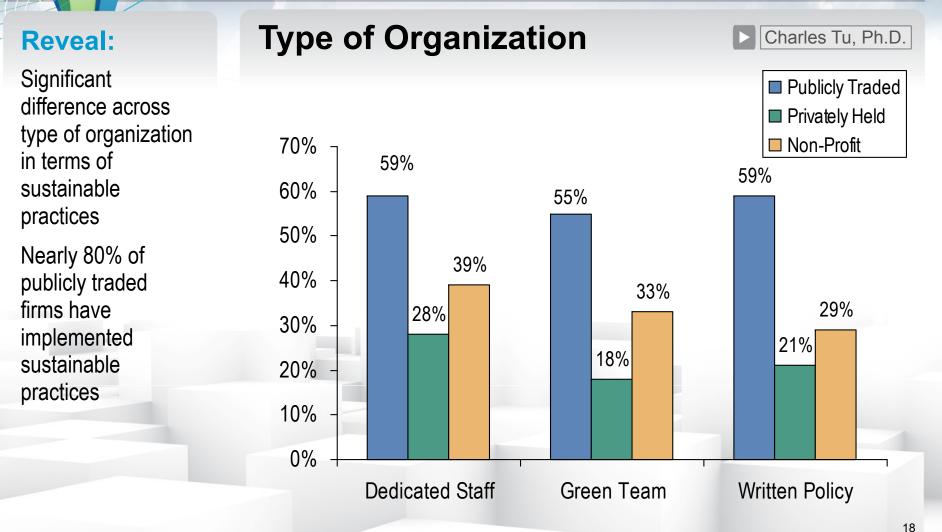
BOGILARS & SENSE





BOGEREN BUILDINGS MAKE Dollars & Sense





about us | survey | white paper | faq | contact us © 2010 CB Richard Ellis/Burnham-Moores Center for Real Estate

BOGIEN BUILDINGS MAKE Dollars & Sense



Reveal:

The firm's size has a significant impact on implementing certain sustainable practices



Charles Tu, Ph.D.



Dollars & Sense



Charles Tu, Ph.D.

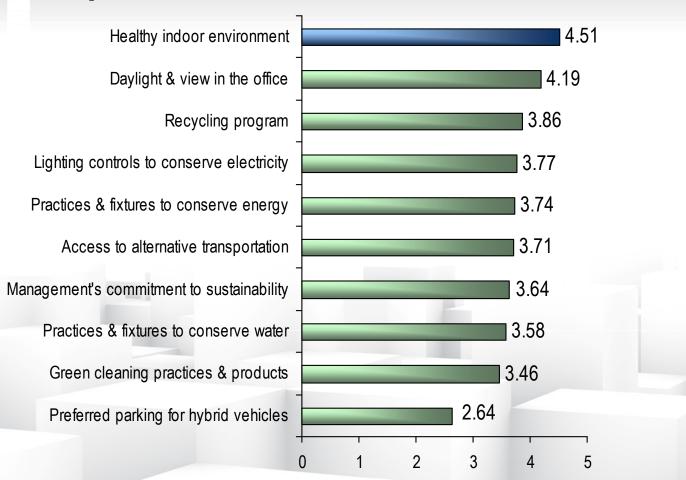
Reveal:

Survey respondents consider green features important when selecting office space

On a scale of 1-5, average rating is 3.71

Healthy indoor environment is the No. 1 factor

Importance of Factors



about us survey white paper faq contact us © 2010 CB Richard Ellis/Burnham-Moores Center for Real Estate

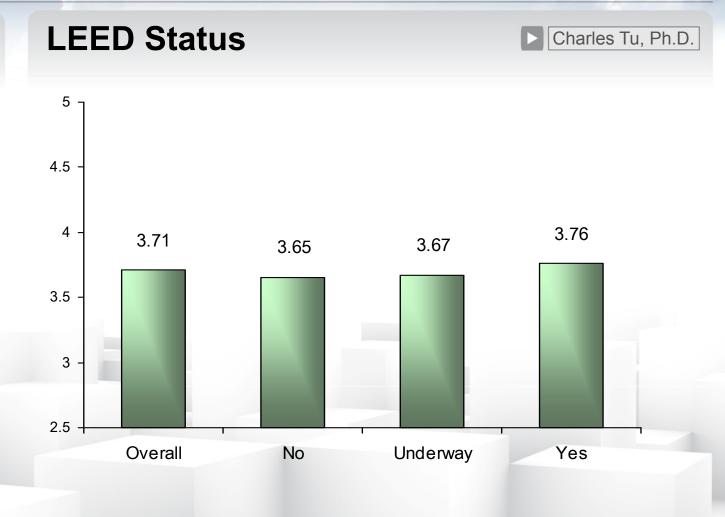
GREENBUILD 2010 / Chicago, IL

BOGIEN BUILDINGS MAKE Dollars & Sense



Reveal:

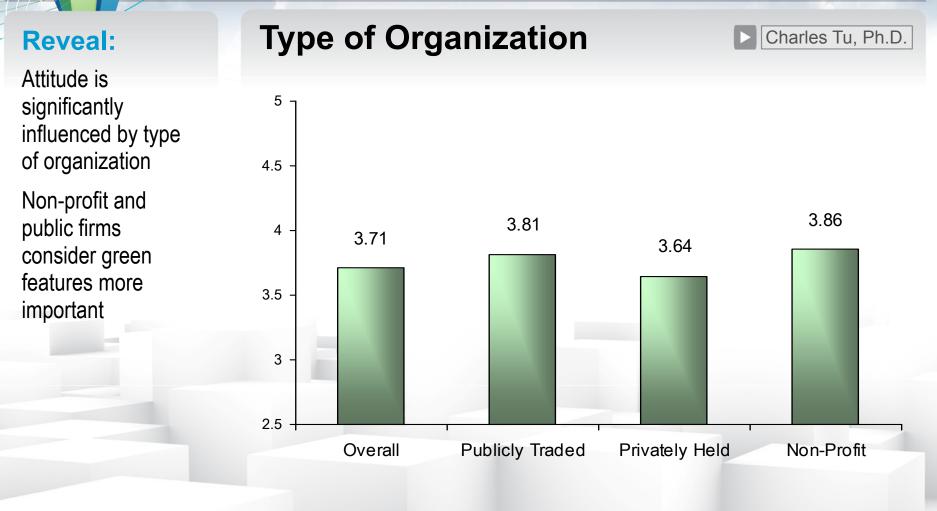
Attitudes toward green features not affected by LEED status of building



about us | survey | white paper | faq | contact us © 2010 CB Richard Ellis/Burnham-Moores Center for Real Estate

GREENBUILD 2010 / Chicago, IL

BOGRENBULDINGSMAKE DOLLARS & SENSE BUDDIALS & SENSE BUDDIALS & COLUPANT STUDY



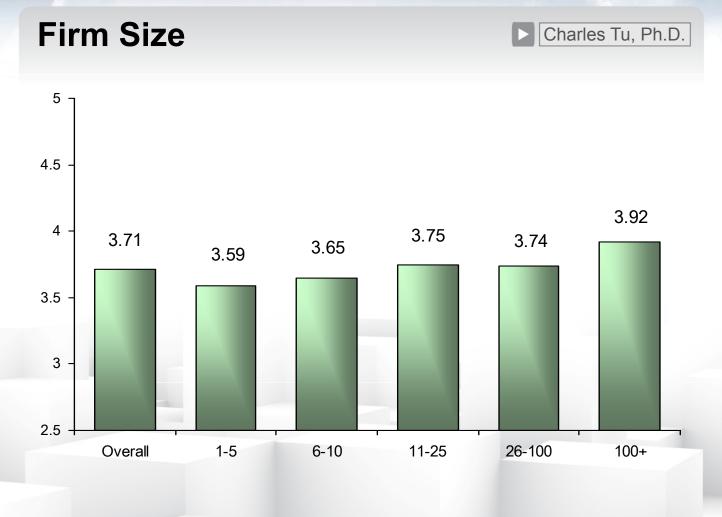
GREENBUILD 2010 / Chicago, IL

BOGIES BUILDINGS MAKE DOIIars & Sense



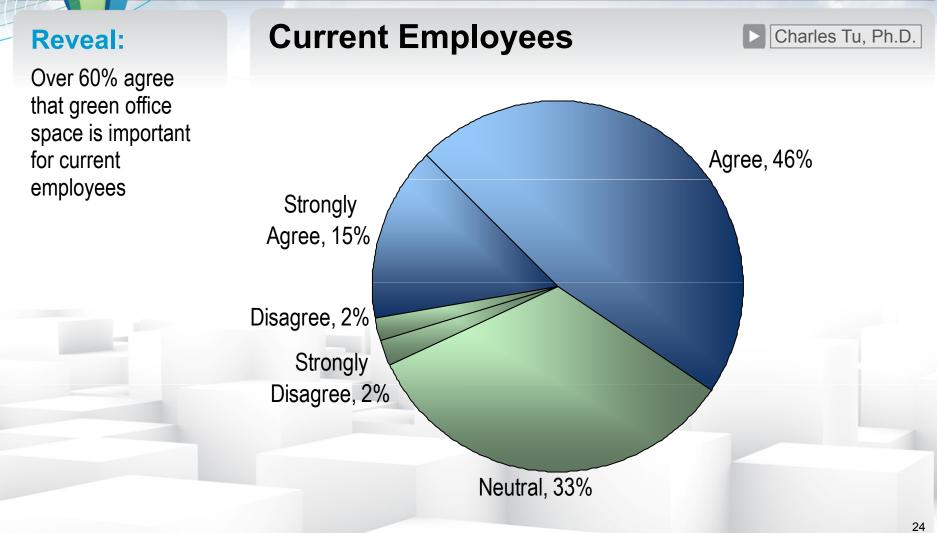
Reveal:

Firm size also has quite significant effect on the attitude

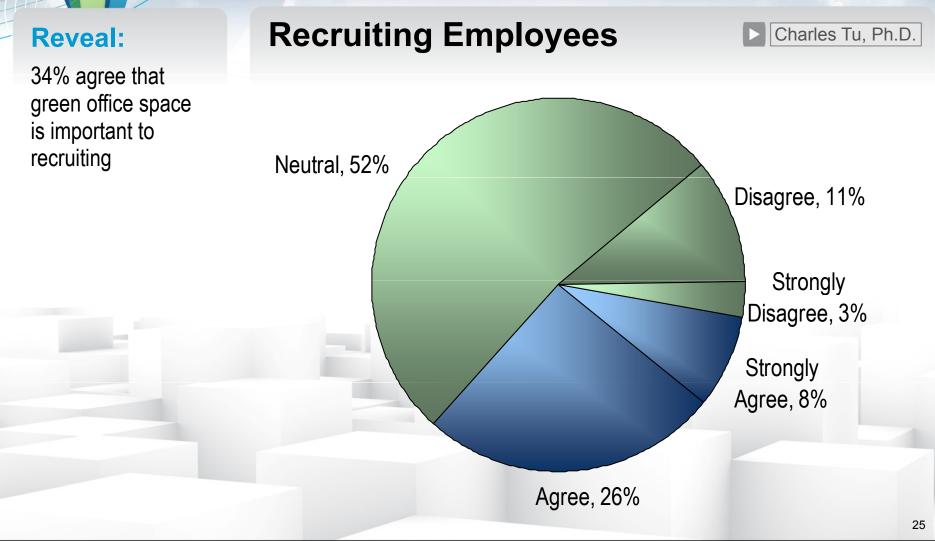


BOGEREN BUILDINGS MAKE Dollars & Sense

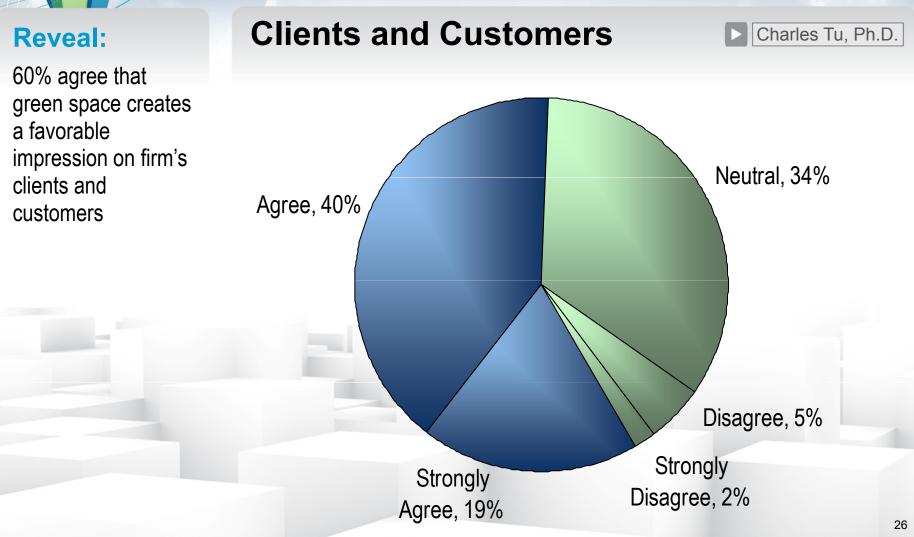




DOGRASSASSENSE UIDINGS MAKE UID



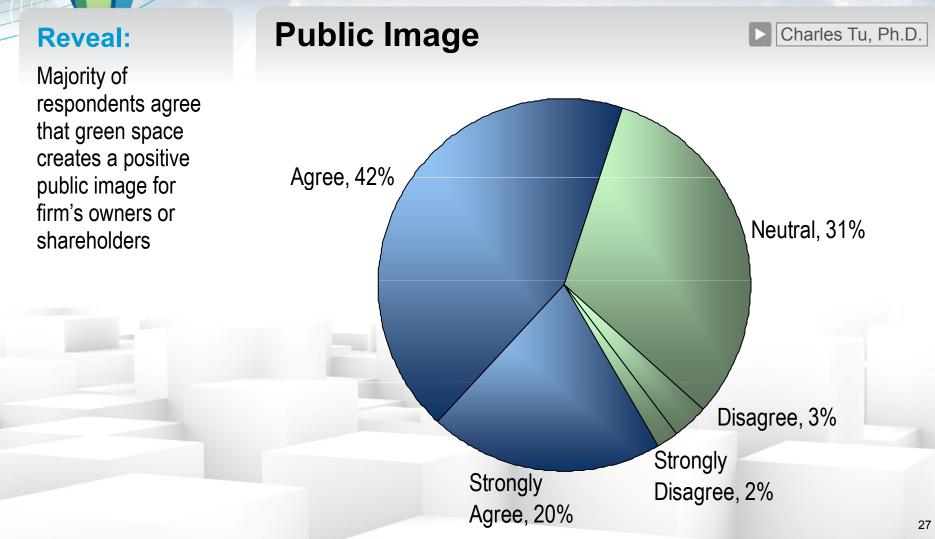
BOGEREN BUILDINGS MAKE DOCIDATS & SENSE CCUPANT STUDY



about us survey white paper faq contact us © 2010 CB Richard Ellis/Burnham-Moores Center for Real Estate

BOGILARS & SENSE





BOGILARS & SENSE

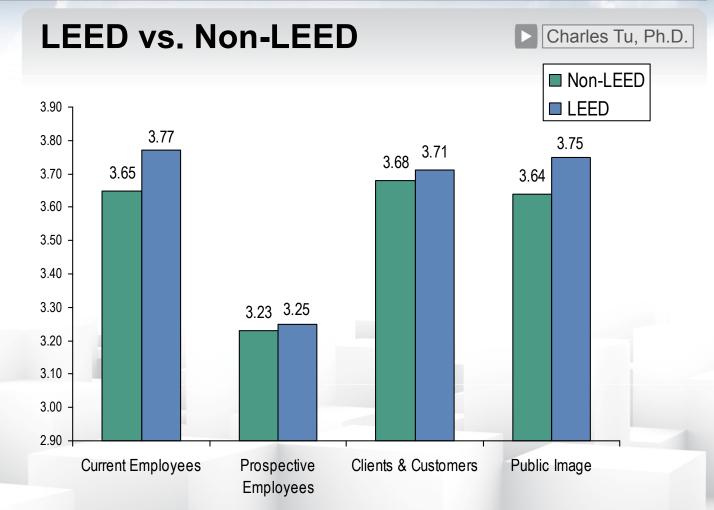


Reveal:

Respondents in LEED buildings: green space important for current employees and public image

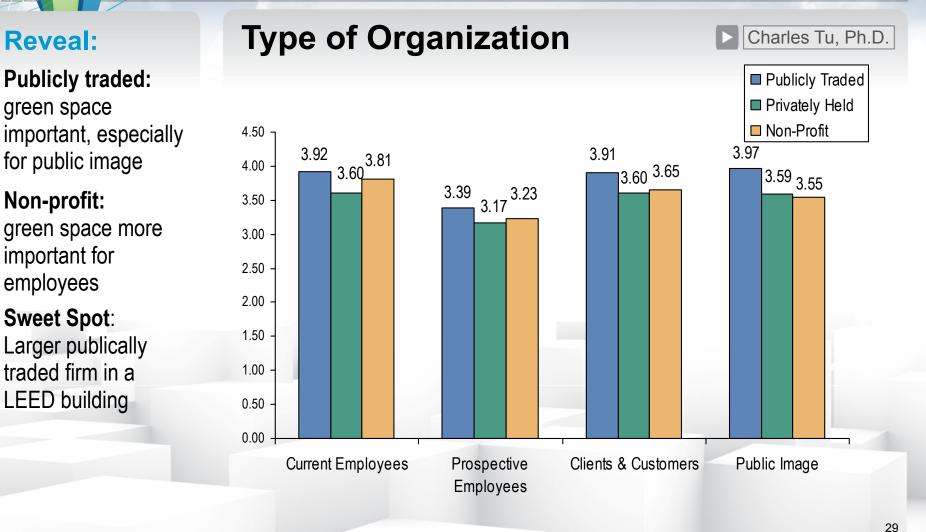
Respondents in non-LEED buildings: green space more important for clients and customers

In all aspects, respondents in LEED buildings felt more strongly



BOGEREN BUILDINGS MAKE Dollars & Sense





about us survey white paper faq contact us © 2010 CB Richard Ellis/Burnham-Moores Center for Real Estate

BOGER BUILDINGS MAKE Dollars & Sense

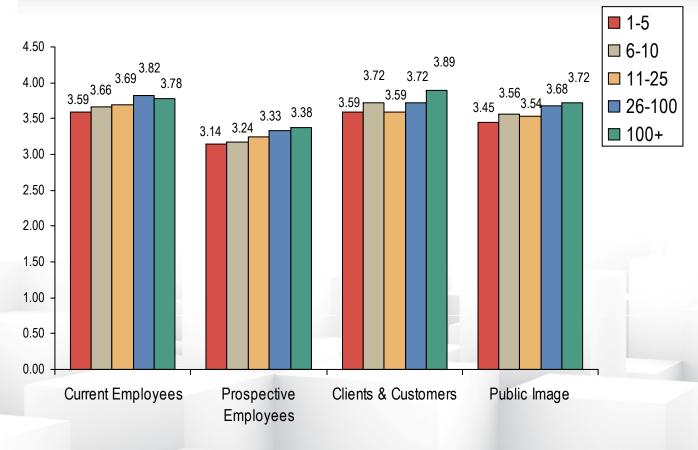


Reveal:

Larger firms: green space more important

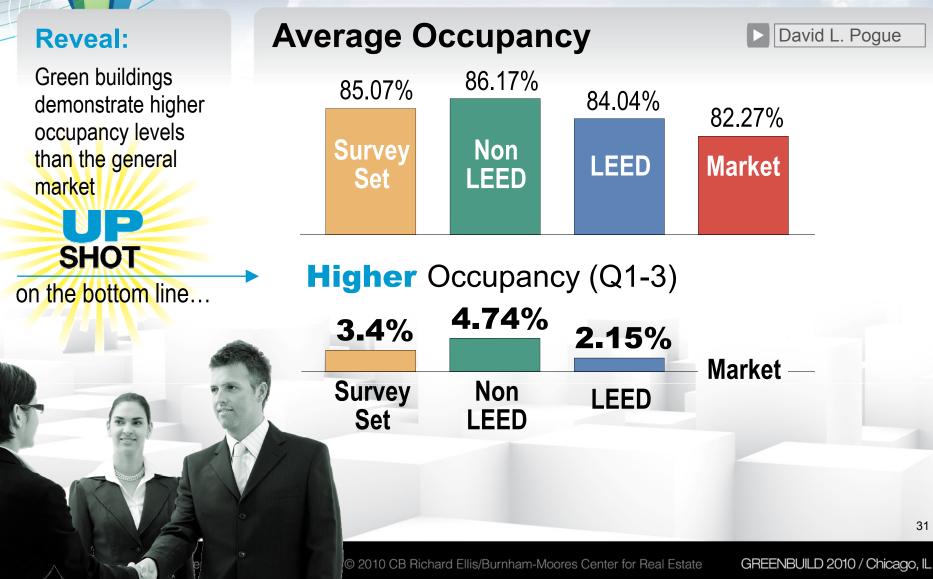
Size of Firm

Charles Tu, Ph.D.

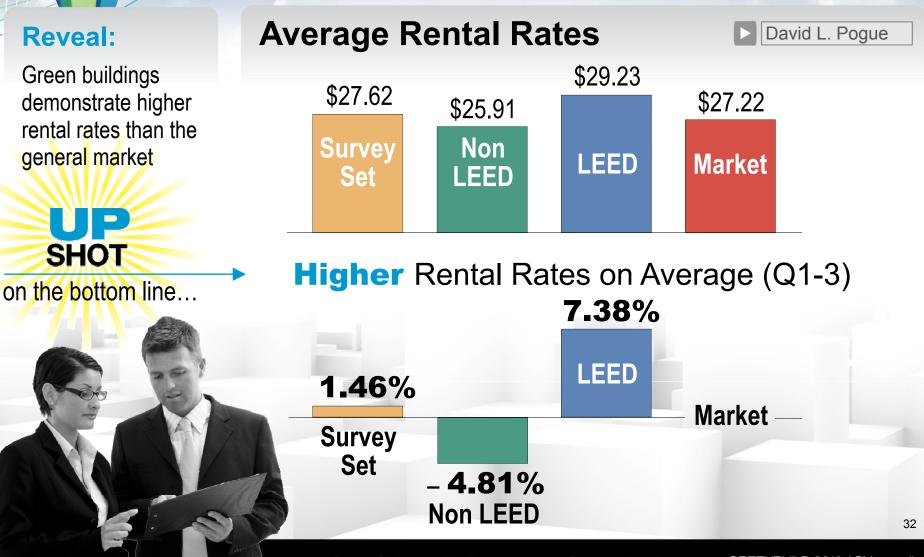


BOGIEN BUILDINGS MAKE Dollars & Sense





BOGEREN BUDDINGS MAKE DOBLASS & SENSE UNIT MANAGEMENT & COUPANT STUDY



tact us





Business Practices

Key Factors Driving Green Growth for Owners, Building Managers & Occupants

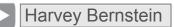
Harvey Bernstein

F.ASCE, LEED AP McGraw-Hill Construction





Objective:



Understand Business and Human Factor Benefits as a Key Driver to Green

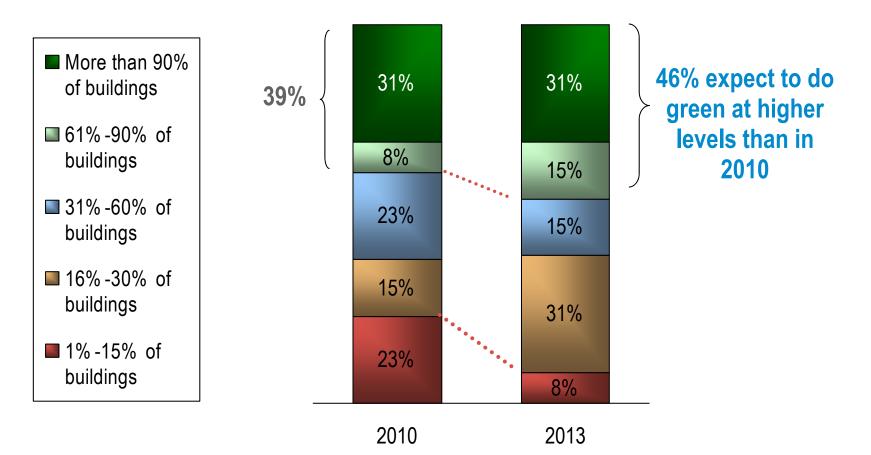
Agenda

- Owners Involved in LEED Commercial Buildings
- Building Manager Perspectives on LEED Commercial Buildings
- Occupants Experiences Working in Green Office Buildings
- Green Building Trends

Owners Involved in LEED Commercial Buildings



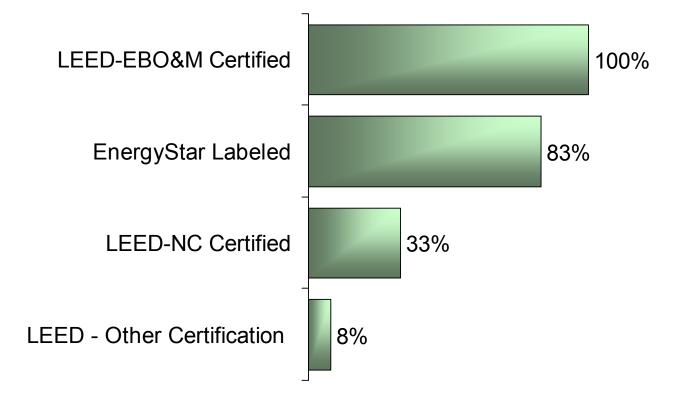
Commercial Building Owners Expect Increased Green Building Activity in 3 Years



Harvey Bernstein

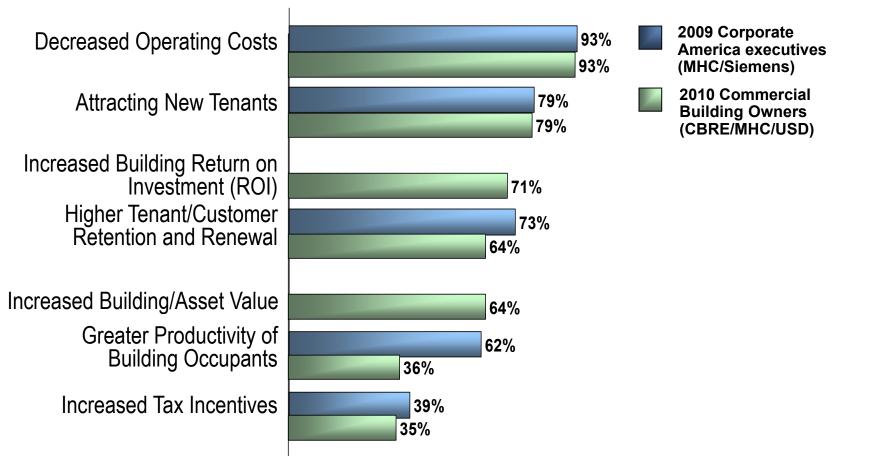


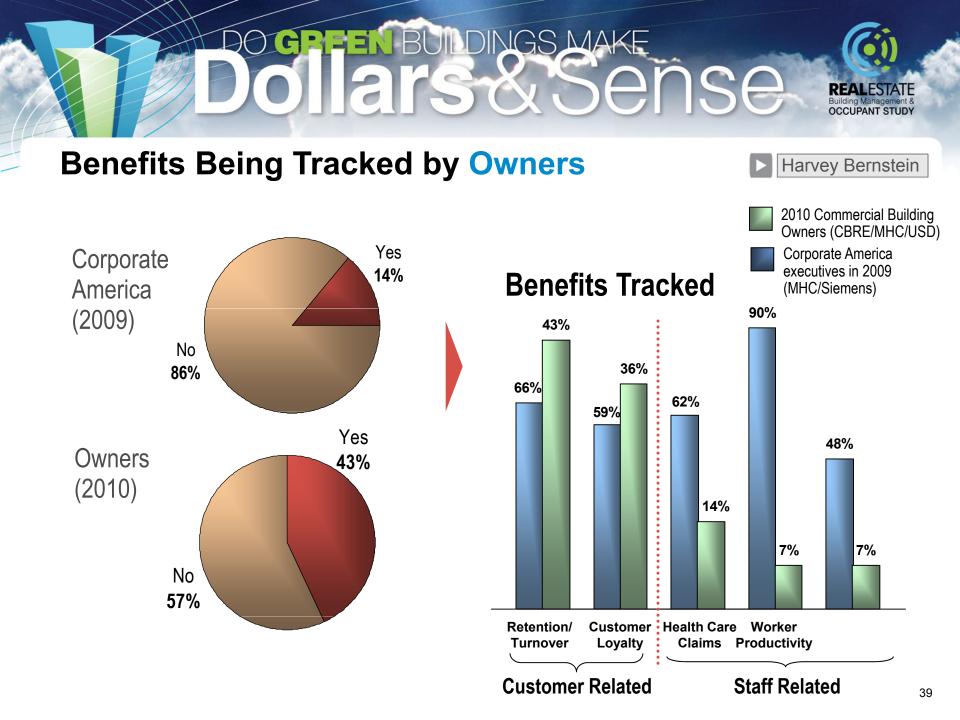
All Owners Expect to Pursue LEED Certification on Other Existing Buildings





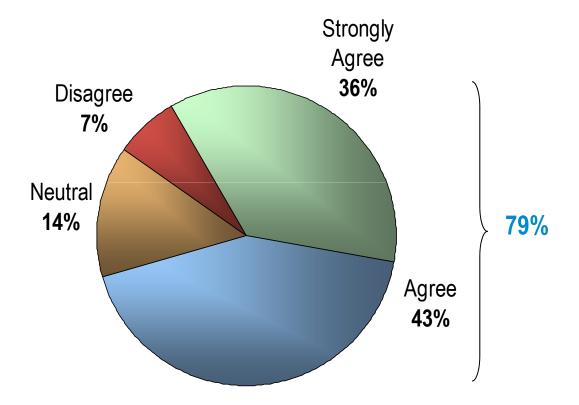
Owners Expected Benefits from Green Buildings







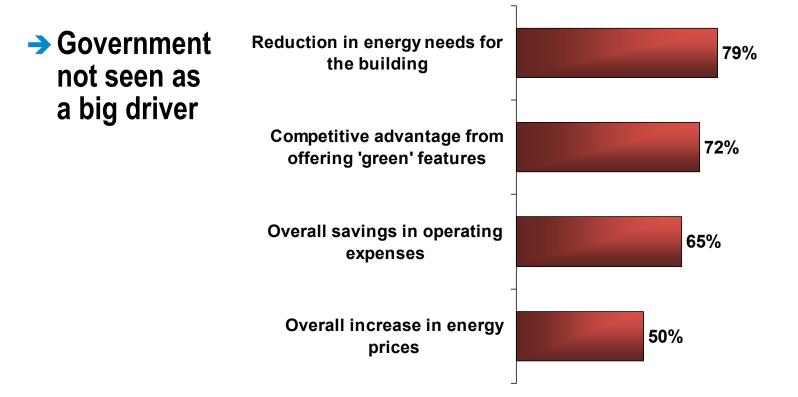
Affordably with Low-Cost Features





Owners Driven Most by Holistic Business Benefits

Triggers to Investment in Green



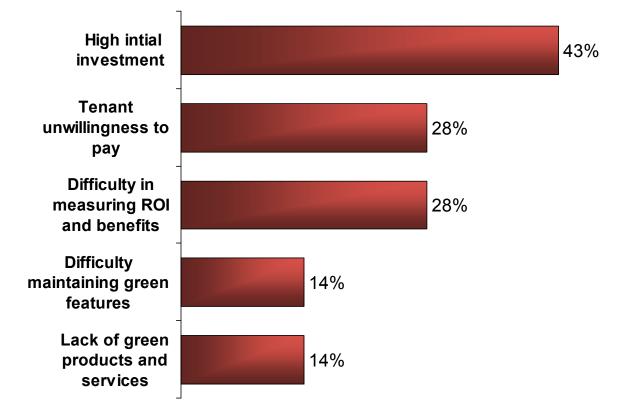


Top Owners List of Challenges

Harvey Bernstein

Obstacles to Investment in Green

More than half <u>do not see ANY</u> <u>major obstacle</u> to doing green building



Business Benefits Expected Across the Industry by Business Owners

Rent Rise

Lower ROI expected in 2010 vs. 2009 study

→ 2009: Some Class B upgrades to Class A

→ 2010: Class A only

14% of tenants firms would pay 2%–3% more for green

Source: 2009 results—Green Retrofit & Renovation SmartMarket Report, McGraw-Hill Construction, 2009; 2010 results—MHC/CBRE, 2010

Note: Surveys include similar populations of commercial building owners.

Decreased Operating Costs:

 Increased Building Values: Improvement in ROI: Increased Occupancy: 	6.8% 19.2% 2.5%	4.8%	
		4.1%	
		5.3%	

DINGS MAKE

SA

Retrofit SMR

2009

8.5%

1.0%

OCCUPANT STUD

Harvey Bernstein

2010 CBRE/MHC/ USD survey

2010

8.0%

1.0%



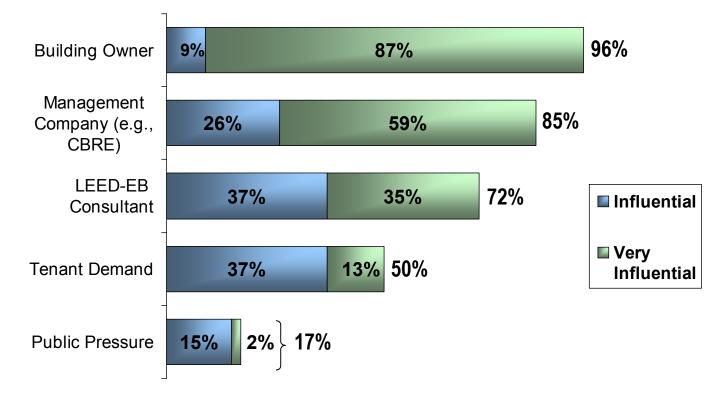
What Have We Learned from the Owner Data?

- Owners consistently report increases in ROI, occupancy and rent premiums from green building
- Owners are motivated by profit measures—not just operational cost savings
- Tools that help owners measure and benchmark business and human benefits would be extremely valuable and marketable
- An Owner who invests in green building is committed to doing so in the future—so target LEED/green building owners for products and services

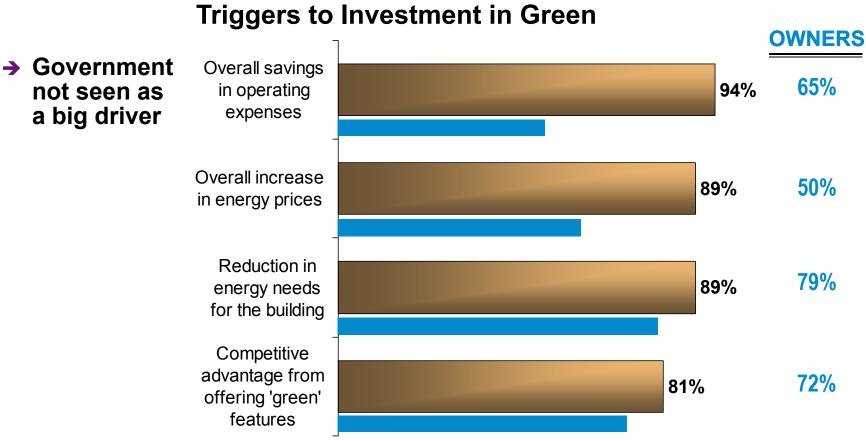
Building Manager Perspectives on LEED Commercial Buildings

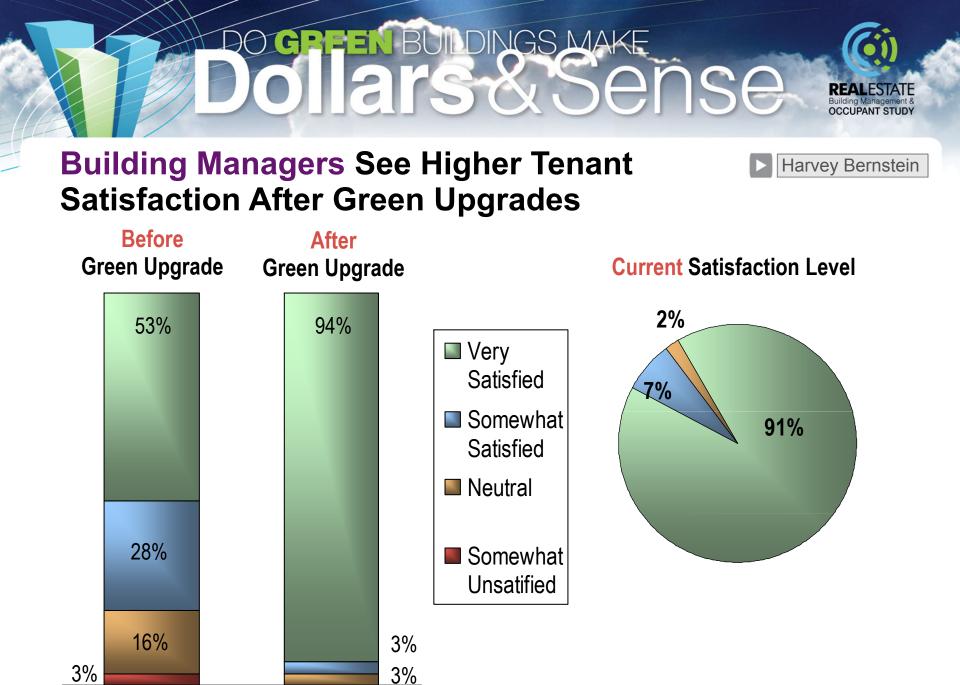


Agents Influencing Building Manager Green Decisions









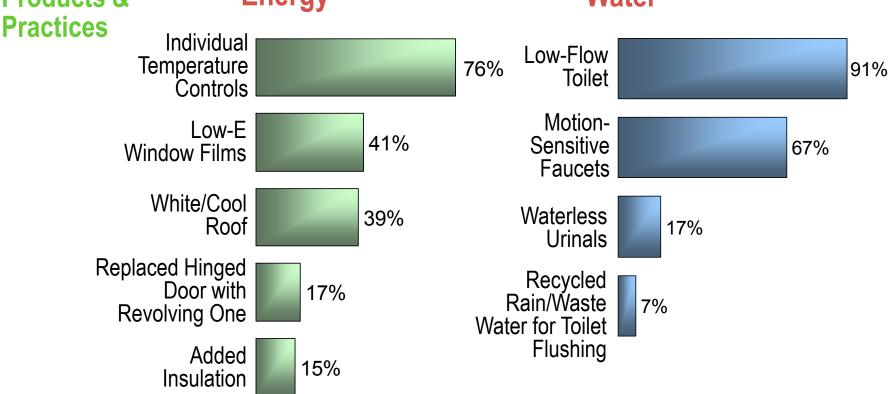


Energy-Efficient Equipment 53%

75%

22%







Building Managers Are Including Green O&M Practices in at Least 94% of Buildings

Products &

Practices

Use of Non-Toxic/Low VOC Cleaning Supplies	100%
Recycling Program	98%
Environmentally Preferable Paper Products	98%
Restrictive Plumbing Devices	98%
Building Controls	96%
Energy Conservation Products	96%
Energy-Efficient Heating and Cooling Systems	94 %
Waste Audit	94 %
Integrated Pest Management Program	94%
Use of CFL Lighting	94%



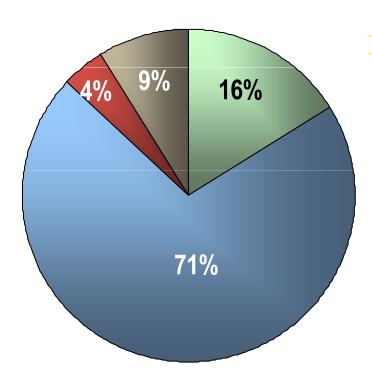
What Have We Learned from the Building Managers Data

- Building managers are most concerned with cost savings
 - Emphasizing energy, water and operational cost savings is extremely critical
- Building managers are focused on selecting and installing green building products and services
 - ➔ Particularly for products that improve water and energy efficiency and indoor environmental quality
- More than 1/3 of building managers have installed renewable energy into LEED buildings
 → LEED is encouraging its use
- Tracking green building performance could help encourage higher levels of investment in green building

Occupant Experiences Working in Green Buildings



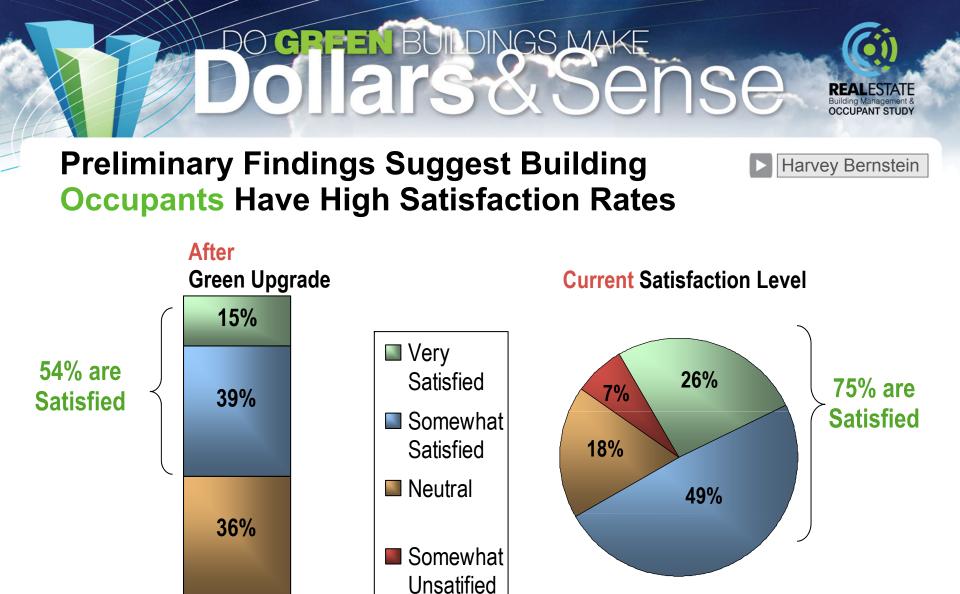
16% of Building Occupants Observe Productivity Increases



In comparison, **10%** of tenant firms expect increase in productivity

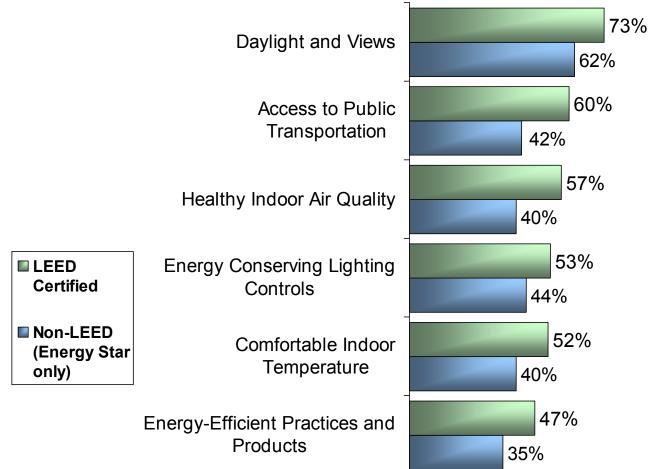
- More Productive
- No Change
- Less Productive
- Don't Know

54



15%





Dollars & Sense



Harvey Bernstein





Case Study:

McGraw-Hill Higher Education Dubuque, Iowa; LEED Silver

- 93% more satisfied after move to green building
- 61% more productive
- 55% producing higher quality work
- 12% healthier, fewer sick days
- 74% think LEED certification is important
- Most value the day lighting
- Improved level of employee engagement in corporate activities – 84% now engaged versus 73%



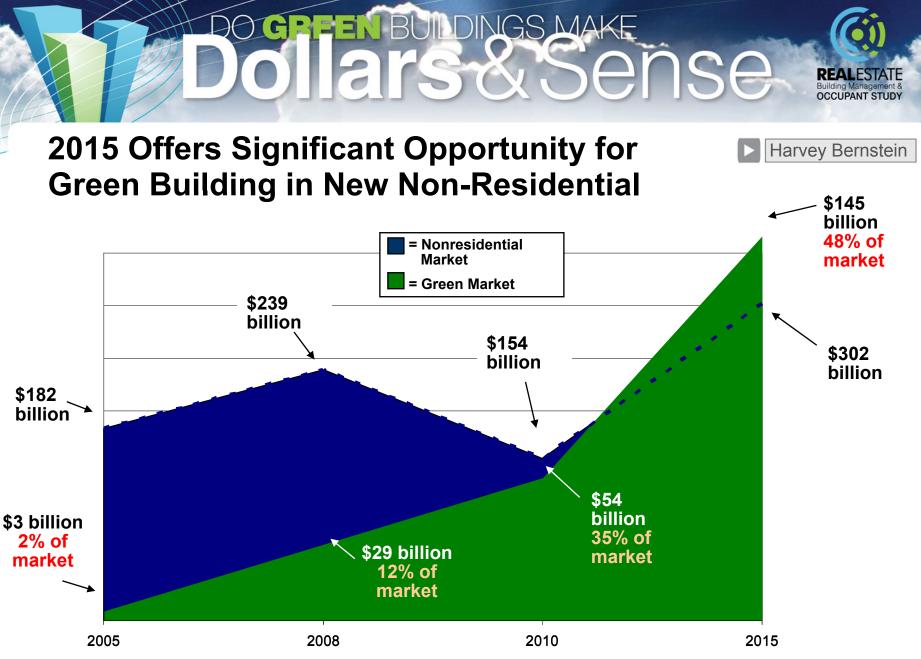
What Have We Learned from the Building Occupants?

- People who work in buildings care about things that affect their health
 - → If employers capitalize on this, they can gain large business savings
 - Product and service providers that can prove benefits in this area can increase market share
- People are satisfied by things they notice
 - ➔ Managers and owners should communicate and engage people working in their buildings to point out and capitalize on green efforts
- People working in Class A LEED buildings are more satisfied with green products as compared to those in non-LEED buildings
 - → Those working in the certification industry should take note

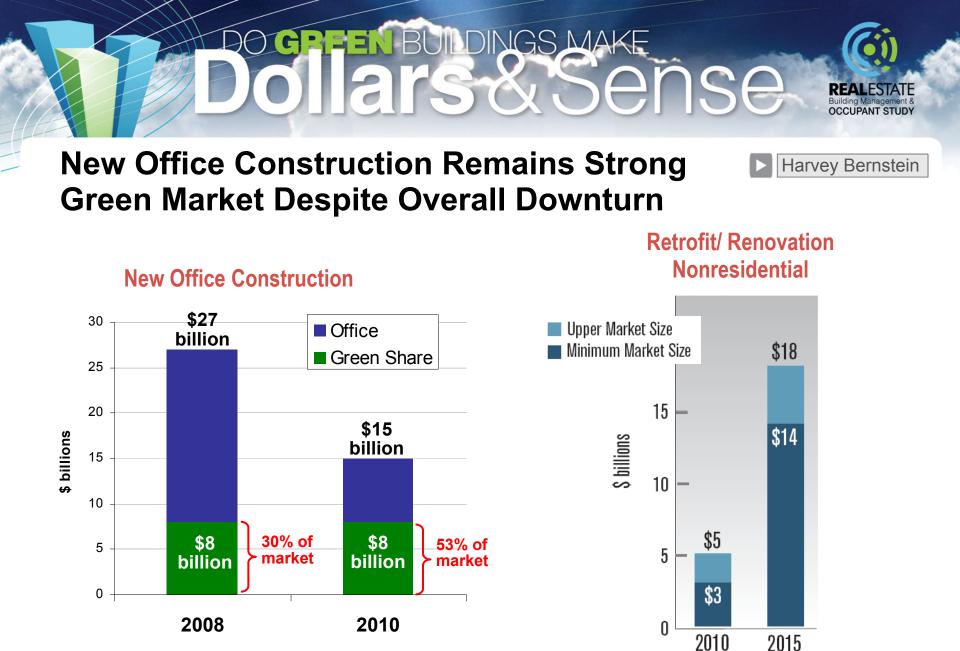


Green Construction Trends





Source: Green Market Size: 2011 Green Outlook Report, McGraw-Hill Construction; base value of construction market from McGraw-Hill Construction Market Forecasting Service, as of September, 2010



Source: Green Market Size: 2011 Green Outlook Report, McGraw-Hill Construction; base value of construction market from McGraw-Hill Construction Market Forecasting Service, as of September, 2010



Conclusions: Trends Are Emerging in Research Studies

- The green building market both new and retrofit –is growing dramatically: 35% of new construction in 2010
- Tangible business benefit such as ROI, occupancy and rent increases – from green are reported – and consistent over time
- Green building occupants are reporting higher productivity and health benefits
- LEED is recognized in the market
- Benchmarking measurement is a challenge, but recognized as critical to show real value
- Energy efficiency in buildings is good business





BOGIEN BUILDINGS MAKE Dollars & Sense





David L. Pogue LEED AP 808.453.7444 dave.pogue@cbre.com



Charles C. Tu

Professor of Real Estate 619.260.5942 tuc@sandiego.edu



Harvey M. Bernstein

F.ASCE, LEED AP 202.383.2228 harvey_bernstein@ mcgraw-hill.com

McGraw_Hill CONSTRUCTION

