



MERCER



MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN

The background of the page is a photograph of a window with a grid pattern. The window reflects a bright blue sky with some light clouds and green trees. The reflection is slightly blurred, giving it a sense of depth. A thin red horizontal line is visible at the top of the page, just above the window image.

Energy efficiency and real estate: Opportunities for investors

This report was made possible through grants from the Merck Family Fund, the Compton Foundation and the Overbrook Foundation. The opinions expressed in this report are those of the authors and do not necessarily reflect the views of the sponsors.

Ceres commissioned this report from Mercer.

Ceres is a national coalition of investors, environmental groups and other public interest organizations working with companies to address sustainability challenges such as global climate change. Ceres directs the Investor Network on Climate Risk (INCR), a group of more than 80 institutional investors from the US and Europe managing approximately \$8 trillion in assets.

Mercer's investment consulting business is a leading global provider of investment consulting services, and offers customized guidance at every stage of the investment decision, risk management and investment monitoring process. Mercer has been dedicated to meeting the needs of clients for more than 30 years, working with fiduciaries of pension funds, foundations, endowments and other investors in some 35 countries. Mercer assists with every aspect of institutional investing (and retail portfolios in some geographies), from strategy, structure and implementation to ongoing portfolio management. Mercer creates value through its commitment to thought leadership; world-class, independent research; and top-notch consultants with local expertise.

Mercer's investment consulting business has over 600 employees in 40 offices around the world.

Acknowledgements

The authors wish to thank Walt Tunnessen of the Environmental Protection Agency, Marc Heisterkamp of the US Green Building Council, Aalok Deshmukh from the Rocky Mountain Institute and Bill Baue of Sea Change Media, who provided valuable insights and editing suggestions.

Ceres wishes to thank the INCR members who helped develop this report and additional members of the Ceres team who provided valuable insights and editing suggestions, including Peyton Fleming, Dan Bakal, Andrea Moffat, Natasha Scotnicki, and Mindy Lubber.

Table of contents

Foreword	ii
Executive summary	1
1. How to read the report	5
2. Investment case for energy efficient real estate	7
3. Opportunities for direct owners of property	16
4. Opportunities for investors in real estate funds or public equity	29
5. Best practice action list	40
6. Conclusion	44
Appendix A: Resources for investors	46

Foreword

This report outlines the business case that investing in energy efficiency enhances value in real estate portfolios.

Investing in energy efficiency has two intertwined virtues that make it particularly attractive in a world with a changing climate and a destabilized economy: It cuts global-warming greenhouse gas emissions *and* saves money by reducing energy consumption. Given that the built environment accounts for 39 percent of total energy use in the US and 38 percent of total indirect CO2 emissions, real estate investment represents one of the most effective avenues for implementing energy efficiency.¹

The case for cutting carbon emissions that exacerbate climate change is clear. The Intergovernmental Panel on Climate Change (IPCC) has stated that greenhouse gas emissions due to human activity grew by 70 percent between 1970 and 2004, with carbon dioxide emissions alone increasing on average by 80 percent.² As a result, global temperatures are increasing, glaciers and ice caps are melting, sea level is rising, weather systems are producing more frequent and more intense storms, and changing precipitation patterns have resulted in increased drought and flooding.

Scientific opinion currently estimates that emissions must be cut 60 to 90 percent by the year 2050 if we are to mitigate the worst effects of climate change. And a consensus has been reached that increasing energy efficiency is the most cost-effective and

low-risk option before us with a potential for achieving about half of the needed reduction goals.³ According to the latest McKinsey & Company report on energy efficiency, “the U.S. economy has the potential to reduce annual non-transportation energy consumption by roughly 23 percent by 2020, eliminating more than \$1.2 trillion in waste . . . [and] 1.1 gigatons of greenhouse gas emissions annually – the equivalent of taking the entire U.S. fleet of passenger vehicles and light trucks off the roads”.⁴

The global trend toward pricing carbon emissions tacks a strong business case onto the equally strong societal case for tackling climate change, inspiring energy efficiency investment by institutional investors and asset managers bound by fiduciary duty to enhance portfolio value. This report outlines the business case that investing in energy efficiency enhances value in real estate portfolios. It takes into consideration the growing demand for more efficient buildings, which studies show command higher sales prices and lease rates, and contribute to higher occupancy rates. It also looks at the risks associated with inaction, such as expected rises in energy costs; existing and soon-to-be-enacted legislation at the municipal, state and federal level that demands increased energy efficiency; and the competitive and financial risks of not responding to market demand. At the

most basic level, significant financial gains can be realized through cutting energy use, lowering operating costs and increasing net operating income. As some have put it, if we’re not investing in energy efficiency, we’re leaving money on the table.

The report concludes that, whether investors have direct control over the properties in their portfolio or not, taking steps to reduce energy use makes financial sense. The report lays out the steps investors can take to improve energy efficiency, and presents best practices for different types of investments.

As you will read in the examples and case studies included in this report, many institutional investors and asset managers are already taking steps to make their real estate portfolios more energy efficient. But much more needs to be done. Impending legislation at the global and domestic level will dramatically alter business as usual. Investors owning real estate – whether directly or indirectly – must commit to taking action to make their portfolios more efficient. Their actions will reduce risk, boost portfolio value and provide the absolutely necessary first step in reducing the threats of global climate change.

Mindy S. Lubber
President, Ceres
Director, Investor Network on Climate Risk

¹ “Buildings Energy Data Book,” Energy Efficiency and Renewable Energy. March 2009. U.S. Department of Energy, available at <http://buildingsdatabook.eren.doe.gov/>.

² Pachauri, R.K. and Reisinger, A. ed. *Climate Change 2007: Synthesis Report*. N.p.: Intergovernmental Panel on Climate Change, 2007.

³ Enkvist, Per-Anders, Naucler, Tomas and Rosander, Jerker, “A Cost Curve for Greenhouse Gas Emissions,” McKinsey Quarterly, 2007 Number 1.

⁴ Granade, Hannah Choi, et al. *Unlocking Energy Efficiency in the U.S. Economy*. McKinsey Global Energy and Materials, July 2009

Executive summary

The current economic and policy climate in the United States is creating new momentum for energy efficient buildings. For investors with real estate holdings, energy efficient buildings can provide a buffer against financial losses in a contracting economy and offer advantages in leasing and resale. Investors can improve energy efficiency in their portfolios, both in their direct and indirect ownership of real estate.

The policy dialogue within the US and globally has moved beyond questioning the validity of climate change science to strategizing climate solutions, such as limiting and putting a price on carbon emissions. Energy efficiency is emerging as the first and most effective means of reducing the greenhouse gas (GHG) emissions causing the climate threat in ways that also bolster the economy.

Climate risks and opportunities are rising on the investment agenda as environmental, social and economic implications of warming global temperatures crystallize. Climate experts are advising a cut in GHG emissions of 60 to 90 percent by 2050 to mitigate the worst effects of climate change. According to McKinsey & Company, energy efficiency can achieve about half of that reduction goal in the most cost-effective and low-risk manner.⁵ Government policies at the local, state and federal level increasingly emphasize energy efficiency as the first climate mitigation and adaptation step. And the built environment, which accounts for 39 percent of total energy use in the US and 38 percent of total indirect CO2 emissions, clearly plays a key role in climate solutions through greater energy efficiency.⁶

State and local governments are enacting new, more stringent building codes, often using green building frameworks such as the US Green Building Council's Leadership in Energy and Environmental Design (LEED) program as requirements. New models for retrofit and real estate redevelopment financing are being established by both for-profit and non-profit players in the industry and the two segments are more often working together. At the federal level, the House of Representatives passed the American Clean Energy and Security Act (ACES) in June 2009, laying out a detailed approach to mitigating greenhouse gas emissions. Meanwhile, the Senate is debating its own version of climate and energy legislation.

For investors with extensive real estate holdings, energy efficient buildings can provide a buffer against financial losses in a contracting economy and create competitive advantage.

⁵ Per-Anders Enkvist, Per-Anders, Naucler, Tomas and Rosander, Jerker, "A Cost Curve for Greenhouse Gas Emissions," McKinsey Quarterly, 2007 Number 1.

⁶ "Buildings Energy Data Book." Energy Efficiency and Renewable Energy. March 2009. U.S. Department of Energy, available at <http://buildingsdatabook.eren.doe.gov/>.

Fiduciaries responsible for these portfolios may assume significant risk and overlook substantial opportunities to enhance returns if they fail to factor energy efficiency into their real estate investment decisions.

This report provides direct and indirect real estate investors with the background information, academic and industry research, case studies, key steps and best practices for integrating energy efficiency across their portfolios. Fiduciaries responsible for these portfolios may assume unnecessary risk and overlook substantial opportunities to enhance returns if they fail to factor energy efficiency into their real estate investment decisions.

Research supporting the business case for energy efficiency

- A 2008 McGraw-Hill Construction/US Green Building Council survey found that markets for green commercial and institutional buildings in the US have risen from 2 percent in 2005 (\$3 billion) to about 10 to 12 percent of construction value (\$24 billion – \$29 billion) in 2008, with projected growth to 20 to 25 percent (\$56 billion – \$70 billion) by 2013.⁷
- Current research by RREEF, Deutsche Bank's real estate investment division, reveals a shortage of energy efficient real estate to meet this growing demand. Price and value premiums observed for green buildings reflect this shortage of such properties on the market.⁸
- A Maastricht University study found an actual rental premium of 3.5 percent on US office properties, a 6 percent increase in occupancy for ENERGY STAR buildings (similar to McGraw-Hill survey results), and a 16 to 17 percent premium on transaction prices (sales price per square foot).⁹
- In a 2008 study, University of Arizona Professor Gary Pivo and Indiana University Professor Jeffrey Fischer found higher income and income growth, lower capitalization rates, higher net operating income per square foot, higher market value, higher rent and lower expenses for ENERGY STAR rated properties, compared to properties with no energy efficiency rating.¹⁰
- In a 2009 study, researchers at the School of Real Estate and Planning at Henley Business School found commercial building price premiums of 10 percent and 31 percent, respectively, for ENERGY STAR and LEED-certified buildings.¹¹

Drawing on interviews with numerous institutional investors and asset managers, the report also documents current best practices in the investment community around energy efficiency. Owners who hold properties directly (without acting through investment managers, pooled funds or other intermediaries) are setting targets for reducing energy consumption of their real estate, retrofitting existing properties to make them more energy efficient and targeting investments in new green real estate.

⁷ *Commercial & Institutional Green Building: Green Trends Driving Market Change*, McGraw-Hill Construction and the US Green Building Council, 2008.

⁸ *Globalization and Global Trends in Green Real Estate Investment*, RREEF Research, September 2008.

⁹ Kok, Nils, Maastricht University, PRI Workshop, January 2009.

¹⁰ *Investment Returns from Responsible Property Investments: Energy Efficient, Transit-oriented and Urban Regeneration Office Properties in the US from 1998-2007*, Pivo & Fischer, October 2008.

¹¹ Fuerst, Franz and McAllister, Patrick "Green Noise or Green Value? Measuring the Price Effects of Environmental Certification in Commercial Buildings," School of Real Estate and Planning, Henley Business School. April 25, 2009.

Indirect property owners, who may own smaller shares of buildings through structured investment products or limited partnerships, Real Estate Investment Trusts (REITs), private equity funds, or stock in real estate-related companies such as home builders, construction companies, retailers or suppliers, are asking their real estate asset managers to enhance property energy efficiency. These indirect owners are also using their fiduciary weight through proxy voting, shareholder resolutions and public policy advocacy.

Case studies illustrate these key steps and best practices throughout the report:

- California Public Employees' Retirement System (CalPERS), TIAA-CREF and Deutsche Bank's RREEF have all set specific targets for reducing energy consumption across their real estate portfolios, and all have begun comprehensive benchmarking projects to establish baseline energy consumption and measure progress towards their goals.
- Jones Lang LaSalle is using a sequenced approach to evaluate and implement energy efficiency upgrades in extensive real estate properties it manages. Ongoing retrofits to New York City's Empire State Building will produce a 38 percent reduction in annual energy use, which will translate into \$4.4 million in annual energy savings. Once completed, the iconic building is expected to achieve an ENERGY STAR score of 90, placing it in the top 10 percent of efficiency for Class A buildings, a major feat for a pre-war property. The property owner will also pursue LEED Gold building certification.
- The Nathan Cummings Foundation is engaging homebuilders and retailers in its equity portfolios to promote emissions reductions through energy efficiency. The foundation filed shareowner resolutions that led to major homebuilders, including KB Home, Centex and D.R. Horton, to address emissions issues, for example, by setting concrete energy efficiency improvement goals for its new homes and increasing disclosure of their emissions.
- Simon Property Group (the largest developer of shopping malls in the US) and Liberty Property Trust each agreed to expand their energy efficiency reporting in their 10-K filings largely in response to shareowner resolutions.

The report also outlines key steps all investors should be taking to improve energy efficiency in their holdings and presents best practices for different types of investments.

Key steps and best practices for leveraging energy efficiency in real estate investments

For investors with direct control of properties:

- Establish a baseline measurement of energy use across portfolios
- Prioritize opportunities for energy reduction using a sequenced approach from ENERGY STAR that focuses first on the worst-performing properties that provide the lowest-cost, easiest opportunities for cutting energy use. Such sequencing includes:
 - Retro-commissioning buildings, which involves testing building systems to ensure they are operating optimally
 - Upgrading lighting
 - Reducing electricity load demand of occupants and equipment
 - Upgrading and optimizing air distribution systems
 - Upgrading and optimizing heating and cooling systems
- Benchmark on a regular basis ongoing energy use against that baseline

For indirect property owners who invest in real estate related funds or stock ownership:

- Seek funds with a specific mission of creating or acquiring energy efficient properties
- Seek funds with specific goals for energy efficiency improvements in existing holdings
- Use proxy voting and direct engagement to address energy efficiency with asset managers and public companies


In addition to information on best practices gleaned from interviews with investors, the report also provides a best practice action list and a summary of resources for investors and real estate asset managers.

How to read the report

This report sets out to accomplish two tasks. First, it seeks to assemble compelling arguments, findings and data supporting the investment and business case for energy efficiency in real estate. Currently, evidence supporting the value of energy efficiency is scattered throughout trade association, academic and practitioner publications. In bringing this evidence together, this report addresses challenges and presents a strong case for investing in energy efficiency. Based on this business case, the report then provides investors with options and opportunities to begin reducing carbon emissions and mitigating climate risk in their real estate portfolios. These opportunities are presented in the context of a value proposition – that investors can address climate-related concerns while maintaining and enhancing the value of their real estate portfolios, whatever the composition of those portfolios.

To make this report easy to read and reference, the authors have categorized real estate investors as either “direct” or “indirect” owners. Investors should read through the descriptions below to determine which sections of the report are most relevant to their current or planned real estate investments.

- **Direct owners of property** are investors who own real estate outright. They may be sole or joint owners of properties. Most important for the purposes of this report, they are positioned to directly influence operations and components of property management, such as building systems adjustments, tenant engagement and leasing arrangements, contracting, maintenance, monitoring and reporting. Investment managers and REITs, which own pools of investable real estate assets on behalf of investors, fall into this category because they have direct access to property managers or developers and can influence the core activities of buildings.
- **Indirect investors in real estate equity and funds** are investors who choose to invest in real estate through one or more funds or through real estate related public equity. They typically own smaller shares of buildings through structured investment products, commingled pools, limited partnerships or common stock. At least one level of intermediaries separates these investors from property managers or developers, and so these investors do not make decisions that directly impact the properties. The options for these investors to improve energy efficiency in their real estate holdings focus more on influencing intermediaries – those with the ability to directly affect the way a property operates or performs.



Investors may also find themselves with specific investments or investor agreements that have characteristics of both direct and indirect ownership. This report aims to describe appropriate actions for each type of investor and bolster the case for action with examples involving existing buildings as well as portfolio-wide programs. Readers should note, however, that most of the content of this report is geared toward investors interested in improving the energy efficiency of existing buildings. Given the limited supply of investment opportunities in new green construction, the authors feel that investments in existing buildings represent the most widespread opportunities to promote green real estate. Where appropriate, however, the report references principles and opportunities related to new construction.

Investment case for energy efficient real estate

Institutional investors are increasingly interested in improving the energy efficiency of their real estate portfolios because they recognize the opportunity for boosting profitability, sales and lease price premiums and long-term increased value of properties within their portfolios. Large and well-known institutional investors, such as CalPERS, the Florida State Board of Administration, TIAA-CREF and Deutsche Bank, are all implementing policies and practices that seek to seize such opportunities in hopes of improving risk-adjusted returns.

This growing interest in energy efficiency improvements is taking place amid a financial slowdown that has triggered a dangerous lack of liquidity and credit. Within the real estate sector, these financial conditions have caused construction delays and prompted closer scrutiny of buildings' energy-efficiency performance and operating costs.

Numerous interviews conducted for this report indicate that many real estate services firms with green building or energy efficiency programs are using this economic lull to focus on internal initiatives, such as benchmarking energy use, setting efficiency targets and implementing programs to meet and exceed those targets. While some institutional investors worry about sacrificing short-term profitability when they make a significant initial capital outlay on energy efficiency measures, a robust body of evidence supports the opposite dynamic: A host of smaller, less expensive changes can yield significant short-term operating cost and energy savings that can increase the value and profitability of existing buildings.

Stepping back to take a longer view, investors and businesses pursuing energy efficiency initiatives see that early action on climate change and managing energy costs can position them competitively for impending national climate and energy legislation that will likely make energy consumption and waste more expensive.

Debate continues to evolve over how the market values energy efficiency, and how energy efficiency affects energy consumption. For example, many analysts point out that gains in energy efficiency can lead to rising energy consumption. This counterintuitive dynamic is dubbed the Jevons Paradox after the British scientist who observed increased coal consumption in 1865 after James Watt improved steam engine efficiency. The Jevons Paradox requires consideration when projecting potential financial gains from assumed energy use declines from energy efficiency.

However, researchers from the Rocky Mountain Institute (which contributed to this report) present a body of evidence that counters the Jevons Paradox, and instead supports the proposition that increases in energy efficiency *decrease* energy consumption, triggering associated financial gains. Such evidence is prompting a growing number of institutional investors, asset managers, brokers, property managers and tenants to consider energy efficiency as a sound investment for real estate that is directly owned and managed or owned through funds or public stock.

The regulatory climate for real estate investment will likely increase investor opportunities related to energy efficiency and increase the risks of holding inefficient properties.

New US government programs and policy developments are already sending ripples through the real estate sector. The US real estate sector uses a large amount of energy that generates significant emissions: The built environment accounts for 39 percent of total energy use in the US and 38 percent of total indirect CO₂ emissions.¹² Government efforts correctly recognize that of all greenhouse gas reduction opportunities, improving energy efficiency of buildings is the “lowest of the lowest hanging fruit” with the greatest potential for generating profitable rates of return on energy efficiency investments.¹³ According to some estimates, by merely improving insulation and lighting standards in current residential and commercial buildings, the US can cut the equivalent of nearly one gigaton of CO₂ emissions over the next two decades, creating savings for investors between \$5 and \$90 per avoided ton of carbon dioxide.¹⁴ For perspective, one gigaton of carbon dioxide emission cuts is the equivalent of replacing 1,000 conventional power plants with “zero emission” power plants.¹⁵ While cutting carbon emissions has its own benefits, the investment benefit becomes increasingly clear as climate change legislation moves closer to reality in Congress.

The Obama administration has placed great emphasis on energy efficient buildings and weatherization in the economic stimulus package as a means of creating new jobs and stimulating the economy while mitigating climate change. The recovery package earmarks \$11.3 billion specifically for energy efficiency efforts.

¹² “Buildings Energy Data Book.” *Energy Efficiency and Renewable Energy*. March 2009. US Department of Energy, available at <http://buildingsdatabook.eren.doe.gov/>.

¹³ Creyts, Jon, Derkach, Anton, Nyquist, Scott, Ostrowski, Ken and Stephenson, Jack “Reducing US Greenhouse Gas Emissions: How much and at What Cost?” McKinsey and Company, December 2007.

¹⁴ Creyts, Jon, Derkach, Anton, Nyquist, Scott, Ostrowski, Ken and Stephenson, Jack, “Reducing US Greenhouse Gas Emissions: How much and at What Cost?” McKinsey and Company, December 2007.

¹⁵ Note: *conventional power plant refers to a 500-MW plant*. Genomic Science Program. 24 Sept. 2009. *US Department of Energy Office of Science*, more information available at <http://genomicsgtl.energy.gov/benefits/gigaton.shtml>.

The American Clean Energy and Security Act of 2009 (ACES), approved by the House of Representatives in June 2009, provides a framework for advancing energy efficiency and addressing climate change.¹⁶ ACES establishes a cap on greenhouse gas emissions and requires emissions reductions of 83 percent below 2005 levels by 2050.

The bill includes provisions for nationwide implementation of energy codes for new buildings. It encourages state and local governments to develop and implement codes requiring energy savings voluntarily. However, if state and local authorities do not move quickly, ACES directs the US Department of Energy to establish codes with incremental energy savings targets: 30 percent savings within one year of enactment; 50 percent savings by the end of 2014 for homes and 2015 for commercial buildings; and an additional 5 percent savings every three years until 2030. ACES also specifies the creation of a model building performance labeling program – a tool that could prove essential in helping investors improve the efficiency of their buildings.

Ahead of federal legislation, states and local governments have embraced green real estate initiatives. In 2008, nearly three times as many states approved green building policies compared to 2005, growing from 13 to 31. Local governments took similar action, with green building initiatives increasing from 57 in 2005 to 156 in 2008.¹⁷ So far, in 2009, at least 30 states and localities have endorsed green policies requiring some level of involvement with the US Green Buildings Council's (USGBC) LEED certification framework.¹⁸ California is on the leading edge of green property legislation, as it adopted the first green building code in summer 2008.¹⁹

Many states adopting related green building policies include a requirement that new government buildings meet the USGBC's LEED standards. Florida, Indiana, Maryland, New Jersey, Oklahoma and South Dakota have all adopted such policies, and many dozens of cities and counties have done the same. Many of these local policies give commercial builders incentives, such as tax breaks and expedited permits, for implementing green initiatives. A few policies, such as one in Maryland's Baltimore County, give tax credits to builders for green construction of homes.²⁰ US government programs related to economic stimulus and climate change will likely employ similar mandates and incentives for new and existing buildings.

In 2008, nearly three times as many states approved green building policies compared to 2005, growing from 13 to 31.

... markets for green commercial and institutional buildings in the US ... will grow to 20-25 percent by 2013

¹⁶ Analysis of H.R. 2454: *The Waxman Markey Climate and Energy Bill*. 21 July 2009. Alliance to Save Energy., available at <http://ase.org/content/article/detail/5612>.

¹⁷ *Commercial & Institutional Green Building: Green Trends Driving Market Change*, McGraw-Hill Construction and the US Green Building Council, 2008.

¹⁸ Public Policy Search. US Green Building Council. 06 Oct. 2009, available at <http://www.usgbc.org/PublicPolicy/SearchPublicPolicies>.

¹⁹ This legislation requires a 15 percent cut in energy consumption in all new construction and a 30 percent improvement in water efficiency, as of 2010. This change will force the market to adapt and will likely reward those that have been proactive at adopting such measures already. This process will be facilitated by a new EPA online energy management tool that will track electric and gas energy consumption data for all non-residential buildings as of January 2009. This information will be available to prospective purchasers and tenants in January 2010, but not to the general public.

²⁰ Kaplow, Esquire, Stuart D. *Green Building Tax Credit Expanded in Baltimore County*. Jan. 2008. Stuart D. Kaplow, P.A.. 07 Aug. 2009. <http://www.stuartkaplow.com/library3.cfm?article_id=142>.

Market demand for energy efficient real estate is growing and supply is limited – a combination that can lead to price premiums and cost savings for investors.

The most significant motives for retrofitting are energy cost reduction, client demand and a desire to create a superior product, according to the McGraw-Hill study.

In 2008, McGraw-Hill Construction conducted an extensive survey and data analysis that found markets for green commercial and institutional buildings in the US have risen from 2 percent in 2005 (\$3 billion) to about 10 to 12 percent of construction value (\$24 billion – \$29 billion) in 2008, and projecting growth to 20 to 25 percent (\$56 billion – \$70 billion) by 2013. Over a third of US real estate professionals surveyed reported that by 2013, they expect 40 percent of real estate holdings will be green. The study predicts a 2011 “tipping point” for green building construction when the number of firms dedicated to green building will be greater than those that are not.²¹

Overall, the three most significant drivers for energy-saving retrofits are energy cost reductions, responding to client demand and a desire to create a superior product, according to the McGraw-Hill study.²² Other factors fuelling demand for greener construction and building operations include rising energy price volatility, increasing green technology affordability and escalating government regulation.²³ Furthermore, in practice, construction firms have experienced lower lifecycle costs and positive reputational impacts from green construction.

Current research on price and value premiums reveals a shortage of energy efficient real estate to meet this growing demand. This shortage, in combination with government incentives in some markets, is resulting in a wave of green property development – or green redevelopment in the absence of new green properties.²⁴

TIAA-CREF and CalPERS, investors with combined assets well over \$500 billion, are surfing the crest of this wave of investors seizing opportunities associated with buying efficient new buildings or retrofitting their existing real estate holdings, as will be seen in case studies in subsequent chapters. Researchers overwhelmingly agree that energy efficient buildings can command a price premium, although the evidence varies with respect to premium size.²⁵ According to the McGraw-Hill study, professionals in the real estate industry believe that the cost reductions and

²¹ *Commercial & Institutional Green Building: Green Trends Driving Market Change*, McGraw-Hill Construction and the US Green Building Council, 2008.

²² *Commercial & Institutional Green Building: Green Trends Driving Market Change*, McGraw-Hill Construction and the US Green Building Council, 2008.

²³ *Commercial & Institutional Green Building: Green Trends Driving Market Change*, McGraw-Hill Construction and the US Green Building Council, 2008.

²⁴ Nelson, Andrew. *Strategic Outlook # 64 - Globalization and Global Trends in Green Real Estate Investment. 2008*. RREEF Alternative Investments.

Available at https://www.rreef.com/cps/rde/xchg/ai_en/hs.xsl/3092.html.

²⁵ *Commercial & Institutional Green Building: Green Trends Driving Market Change*, McGraw-Hill Construction and the US Green Building Council, 2008.

other benefits of green buildings over less efficient traditional buildings are significant. In the past four years, their views about how much these benefits matter to the bottom line have only increased (Figure 1). Each column in Figure 1 represents the percentage of improvement that real estate professionals expected in the near future.

Figure 1: Real estate professionals' changing perception of green building benefits

	2005	2008
Decreased operating costs	8-9%	13.6%
Increased building values	7.5%	10.9%
Improvement in ROI	6.6%	9.9%
Increased occupancy	3.5%	6.4%
Rent rise	3.0%	6.1%

Source: McGraw Hill Construction, 2008

The McGraw-Hill Construction survey provides industry insights on green building trends that are supported by a growing body of academic research based on real values, prices and sales of green building and energy efficiency.

Maastricht University researcher Nils Kok presented research based on ENERGY STAR²⁶ and LEED data at a 2009 UN Principles of Responsible Investing (PRI) workshop. The study found an actual rental premium of 3.5 percent on US office properties, a 6 percent increase in occupancy for ENERGY STAR buildings (similar to the McGraw-Hill survey results), and a 16 to 17 percent premium on transaction prices (sales price per square foot).²⁷ In a 2008 study, University of Arizona Professor Gary Pivo and Indiana University Professor Jeffrey Fischer compared ENERGY STAR rated properties to properties with no energy efficiency rating. Their findings showed higher income and income growth, lower capitalization rates, higher net operating income per square foot, higher market value, higher rent and lower expenses.²⁸ In a 2009 study, researchers at the School of Real Estate and Planning at Henley Business School found commercial building price premiums of 10 percent and 31 percent, respectively, for ENERGY STAR and LEED-certified buildings.²⁹

In a 2009 study, researchers ... found commercial building price premiums of 10 percent and 31 percent, respectively, for ENERGY STAR and LEED-certified buildings.

²⁶ ENERGY STAR is a joint program of the US Environmental Protection Agency and the US Department of Energy that offers a proven energy management strategy that helps measure current energy performance, set goals, track savings and reward improvements. The ENERGY STAR program for buildings and industrial plants develops tools and resources to improve the energy efficiency of existing and new buildings. See http://www.energystar.gov/index.cfm?c=business.bus_realestate for more information.

²⁷ Nils Kok, Maastricht University, PRI Workshop, January 2009.

²⁸ Pivo, Gary and Fischer, Jeffrey D., *Investment Returns from Responsible Property Investments: Energy Efficient, Transit-oriented and Urban Regeneration Office Properties in the US from 1998-2007*, October 2008.

²⁹ Fuerst, Franz and McAllister, Patrick "Green Noise or Green Value? Measuring the Price Effects of Environmental Certification in Commercial Buildings," School of Real Estate and Planning, Henley Business School. April 25, 2009.

Other studies from the industry support these academic findings (as well as the McGraw-Hill survey results). Figure 2 displays the results of a 2008 study by the CoStar Group comparing green buildings to conventional buildings on occupancy rates and transaction prices.

Figure 2: Financial metrics for green versus conventional buildings

Building type	Occupancy rate	Rental rate per ft ²	Sale price per ft ²
ENERGY STAR Certified	91.5%	\$30.55	\$288
Non-ENERGY STAR peers	87.9%	\$28.15	\$227
LEED certified	92.0%	\$42.38	\$438
Non-LEED peers	87.9%	\$31.05	\$257

Source: CoStar Group, "Commercial Real Estate and the Environment"; All Figures are as of first quarter 2008.

It is important to realize that these premiums often vary by a number of factors related to region and location, including awareness of climate change, energy costs, access to renewable energy and availability of energy efficiency credits or incentives. This dynamic of property location affecting premiums applies more broadly than this CoStar study. For example, proximity to public transportation may add a premium, as government initiatives and consumer choices to reduce carbon emissions affect transportation habits. Nils Kok has also identified an interesting inverse relationship between location premiums and green premiums – in buildings able to charge a significant location premium, the green premium is lower, and where the location premium is low, the green premium is higher. In other words, green buildings in less accessible, suburban areas have a higher green premium; whereas green buildings in urban settings have a higher location-specific premium.³⁰

³⁰ These studies represent an important consensus on the investment case for green building and energy efficiency though research continues on what types of energy efficiency measures and green features command the greatest premiums. This is discussed further in following sections.

Parsing premiums

The Agency issue

Owners and investors need to keep in mind the relationship between operating and rental/sales premiums that green buildings earn, and their own investor returns. Not all financial benefits of energy and green building directly transfer to the owners and investors. For example, an energy efficient building may have lower utility costs, but if tenants are paying their own utility bills, the owner/investor does not reap the entire benefit (although the owner/investor does benefit by way of reduced common space operating costs). The larger gain will come when the building is sold or the lease is up and the value of the building increases because of lower utility costs to the owner and/or tenant.

Green and energy efficiency premiums

Investors should also consider the difference between green and energy efficiency projects, and the different costs and benefits they are likely to bring. While green and other sustainability projects (such as the use of sustainable materials) may increase the value of the building to certain tenants at the time of sale or lease, they may not decrease operating costs. Energy efficiency improvements are more likely to impact both operational savings and resale premiums, according to academic studies thus far.

Property and portfolio value

From an investor perspective, studies show that returns on green and energy efficiency features and initiatives are indeed positive, but do not show significant outperformance on a portfolio basis. Pivo and Fischer show that investors who purchased a portfolio consisting solely of green office properties over the past 10 years (1998-2008) would have earned only a slightly higher return at slightly lower risk compared to a portfolio of properties without green features.³¹ This small degree of outperformance may be due to the unclear nature of the “green premium” and how green features are priced in the market. Academic research has shown that the premium is dependent on size, location and maturity of the green building market in specific regions. Further research is certainly needed, but it is likely that climate change legislation and additional government mandates and incentives will increase the supply of green buildings and make brokers and other intermediaries more aware of the potential value of such properties.³²

³¹ Pivo, Gary and Fischer, Jeffrey D., *Investment Returns from Responsible Property Investments: Energy Efficient, Transit-oriented and Urban Regeneration Office Properties in the US from 1998-2007*, October 2008 (revised March 2009).

³² Fuerst, Franz and McAllister, Patrick “Green Noise or Green Value? Measuring the Price Effects of Environmental Certification in Commercial Buildings,” School of Real Estate and Planning, Henley Business School. April 25, 2009.

Retrofitting existing buildings and constructing more efficient new buildings costs less and pays back faster than owners and investors imagine.

The perception that improvements in energy efficiency require expensive technologies and significant upfront capital creates an unnecessary obstacle for investors considering energy efficiency improvements in their real estate portfolios. The current credit crunch only exacerbates this misperception. Studies have shown that the *perceived* cost of making green improvements to an existing building is 17 percent higher than the *actual* cost.³³ Fearing these ghost expenditures, developers, builders and property managers have been slow to incorporate energy efficiency initiatives into their operating budgets. However, evidence suggests that in many cases, the most effective changes have low upfront costs and result in significant operational cost savings, rental premiums, shorter vacancies and reduced obsolescence, as well as slower depreciation and, therefore, higher capital values. For these reasons, 77 percent of professionals in the real estate industry believe that green buildings will increase their revenues steadily in the short-term future.³⁴

The US Green Building Council data shows that achieving its LEED standard accounts for between only 0 and 7 percent of total costs (depending on certain factors such as the level of certification and building size) – significantly lower than perceived estimates.³⁵ For commercial properties, the Fraunhofer Institute found that the energy demand of new office buildings can be reduced by 50 percent compared with the existing building stock, without increasing construction costs at all.³⁶ Moreover, a 2003 study conducted for the California Sustainable Building Task Force shows that a 2 percent increase in first costs for green design will yield life cycle savings of more than ten times the initial investment.³⁷ It is important to reiterate that LEED certification and “greening” of buildings may include projects beyond energy efficiency, such as sustainable materials, water and waste management, green space and air quality reductions, to name just a few.

Overall, there is broad consensus that specific energy savings measures increase the value of a building over the long-term, and there is general agreement that other potential green attributes (sustainable building materials, renewable energy, etc.) add value over time. In the face of economic challenges, green building may present investors with an opportunity for both carbon risk mitigation and improved returns.

³³ World Business Council for Sustainable Development. “Transforming the Market: Energy Efficiency in Buildings.” 21 Apr. 2009. Available at <http://www.wbcsd.org/Plugins/DocSearch/details.asp?Doc>.

³⁴ *Commercial & Institutional Green Building: Green Trends Driving Market Change*, McGraw-Hill Construction and the US Green Building Council, 2008.

³⁵ LEED is an internationally recognized certification system that measures how well a building or community performs across the following metrics: energy efficiency, water efficiency, carbon dioxide emissions reduction, improved indoor environmental quality and stewardship of resources and sensitivity to their impacts. LEED is flexible enough to apply to both commercial and residential buildings. See <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1989> for more information.

³⁶ Herkel and others, *Energy efficient office buildings – Results and Experiences from a Research and Demonstration Program in Germany*, Building Performance Congress 2006; see www.enbau-monitor.de

³⁷ California Green Building Task Force, “The Costs and Financial Benefits of Green Buildings: A Report to California’s Sustainable Building Task Force,” October 2003, <http://www.ciwm.ca.gov/GreenBuilding/Design/CostBenefit/Report.pdf>, p.V

Lowering costs through new insurance coverage³⁸

Funds that hold real estate as direct owners may want to consider new insurance products developed specifically to encourage green building practices. Most products include green features as a covered loss. For example, some new products explicitly cover costs to repair or replace green roofs, expenses that traditional policies typically do not cover. Some companies also include the costs of LEED recertification following a major loss, including a LEED qualified inspection of reconstruction plans and services to complete the certification process. A third type of new insurance product includes green upgrades, which cover the costs of improving a building's environmental performance through ENERGY STAR certified systems or according to LEED requirements, following a major loss.

A number of firms are also exploring policies that cover instances when a building contracted to meet LEED certification fails to do so. Another market opportunity insurers are exploring is building risk, where policies would cover any extra expenses associated with decommissioning green buildings, in addition to initial certification and upgrade expenses.

Examples of available policies include:

- Fireman's Fund offers several "Green-Gard" insurance policies for nonresidential buildings that are built green from the ground up, for green renovations to existing buildings, or for green reconstruction after a loss.
- AIG's "Green Rebuilding Cost" program extends up to 20 percent above standard coverage to restore, repair or replace damaged property with green materials. It also provides consulting services and/or certification registration fees, and up to \$500 to purchase carbon offsets for emissions resulting from the loss.
- ACE, Travelers and Liberty Mutual also provide coverage for commercial businesses to rebuild to a "greener" standard after a loss to an existing property. ACE offers an environmental consulting service to help customers develop LEED buildings that pays special attention to indoor air quality.

³⁸ Mills, Evan. *From Risk to Opportunity: Insurer Responses to Climate Change*, Ceres. Apr. 2009.

Opportunities for direct owners of property

For direct investors seeking to improve the energy efficiency of their portfolios, benchmarking the energy efficiency of their properties is the key first step.

This report defines direct owners of property as investors who are invested in a building or multiple buildings directly. This section covers a range of steps that direct owners can take to implement energy efficiency improvements, realize financial gains from energy savings and value premiums, and mitigate climate change-related risks. Options include working with tenants and building management on leases, creating contractor policies and system tune-ups and updates. Several of the actions recommended for direct owners also apply to indirect property owners, in partnership with their investment managers or co-owners in pooled funds.

Direct owners are currently taking many different steps to improve the energy efficiency of the properties they own. The range of actions includes setting targets for reducing energy consumption of their real estate, retrofitting existing properties to make them more energy efficient and targeting investments in new green real estate. For direct investors seeking to improve the energy efficiency of their portfolios, benchmarking the energy efficiency of their properties is the key first step.

Benchmarking energy consumption of real estate portfolios is the key first step to make properties more energy efficient.

Energy benchmarking involves the initial and ongoing measurement and analysis of energy use in individual buildings and across portfolios. Benchmarking allows owners to compare the energy performance of peer properties, establish a baseline for setting improvement targets, prioritize opportunities for improvement across portfolios, and subsequently quantify and verify energy savings achieved. Without an adequate inventory of the performance of existing assets, it is impossible to track improvements and difficult to repeat successful projects or to avoid repeating failures across the portfolio. Benchmarking can be challenging to implement across diverse real estate assets, but it is an essential step toward a strategic plan for improving energy efficiency. Fortunately for direct investors, new tools, partners and case studies are available to help.

The most appropriate approach to benchmarking generally depends on the type of portfolio and ownership of assets. Many owners contract an energy audit at each property, performed either by their property managers or an external consultant. Most investors interviewed for this report have begun their energy benchmarking efforts by focusing on office buildings, where data is more readily available and energy use is often monitored by a central meter system rather than among various tenants. It is also the asset class for which the US EPA's ENERGY STAR program developed the first national energy performance benchmarking tool and rating.

ENERGY STAR operates an online benchmarking tool, Portfolio Manager, that enables building owners and managers to benchmark and rate the energy performance of their commercial buildings. Portfolio Manager allows users to establish energy baselines and track the energy use of any commercial property type.³⁹ Portfolio Manager can “rate” on a scale of 1 to 100 the energy performance of selected property types against similar properties, including office buildings, financial centers, retail spaces, hotels, supermarkets, bank branches and warehouses.⁴⁰ Buildings that earn an ENERGY STAR rating of 75 or higher are eligible to receive ENERGY STAR certification. The EPA has shown that these certified buildings use 40 percent less energy on average and reduce indirect carbon emissions by 35 percent, compared to peer properties that are not certified.⁴¹

Benchmarking typically starts through conversation with building managers. Perhaps managers already use ENERGY STAR Portfolio Manager and know how the building compares to the national average. Managers may also be seeking LEED certification. And tenants may have already inquired about the green attributes of the building, providing an obvious starting point. Buy-in from tenants and contractors can help achieve goals more quickly and cost effectively. Detailed information collected from these and other contacts can then comprise the data entered into a benchmarking tool.

The two primary green building certifications, ENERGY STAR and LEED, operate differently when used for benchmarking. ENERGY STAR benchmarks energy performance against other buildings. LEED assesses new and existing properties' sustainability characteristics, according to specific criteria that cover a broader range than just energy efficiency. ENERGY STAR and LEED also overlap in some instances. For example, LEED's Existing Buildings: Operations and Maintenance (LEED-EB: O&M) certification depends on product certifications such as ENERGY STAR for verification and benchmarking. Specifically, LEED-EB: O&M requires a minimum level of operating energy efficiency for a building to be certified. It offers two options to meet the minimum requirement, one of which requires achieving a rating of 69 or above in ENERGY STAR Portfolio Manager.

Direct investors should be aware of the common misperception that, if a building is unlikely to reach the threshold for ENERGY STAR certification, then it is not worth benchmarking or pursuing energy efficiency. Quite the opposite: It is arguably *most* important to benchmark the worst performing assets, which are most likely to show the largest improvements resulting from the smallest capital expenditures. Benchmarking through ENERGY STAR Portfolio Manager can help prioritize projects by cost and impact, allow users to see what other similar buildings throughout the country have done effectively and avoid missteps. Some buildings may never reach ENERGY STAR certification, and so may not realize the full energy efficiency premium in resale, but investors risk

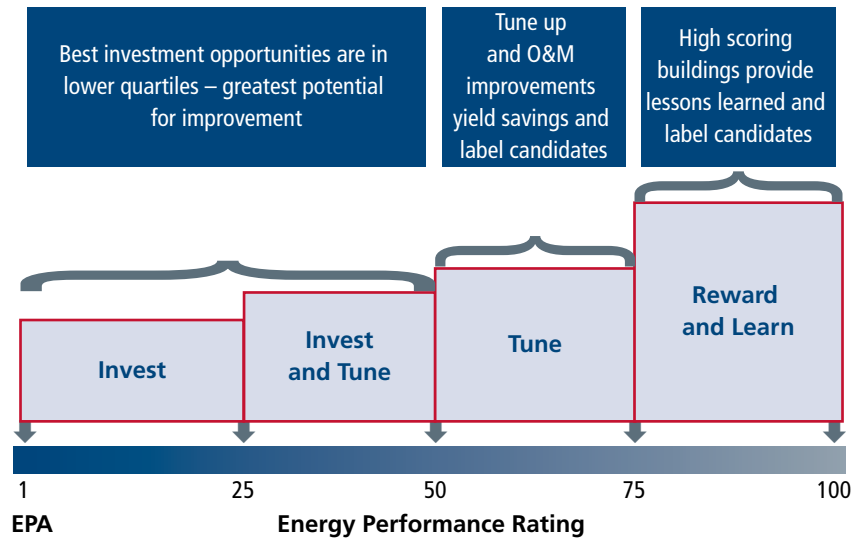
³⁹ For industrial facilities, EPA's ENERGY STAR program offers different benchmarking and rating tools.

⁴⁰ EPA currently offers 12 ENERGY STAR ratings for commercial buildings and 5 rating for industrial facilities. For more information, see www.energystar.gov/benchmark.

⁴¹ Tunnessen, Walt. *ENERGY STAR for Real Estate Investors*. RiskMetrics Group. 23 October 2008. Webcast.

leaving money on the table if they ignore opportunities to improve efficiency. The benchmarking process itself can lead to improvements, such as better energy efficiency, lower costs and increased net operating income, even when ratings fall shy of ENERGY STAR certification. Figure 3 below illustrates the significant benefits of knowing a building's ENERGY STAR rating, no matter how low or high.

Figure 3: Benefits of ENERGY STAR ratings



Benchmarking results can also be used to set targets for improvement, another major benefit. Results from ENERGY STAR ratings (or other evaluation systems) across a real estate portfolio help set a baseline and establish milestones for future improvements.

More investors are setting energy reduction targets and policies based on baseline data collected through the benchmarking process.

TIAA-CREF, one of the largest real estate investors in the US, started its formal benchmarking efforts by becoming an ENERGY STAR Partner in 2002, almost six years before announcing actual energy-reduction targets. TIAA-CREF based its targets on aggregate reductions in energy intensity across the entire portfolio rather than on a specific certification. In 2008, TIAA-CREF established a goal to reduce energy use in its real estate portfolio by 10 percent by 2010, and is well on its way to meeting its goal; reduction measures are already saving more than \$4 million per year in reduced energy costs. Further, all new buildings that TIAA-CREF develops will be LEED certified. CalPERS is also on target to meet a 20 percent energy use reduction goal by year end 2009. Similarly, UK-based F&C Property established a goal in 2008 that aims to reduce carbon emissions in the directly managed elements of its commercial property funds by 20 percent by 2011.⁴²

⁴² Jansen, Mark, "F&C and King Sturge campaign for carbon cutbacks, Property Week," February 29, 2008. "F&C Property Launches Sustainable Property Investment Strategy and Pledges to cut CO2 by 20% within 3 years," http://www.fandc.com/FundNets_FileLibrary/File/co_press_rpi_strategy.pdf.

Committed to targets and benchmarking progress

Organization: CalPERS

Type: Public fund

Size: \$19.4 billion in real estate (as of March 31, 2009)

Management structure: Primarily in-house

CalPERS' core real estate portfolio includes apartment, industrial, office and retail properties, which are acquired and managed through REITs, separate accounts, partnerships and limited liability corporations between CalPERS and investment advisory firms.⁴³

CalPERS' Investment Committee made significant voluntary commitments to energy efficiency as early as December 2004, including a goal to reduce energy consumption by 20 percent in its core portfolio over a five-year period, subject to an appropriate cost/benefit analysis. The committee then engaged in a significant benchmarking exercise to understand the energy performance of the current portfolio. Staff submitted annual progress reports to the Investment Committee.

Efforts to revamp the benchmarking process began with a survey of core investment partners about their energy consumption data for all properties owned in 2007. The energy reductions were then calculated and compared with energy usage data for 2004 (the baseline year), 2005, and 2006. The previously reported 2005 and 2006 energy reductions were recalculated based on this methodology to provide reasonable comparisons. The analysis of the 2007 data revealed a 13.3 percent reduction in energy consumption when compared to 2006 data, and an overall reduction of 12.5 percent since a baseline measurement was taken in 2004.

CalPERS faced a number of challenges in refining and reporting energy consumption data in their real estate portfolio: the portfolio is very large, diverse and dynamic; the portfolio contains multiple property types; portfolio size varies annually; and only a small portion of the portfolio has remained constant since 2004. Controls were created to deal with each of these issues, but CalPERS still considers the reported reduction numbers representative rather than absolute.

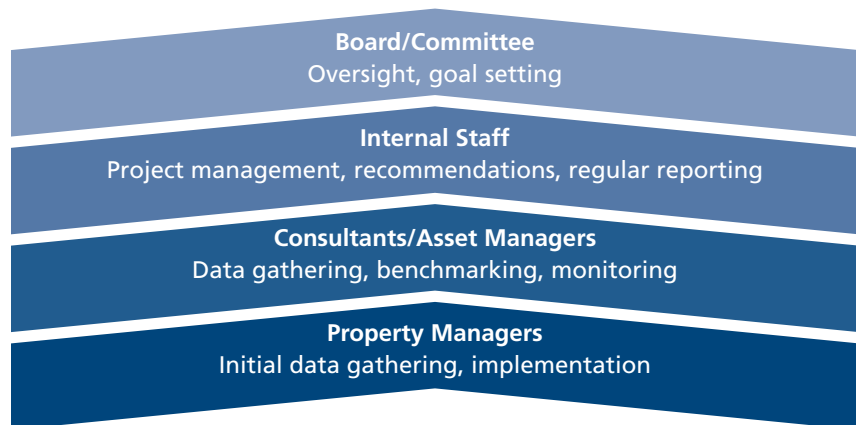
CalPERS believes its investment partners are largely on track to meet the Investment Committee's energy efficiency goal of 20 percent energy consumption reduction by the close of 2009. As stated in a November 2008 report to its investment committee, "CalPERS Real Estate investment partners strive to enhance sustainability across their portfolios. All partners recognize the importance of an industry shift toward environmentally sensitive real estate operations, management, and development. They recognize the challenges involved in tracking energy usage and reductions accurately across a diverse portfolio and their commitment to this effort is largely the reason for its success to date. Investment partners continue to explore and implement cost-effective strategies to achieve CalPERS environmental objectives."

⁴³ Real Estate Overview. CalPERS. <http://www.calpers.ca.gov/index.jsp?bc=/investments/assets/real-estate/realoverview.xml>. Dated: December 14, 2007.

Deutsche Bank's real estate group, RREEF, has set a goal to decrease energy consumption by 30 percent across its portfolio by 2012. RREEF joined ENERGY STAR as a partner, and has committed to benchmarking all office buildings, whether or not they receive the ENERGY STAR label. At the beginning of 2009, RREEF had completed the baseline benchmarking of 219 office buildings through the EPA's ENERGY STAR benchmarking tool.

Investors' specific policies, goals and objectives will differ, depending on their institutional size, capacity and ability to research and monitor progress toward their targets. For instance, large institutional investors tend to utilize internal staff for at least some of the research, oversight and monitoring, and may or may not have board involvement. However, owners can use consultants, asset managers and property managers as necessary. Figure 4 shows one possible model for outlining roles and responsibilities in implementing energy efficiency improvement programs after setting initial goals.

Figure 4: Governance structure for energy efficiency



National organizations and energy-reduction targets

A number of environmental and trade organizations have set specific energy-reduction targets for various bodies to adopt. For example, Architecture 2030, an international coalition of governments, real estate industry groups and environmental organizations, has issued **The 2030 Challenge**. The initiative asks the global architecture and building community to adopt targets, such as designing new buildings, developments and major renovations to emit 50 percent fewer greenhouse gases and use 50 percent less energy compared to the average performance of like buildings on a regional or national basis. Ultimately, the Challenge aims for all buildings to be carbon-neutral by 2030.

Separately, the Investor Network on Climate Risk (INCR)⁴⁴ launched an Action Plan in 2008 that, among other goals, called for improving the energy performance of real estate portfolios and investments by:

- Seeking a 20 percent reduction over a three-year period in energy used in core real estate investment portfolios, using standardized units of measurement, performance baselines, and regular reporting on measures taken and actual energy performance.
- Incorporating green building standards (such as LEED and ENERGY STAR) as a factor in investment decisions.

Property owners and real estate fund investors representing \$1.75 trillion in assets endorsed the INCR action plan. Supporters included CalPERS and CalSTRS, and state treasurers, comptrollers and chief financial officers from Connecticut, Florida, Illinois, Maryland, Massachusetts, and New York State and City.

⁴⁴ INCR is a project of Ceres. Ceres commissioned this report.

Taking a “sequenced” approach to energy efficiency upgrades in existing buildings increases the likelihood that investors will maximize their cost savings and shorten payback periods on their efficiency investments.

After benchmarking and setting goals, direct investors can achieve these goals by implementing action plans. In order to do this, investors must engage their property managers and tenants to realize cost savings and improve the long-term efficiency of their holdings.

Real estate properties and portfolios vary widely in terms of use, tenants, location, age and ownership structure, complicating the move to create a single implementation framework for energy efficient real estate. The numerous avenues for achieving improved energy efficiency add further complexity. However, it’s important to start somewhere, and an increasing body of work is providing useful guidance for a wide range of investors.

The US EPA’s ENERGY STAR Buildings Program and the Rocky Mountain Institute, as well as other organizations and associations working in real estate and green buildings, strongly suggest a “sequenced approach” for maximizing efficiency gains in existing buildings. Sequencing ensures that investors achieve the biggest energy savings and returns on investment. It allows owners to evaluate the payback period for these investments and consider which properties in their portfolios should be the highest priorities. Perhaps most important, a phased approach can help avoid unnecessary expenses.

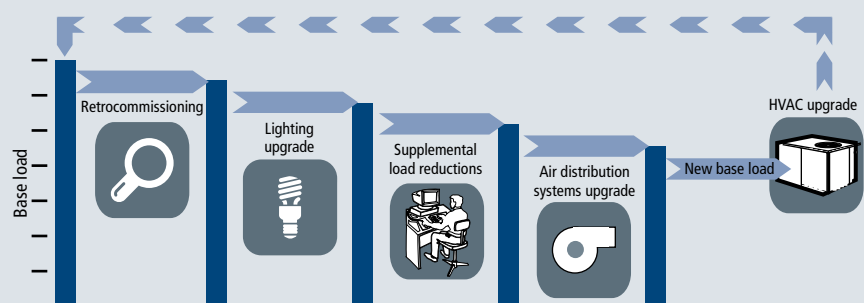
EPA guidelines highlight best practices and industry perspectives on how to maximize energy and cost savings from projects. Identifying properties and projects that will provide the maximum opportunity for achieving energy savings at the desired cost is a key first step. For example, buildings due for significant equipment or system upgrades are great targets for energy efficiency initiatives. As discussed previously, the costs of energy efficient equipment and systems are often much lower than most real estate professionals believe. Buildings not yet due for major upgrades may be good targets for tune ups or lighting initiatives. Once owners compare buildings and identify opportunities, an important second step is to sequence energy efficiency updates and retrofits to maximize cost savings. Figure 5 lists the sequence of technical improvements, according to the EPA’s Building Upgrade Manual.⁴⁵

Sequencing ensures that investors are getting the biggest energy savings returns on their investment in energy efficiency measures first. It allows them to evaluate the payback period for these investments and consider which properties in their portfolios should be the highest priorities.

⁴⁵ ENERGY STAR. “Building Upgrade Manual.” *Superior energy management creates environmental leaders: US Environmental Protection Agency*, Web. 2007.

Figure 5: Sequence of Technical Improvements for Energy Efficiency Upgrades⁴⁶

1. **Retrocommissioning:** Provides an understanding of how a facility is operating and how closely it comes to operating as intended. Specifically, it helps to identify improper equipment performance, equipment or systems that need to be replaced and operational strategies for improving the performance of the various building systems.
2. **Lighting:** This may include new light sources, fixtures and controls, come early in the process because the lighting system has a significant impact on other building systems. Lighting affects heating and cooling loads, and power quality.
3. **Supplemental load reductions:** Supplemental load sources, such as building occupants and electronic equipment, are secondary contributors to energy consumption in buildings. They can affect heating, cooling and electric loads. With careful analysis of these sources and their interactions with heating, ventilation and air conditioning (HVAC) systems, equipment size and upgrade costs can be reduced.
4. **Air distribution systems:** Air distribution systems bring conditioned air for heating or cooling to building occupants, and therefore directly affect both energy consumption and occupant comfort. Fan systems can be upgraded and adjusted to optimize the delivery of air in the most energy-efficient way.
5. **Heating and cooling systems:** If the steps outlined in the first four stages have been followed, cooling and heating loads are likely to be reduced. That reduction, coupled with the fact that many existing HVAC systems are oversized to begin with, means that it may be possible to justify replacing an existing system with one that is properly sized or retrofitting a system so that it operates more efficiently. In addition to saving energy, proper sizing will likely reduce noise, lower the initial costs of equipment and optimize equipment operation, often leading to less required maintenance and longer equipment lifetimes.⁴⁷



Stages of an integrated upgrade approach, US EPA ENERGY STAR

⁴⁶ Chart courtesy of Energy Star. Adopted from BOMA/Kingsley Quarterly. Practical Industry Intelligence for Commercial Real Estate. "Green Starts with Energy." Nick Murray. Spring 2006.

⁴⁷ ENERGY STAR. "Building Upgrade Manual." *Superior energy management creates environmental leaders: US Environmental Protection Agency*, Web. 2007.

The logic of the steps is self-evident: First take simple, low-cost energy efficiency steps, such as retrocommissioning, tuning up existing systems, replacing inefficient lighting and identifying opportunities to conserve energy, as these cost measures often have the greatest and quickest impact on investment return. Tempting as it might be to upgrade major systems and implement highly visible improvements, doing so before taking these simpler steps can increase costs and decrease efficiency. If relatively simple steps can increase a building's efficiency or decrease consumption, then a major system upgrade may prove unnecessary.

Government incentives or other ancillary sources of financing for specific types of improvements should not be ignored when prioritizing energy efficiency measures, but ENERGY STAR's suggested steps offer a relevant and flexible framework to guide owners, developers and managers through energy efficiency improvements.

Figure 6: Impacts of ENERGY STAR steps in energy efficiency retrofits

Impact of retrofits ⁴⁶		
ENERGY STAR Step	Example	Potential Impacts
Retrocommissioning	Duct cleaning	The items mentioned here, whether for retrofits or new construction, cover most of the steps offered in the ENERGY STAR framework and can reduce energy use by 30 – 50 percent, reduce waste by 70 percent, reduce water usage by 40 percent and reduce CO ₂ emissions by 35 percent, depending on the building's current efficiency level.
Lighting	Day lighting, energy efficient bulbs	
Load Reduction	Window resealing, natural ventilation, green roofs	
Air distribution system upgrades	Room sensors, replacement of fans	
Heating and cooling systems	HVAC upgrades	

⁴⁸ Adapted from *Commercial & Institutional Green Building: Green Trends Driving Market Change*, McGraw-Hill Construction and the US Green Building Council, 2008 and ENERGY STAR. "Building Upgrade Manual." *Superior energy management creates environmental leaders: US Environmental Protection Agency*, Web. 2007.

A sequenced approach to energy efficiency improvements

Organization: Jones Lang LaSalle

Type: Property and Investment Management provider

Size: Manages 1.4 billion square feet globally

Management structure: In-house

Jones Lang LaSalle recently unveiled a project to retrofit New York City's Empire State Building with an expert team that included the Rocky Mountain Institute, Johnson Controls Inc. and the Clinton Global Initiative. The team reviewed more than 60 energy efficiency strategies with the goal of balancing carbon emissions and economic impacts. It examined upfront costs and associated energy savings and emission reductions of different strategies to determine the payback period and net present value over a 15-year horizon. In doing so, the team relied on the Rocky Mountain Institute's "whole-systems, least cost, end-use efficiency framework." The Institute has used this framework to build and retrofit numerous buildings. Details of the team's approach to retrofitting the Empire State Building are shown in the Figure 7 below.

The approach and its impact show the financial value of implementing an optimal set of energy strategies in a model that can be replicated by older buildings around the world. To allow other building owners and managers to benefit from the project, Empire State Building owner Tony Malkin instructed the team to share virtually all of their work and documents in a public and free web site, www.esbsustainability.com, which will be updated as the team moves through the implementation phase. This retrofit demonstrates a business case for sustainability, and the public website will help owners of other buildings make the business case and attract financing for their own retrofit projects.

The Empire State Building retrofit

The strategies below are expected to result in a 38 percent reduction in annual energy use for the Empire State Building. Once completed, the iconic building is expected to achieve an ENERGY STAR score of 90, placing it in the top 10 percent of efficiency for Class A buildings, a major feat for a prewar property. The property owner will also pursue LEED Gold building certification.

Since the retrofit was timed to align with the needed replacement of several building systems, it is cost effective. The Empire State Building's retrofit program carries an initial cost of about \$20 million and will result in *annual* energy savings of about \$4.4 million upon completion. Most of the work will take place in the first two years. The program will reduce carbon dioxide emissions by 105,000 metric tons over the next 15 years, equivalent to the annual emissions of 17,500 cars.

Figure 7: Empire State Building energy efficiency retrofit steps and strategies

Step	Strategy
Identify the right building	The Empire State Building had plans under way to replace its chillers, fix and reseal some of its windows, change corridor lighting and install new tenant lighting with each new tenant. This made the building an ideal candidate for a whole building energy efficiency retrofit.
Reduce Loads	Remanufacture more than 6,500 windows to prevent leakage, install reflective barriers behind all radiators in the building in order to project more heat into rooms, and improve day lighting to reduce the need for artificial lighting.
Implement efficient systems	Install sensors in lighting fixtures that adjust brightness based on daylight availability and provide tenants with fixtures that prevent electronic equipment from using energy when turned off or in standby mode.
Use control strategies	Install carbon dioxide sensors to control outside air introduction into the building, and install independent metering for each tenant. Make energy and benchmarking information available to tenants online.

Lease arrangement, tenants and property managers

With certain types of real estate, there are limits to what system improvements can achieve in terms of energy efficiency. In residential or commercial buildings, for example, owners can implement hardware improvements and make changes to common areas, but without explicit leasing terms that clearly define responsibilities for energy management, or without the full participation of tenants, it is difficult to regulate how the occupants consume energy in their leased spaces. Further, there is an incentive gap when owners finance the energy-efficient upgrades, and tenants get most of the benefit through lower utility bills. Tenant buy-in or updated lease terms are important in these circumstances.

Several groups have published guidance documents and tools to help property managers and landlords address these split incentives: The Natural Resources Defense Council has developed a first draft of its Energy Efficient Green Lease Guidance,⁴⁹ the California Sustainability Alliance has released a Green Leases Toolkit;⁵⁰ and the Building Owners and Managers Association (BOMA) International has issued guides to help building owners and managers write green operations and management practices into their lease agreements.⁵¹ All of these guides address commonly cited barriers to implementing green building practices.

BOMA provides guides that serve as a legal-language tool to help building owners and managers maintain green buildings through operations and management practices. BOMA also provides an education tool for working with brokers and tenants to outline expectations of tenants in high-performance green buildings and the mutual responsibilities of all parties in pursuing continuous improvement.⁵²

⁴⁹ <http://www.cycle-7.com>. Accessed April 8, 2009.

⁵⁰ http://www.sustainca.org/green_leases_toolkit, Accessed April 8, 2009.

⁵¹ <http://shop.boma.org/home.aspx?session=D67FA5571E394408998047790E38C990>. Accessed April 12, 2009.

⁵² "New BOMA Green Lease Guide Offers Solutions for Writing Sustainability into Lease Agreements."

<http://shop.boma.org/showitem.aspx?product=GL2008&session=D905FD6611D54456856BAFD3DC3E2E48>. Accessed December 13, 2009. BOMA.org. June 22, 2008 Web.

BOMA-BEEP, Building Operators and Managers Association Energy Efficiency Program

The Building Owners and Managers Association (BOMA) developed this program in partnership with ENERGY STAR and provides energy efficiency training to property managers. The online curriculum includes benchmarking, auditing concepts, valuing benefits, and no- and low-cost improvement options, as well as steps to implement an energy awareness program. The program also offers continuing credit for industry designations.

Some real estate investment managers, like Deutsche Bank's RREEF, have made the BEEP program part of their energy efficiency initiative and encourage or mandate that property managers or other relevant contractors complete the curriculum. Property owners can certainly use completion of the BEEP program as an indicator of contractor interest in energy efficiency and may reference it in contracts or contracting policies. Owners can also require certain staff to complete the program as a long-term investment in their real estate portfolio.

Deutsche Bank's RREEF references BOMA's programs and others as part of its Sustainable Building Initiative. This initiative is a resource for internal staff as well as third party contractors regarding the building, management and investment in real estate assets. Highlights of the initiative include:

- Guidelines for contracting with "eco-friendly" national vendors for services such as electronics and recycling for tenants and for sourcing carpet constructed of sustainable materials
- Information on LEED guidelines and certifications, and instructions for registering as a USGBC member
- Details for the measurement and benchmarking of energy consumption, with specific attention given to RREEF's participation in the BOMA 7-Point Challenge⁵³ and ENERGY STAR

Direct property owners are also boosting tenant engagement to encourage energy efficiency. TIAA-CREF and American Realty have both conducted educational programs in common areas, and given away compact fluorescent light bulbs (CFLs) and "smart meters" that provide tenants more direct knowledge of energy use and costs. Both groups noted that engagement is usually more effective for commercial or industrial properties with energy efficiency rules built into leasing agreements.⁵⁴

⁵³ BOMA's 7-Point Challenge includes goals for reducing energy use, benchmarking water and energy, and educating staff involved in building operations. For more information see the website at <http://www.boma.org/getinvolved/7pointchallenge/Pages/default.aspx>.

⁵⁴ Stolatis, Nick. Personal Interview. 28 January 2009 and Darling, Scott and Vacheron, Paul. Personal Interview. 30 January 2009.

Direct investors are also incorporating responsible contracting policies into their operations. Institutional investors such as CalPERS and the Connecticut Retirement Plan and Trust Funds both have responsible contractor policies posted publicly, which include provisions for fair payment and treatment of workers who service and operate the building systems. Such policies ensure that a trained workforce will implement building operations in accordance with owners' guidelines. Responsible contractor policies can include provisions for green and socially responsible practices, and can set energy conservation as a priority for contractors, consultants and property managers as part of a statement of their primary duties.

Even without responsible contractor policies, direct owners can solicit property managers with green building and energy efficiency experience or specialized skills in order to properly utilize new technologies. For example, building owners can require property managers to benchmark their buildings' energy efficiency annually as a way to ensure continuous improvement in operations and maintenance.

Some investment managers interviewed for this report use project-specific labor agreements to ensure that all retrofitting work of existing buildings is being done by trained and experienced workers. Trained workers with proper certifications and experience will lead to enhanced energy efficiency improvements and favorable insurance or financing terms, interviewees reason.

A related development in the universe of responsible contracting and service providers is the current focus on green jobs in the Obama administration's stimulus programs, which set aside \$500 million for research, labor exchange and job training projects that prepare workers for careers in energy efficiency and renewable energy. Direct property owners have an opportunity to not only support the growth of this sector, but also to benefit directly by utilizing enhanced training and knowledge to implement energy-saving and cost-saving measures within their portfolios. Federal, state and local funding for "green training programs" promote training for long-term careers instead of short-term employment and can help local employment instead of long-distance outsourcing.⁵⁵ This support from the government could serve to make energy efficiency improvements more feasible and even more cost effective in the near future, and will likely increase the pool of qualified contractors and service providers.

Responsible contractor policies can include provisions for green and socially responsible practices, and can set energy conservation as a priority for contractors, consultants and property managers as part of a statement of their primary duties.

⁵⁵ Metcalf, Richard. "RE: Thanks and report". 5 May 2009. Email.

TIAA-CREF ... found that many buildings were “turned on” all weekend, when few were using the space, and that TIAA-CREF could save 5 –15 percent of energy use by reducing use of systems on weekends.

Tenant engagement leads to large operational savings

Organization: TIAA-CREF

Type: Private retirement system

Size: \$363 billion as of December 31, 2008

Management structure: In-house

Energy efficiency concerns have long been an important priority at TIAA-CREF, one of the nation’s largest real estate owners. TIAA-CREF formalized this focus on energy efficiency in 2002, when it signed on as an ENERGY STAR partner. It has increased its knowledge of environmental issues and sustainability practices in recent years, and strengthened its internal commitment, with strategically focused resources and top level support.

In 2008, TIAA-CREF committed to reduce energy use in its portfolio by 10 percent by 2010. It expects to meet this goal, having already reduced overall energy intensity by 4.6 percent across the portfolio, which has amounted to savings of about \$4.3 million per year. TIAA-CREF is also working to achieve ENERGY STAR and LEED certifications for appropriate individual properties. All new buildings developed by TIAA-CREF will be LEED certified.

TIAA-CREF attributes its success to its focus on small operating details and its engagement with tenants and property managers to make improvements. It credits ENERGY STAR for this focus on small details, such as tracking the results of changes as they are made. TIAA-CREF begins by asking tenants questions about hours of use. It found that many buildings were “turned on” all weekend, when few were using the space. TIAA-CREF discovered it could save 5 to 15 percent of energy use by reducing power on weekends.

Secondly, TIAA-CREF has strongly recommended changing light bulbs and fixtures within buildings. This change alone can lead to a savings of 3 to 8 percent in energy use, depending on what lighting was previously in place. This “Change a Light” campaign is being used across its entire portfolio. More than 255,000 compact fluorescent bulbs have been issued to tenants for use in leased space or for replacing bulbs in multifamily buildings. The response from tenants has been very positive.

The program has also examined larger assets for age and efficiency, and recommends a replacement strategy for outdated or inefficient systems when appropriate.

Opportunities for investors in real estate funds or public equity

This section focuses on actions for indirect owners of real estate. These investors may own a smaller share of a building or group of buildings through a structured investment product or limited partnership. Real estate exposure may also come through a REIT, a private equity fund, or through stock in real estate-related companies (home builders, construction companies, retailers, or suppliers).⁵⁶ Indirect investors are at least one step removed from direct influence on property managers or developers. Still, there are many opportunities for them to improve the long-term value of their real estate holdings by making them more energy efficient.

Investors in REITs, real estate funds and public equity can influence energy efficiency by engaging more closely with their real estate asset managers. They can also pursue equity shareholder actions via public policy advocacy, shareholder resolutions and proxy voting. Private equity investors can seek a fund manager attuned to energy efficiency issues and green building before they invest, or they can begin a dialogue with existing managers.

The current market for commercial real estate is depressed, and green real estate has also been negatively affected. However, interviews conducted in September 2009 paint an encouraging picture for green and energy efficient real estate going forward. While the credit market is still restricted, new sources of funding are emerging: More municipalities and states are instituting green building incentives and new federal government incentives are now online. Moreover, prices have decreased substantially, so managers with capital are seeking appealing new deals.

The industry is responding to growing interest and a belief in the long-term value of green building. Organizations are developing energy retrofit loans that help finance capital projects and are repaid through demonstrated savings in energy bills. To date, research for this report has not identified many such opportunities for institutions, but the US Department of Housing and Urban Development has launched a program based on this model, and several large financial institutions are exploring this concept for commercial use.

The industry is responding to growing interest and a belief in the long-term value of green building.

⁵⁶ A real estate investment trust, or REIT, is a company (usually publicly traded) that specializes in owning and sometimes operating a portfolio of real estate assets such as shopping centers, medical facilities, industrial warehouses, apartment complexes, or hotels. REITs enjoy a tax advantage by distributing a large percentage of their annual taxable income to shareholders. Similar to a closed-end mutual fund. Mercer, *North American Investment Dictionary*, 2004.

Investment managers interviewed for this report acknowledge the downturn in real estate, citing such trends as low valuations, decreased rates of transactions and tight credit markets. Still, organizations that focus on green development and redevelopment have not wavered from these commitments, and investors have stuck with these funds. Likewise, managers with internal commitments to benchmark properties and explore LEED or ENERGY STAR certification have not ceased these efforts; rather, they have used these slower times to continue to achieve their goals for improved energy efficiency and long-term value for investors.

More asset managers and real estate investment vehicles are enhancing property energy efficiency to create long-term value.

When institutional investors are conducting due diligence on real estate asset managers, they can explore managers' willingness to pursue energy efficiency benchmarking and sequenced implementation plans, as discussed in the previous chapter.

Based on developments in the green real estate industry and growing investor interest in energy efficient real estate portfolios, asset managers are creating a variety of investment vehicles that enable investors to "green" their real estate holdings. Currently, relatively few REITS and other green real estate funds focus *exclusively* on ENERGY STAR or LEED-certified efficient properties. Numerous funds do commit to improving energy efficiency (and other green or socially responsible) characteristics over time. It is still relatively early for many of these funds with internal commitments, but asset managers are tracking their progress on specific initiatives while trying to integrate increased energy efficiency into their broader operations and decision making.

Three key approaches are available to indirect owners:

- Seek portfolios with goals for energy efficiency improvements for holdings.
- Use proxy voting and engagement with asset managers and public companies to address energy efficiency.
- Seek portfolios of green properties.

Green real estate portfolios

Examples of screened portfolios include the Hines CalPERS Green Development Fund, which develops high performance, sustainable office buildings; and the Rose Smart Growth Fund, which seeks to provide both economic and environmental returns by focusing on transit-oriented development and environmentally responsible property management.⁵⁷ Other examples include Thomas Properties Group's High Performance Green Fund, which launched in the third quarter of 2008 with \$180 million of capital.⁵⁸

⁵⁷ Baue, Bill, "The Growth of Green Building Funds," *SocialFunds.com*, 30 November 2006. <http://www.socialfunds.com/news/article.cgi/2172.html>

⁵⁸ Thomas Properties Group, Inc. Q3 2008 (Qtr End 09/30/08) Earnings Call Transcript.

Case Study: Hines CalPERS Green Development Fund

Organization: Hines

Type: Developer, Property Manager, Investment Manager

Management structure: In-house

Hines manages the Hines CalPERS Green Development Fund, which has been developing high performance, sustainable office buildings since 2006. The firm provides services in investment, development, renovation and property management, and has been integrating LEED and ENERGY STAR practices into these businesses for more than 10 years.

Hines is one of ENERGY STAR's key partners, having won ENERGY STAR Partner of the Year in 2001, 2002 and 2003 and ENERGY STAR's Sustained Excellence Award in 2004 and 2008. Hines' buildings accounted for one-third of nongovernment participating buildings in the late 1990s.

In 2008, Hines launched an aggressive plan to reassert itself as the leader in sustainable real estate by implementing three key projects. The Hines Sustainability Task Force, the first key project, examines 20 key initiatives for recommendation to the board. The Hines Center for Excellence, the second project, is a virtual center for research, development and promotion of new sustainability initiatives. Finally, HinesGO is a green office program, aligned with LEED and ENERGY STAR, to enhance the energy efficiency of a portfolio of 230 global offices.

Hines has a three-step process for developing sustainable operations, and works with each building's managers to implement it. First, Hines works with operating staff to ensure effective integration and management of the building's mechanical, electrical, plumbing and control systems. This step alone can save significant energy and water costs without any major expenditure. Second, once the operating staff understand the efficiency objectives and have benchmarked the building's energy use, the team can examine the HVAC controls for maintenance-setting adjustments. Finally, they examine the condition of the equipment itself and plan out maintenance schedules and any more costly capital projects.

Hines' efforts have been largely client-driven. As a result, every Hines property is now pursuing ENERGY STAR or LEED, depending on what makes the most sense for the given building. The results for Hines have been encouraging: Higher ENERGY STAR scores have led to operational savings and, in several instances, higher resale values.



Responsible Property Investing (RPI) funds and firms promote energy efficiency as one among a host of broader social and environmental sustainability issues. LEED is more commonly used as a standard for these funds, and so these projects may be designed to meet LEED requirements or be based on specific LEED principles. Many of these funds focus on redevelopment and, generally, hold that a broader approach to “green” makes a property more desirable for new tenants and multiple uses. RPI also increasingly meets new municipal criteria for green building mandates, affordable housing and new sources of public and private financing relating to green building or mission-related investments. Some firms, like Cherokee, also specialize in or seek out brownfield redevelopment or historic preservation projects or other niche opportunities. Due to the mission of these funds and their types of financing, issues such as proximity to transport, affordability and green space may be equally or more important than energy efficiency when greening these portfolios.

Commitments to greening portfolios

Firms such as RREEF in the US and F&C Property and Hermes in the UK have made commitments to improving energy efficiency and green building practices across portfolios, as well as developing internal products and programs. Hermes, for example, has created its own Sustainability Rating System for investment properties, including energy performance, flood risk and other characteristics. RREEF created its Sustainable Building Initiative – a resource for property managers and contractors – which provides information on LEED and access to ENERGY STAR training. F&C has adopted a goal of reducing the consumption of its real estate portfolio by 20 percent over three years.⁵⁹

There are also a number of REITS that have sought to green their portfolios using energy efficiency as a leading driver. Liberty Property is a REIT, with 35 LEED projects completed or under construction nationwide. Other examples include Boston Properties, Simon Property Group, ProLogis, Regency Centers Corp, Thomas Properties Group, and AMD Property Corp. ProLogis announced in January 2008 that all future developments would meet at least minimum LEED criteria in the US and a “Very Good” rating, according to the Building Research Establishment’s Environmental Assessment Method (BREEAM), a UK system for properties in that region. Simon Properties lists “energy efficiency” as a core strategy in its public disclosures, and its absolute corporate energy use for operations has decreased by 9.7 percent from 2003 to 2006, resulting in approximately \$11 million in avoided annual operating costs.⁶⁰

⁵⁹ BaJansen, Mark, Property Week. “F&C and King Sturge Campaign for Carbon Cutbacks: Asset Managers Set Ambitious Goal for more than 2,600 Buildings Under Management.” Page 75. February 29, 2008.

⁶⁰ Simon Property Group, “EPA Names Simon Property Group 2008 ENERGY STAR® Partner of the Year.” March 4, 2008.

Case Study: The greening of REITs

Organization: ProLogis

Type: Real Estate Investment Trust (REIT)

Size: \$32 billion (as of December, 2009)

Management structure: In-house

ProLogis is a leading global provider of distribution facilities, with over 475 million square feet of industrial space leased to more than 4,500 customers in markets all across North America, Europe and Asia (as of December 2008), including manufacturers, retailers, transportation companies, third-party logistics providers and other enterprises with large-scale distribution needs. In addition to its core industrial business, the company is active in retail and mixed-use development in Europe and throughout North America as Catellus Development Group, a ProLogis company.

Currently, the company is organized into two business segments:

Direct-Owned

ProLogis' direct-owned segment represents core holdings of industrial properties. Its investment strategy in this segment focuses primarily on the ownership and leasing of industrial and retail properties in key distribution markets.

Investment Management

The investment management segment represents the investment management of unconsolidated property funds and certain joint ventures and the properties they own.

In February 2007, ProLogis became the first real estate company to join the Chicago Climate Exchange, the world's first voluntary greenhouse gas emissions reduction and carbon credit trading program. As an associate member, the company committed to measuring and offsetting its operational "carbon footprint" through 2010.

ProLogis is focused on improving the energy efficiency of the existing facilities in its portfolio. In 2006, it initiated a lighting program to install or upgrade the lighting systems in its North American portfolio with higher performing fluorescent lighting. As of the end of 2008, high-efficiency lighting had been installed in more than 26 million square feet of warehouse space. Compared to standard warehouse lighting systems, this translates into a savings of over 29 million kilowatt hours of electricity per year – the equivalent of powering more than 2,600 Americans' homes for one year, or producing more than 21,000 metric tons of carbon dioxide emissions.

ProLogis employs other approaches to improve energy efficiency. For example, it installs skylights and clerestory windows to create more natural light, which lowers electricity usage and operational carbon and improves indoor environmental quality for warehouse personnel. The company also installs high-reflectance roof membranes to replace more traditional black ethylene propylene diene monomer (EPDM) rubber roofing membranes, which absorb heat from sunlight. White thermoplastic polyolefin (TPO) roofing offers the same performance at essentially the same cost while reducing urban heat island effects and often providing a more comfortable work environment.

In January 2008, ProLogis announced that it will require all development in the United States to comply with LEED going forward. New properties in the UK are developed to achieve at least a "Very Good" rating in accordance with the Building Research Establishment's Environmental Assessment Method (BREEAM); and in Japan, many of its facilities comply with the Comprehensive Assessment System for Building Environmental Efficiency (CASBEE). In countries where no green building rating system exists, the company utilizes a global standards checklist based on these three leading regional rating systems. Worldwide, counting all three rating systems, ProLogis has 20 million square feet of development registered or certified as green buildingsavings and, in several instances, higher resale values.

Green real estate fund brings new industry participants

The Multiemployer Property Trust (MEPT) exemplifies how green projects can generate and maintain green jobs. In addition to spurring its own set of green investments, the firms involved with managing the MEPT have taken the lessons learned and continued to apply energy efficiency and other green principles throughout their businesses. Kennedy Associates Real Estate Council, which advises the fund, and Landon Butler & Co., which provides investor relations and administrative support, have carried their commitments to energy efficiency beyond the MEPT. In 2008 alone, Kennedy Associates decreased energy use in its portfolio by 5 percent.⁶¹

Some funds that have energy efficiency and/or green building as part of their new construction criteria have also incorporated responsible contractor policies into their investment criteria. These policies require that properties be built and operated by contractors committed to skilled workers making prevailing area wages and benefits. For example, the \$5.97 billion Multiemployer Property Trust (MEPT), which serves Taft-Hartley plans for union pension funds based on real estate investments that often utilize union labor, completed its first green project in 1995, and continues to be a leader in both LEED and ENERGY STAR certification. The MEPT is also the only fund of its type to be a signatory to the UN Principles for Responsible Investment, an investor-led initiative that promotes the consideration of environmental, social and governance issues in investment decision making from a fiduciary perspective.

Other funds that have energy efficiency and/or green building characteristics have also incorporated community development factors into their decision-making processes. The Energy Efficiency Opportunity Fund, which is a new fund resulting from a partnership between Living Cities and Green For All, provides low-cost financing to programs that help homeowners, landlords, and other building owners make cost-effective retrofit improvements, with a dual priority on deep environmental impact and economic benefits for low-income people. The Fund will have a 10-year life, with principal returned at the end of the Fund. During the life of the Fund, investors will receive current interest payments, as well as third-party verification of the social, economic and environmental impacts of the investments. This type of investment offers an opportunity to diversify within a green real estate portfolio.

Further opportunities to diversify a real estate portfolio include community investment funds, which originated to assist banks in meeting their requirements under the Community Reinvestment Act. Originally, banks could invest in these funds, which purchased debt instruments that met the criteria for lower-income housing and geographies identified under the Community Reinvestment Act. Today, these funds have a broader client base including many institutional investors.

One firm, Community Capital Management, offers a mutual fund that invests primarily in government-related bonds that support community development benefitting low-to-moderate-income families and neighborhoods. Community Capital Management recently established a screening process for “green” fixed income investing for a client. The firm has developed in-house capacity to identify instruments, such as municipal bonds issued to support brownfield remediation, US agency Multi-Family Backed Securities, which are collateralized by affordable housing properties with green design components, and loans to small, sustainable businesses. The specific green or energy-related aspects of these types of investment will differ depending on the bond issuer, but these investments offer yet another opportunity to diversify within a green real estate portfolio.

⁶¹ Burr, Andrew C. *At Kennedy Associates, Benefits of Green Building are Real: The Real Estate Investment Manager is Leaving its Mark on Many Prominent Sustainable Projects*. CoStar Group, 10 July 2009. Web.

More investors are using proxy voting and shareholder engagement to promote energy efficiency in real estate holdings

Asset owners with equity shares in publicly traded building or construction companies, big box retailers, property managers, or hotel/restaurant chains are increasingly advocating for better energy efficiency performance of company properties. Climate change and environmental issues are perennial shareholder proposal topics at public companies, and climate and energy resolutions have been receiving increasing levels of shareholder support.

Over the past two years, investors have put particular focus on these issues by taking three steps:

- Adopting proxy voting guidelines that address these issues
- Conducting shareholder engagement and dialogue, including filing shareholder resolutions
- Reviewing climate and environmental efficiency issues at the portfolio and stock level

Proxy voting is probably the most prevalent method for investors to advocate energy efficiency in real estate public equities. Shareholders can use the power of the proxy to promote better climate mitigation practices and better disclosure of energy performance within the real estate industry. Votes supporting disclosure of climate change and energy programs can help focus company managements' attention on how energy consumption affects the bottom line. Ceres has proposed model proxy voting guidelines through INCR that include policies on disclosure, emission reductions and investment in renewable energy sources. Proxy service providers such as RiskMetrics, Glass Lewis and Proxy Governance also have services that can guide investors to make their proxy voting more supportive of climate and energy initiatives. In addition, some pension plans, such as the American Federation of Labor and Congress of Industrial Organizations (AFL-CIO), make their proxy voting guidelines public for others to utilize.

Some institutional investors have developed clear guidelines for how to vote on resolutions filed by other investors, and have also adopted the shareholder resolution model to REITS, homebuilders and related companies. Shareowners have only engaged a few REITS in the US on the issues of sustainability practices, but these discussions have led to significant improvements. The REITS that have received shareholder resolutions have responded favorably and made major commitments. For example, Liberty Property Trust (owner of over 73 million square feet of office and industrial space) and Simon Property Group (the largest developer of shopping malls in the US) both agreed, in response to shareholder resolutions, to expand their energy efficiency reporting in their 10-K filings.

A shareholder resolution may target disclosure, goals or timelines related to energy efficiency or sustainable building practices. Often, shareholder resolutions recommend that managers set quantifiable energy savings goals and report on progress toward those goals. Shareholders filing these types of resolutions often subscribe to the “what gets measured, gets managed” philosophy. If managers commit to measuring energy use in real estate holdings, they are more likely to improve energy efficiency and use energy efficiency metrics in making investment decisions. Because the business case for addressing energy efficiency is clear, resolutions that address this issue are better positioned to withstand challenges if target companies petition the Securities and Exchange Commission (SEC) for permission to omit these resolutions from their proxy statements.

Because many companies are willing to speak with shareholders about these issues, however, very few energy efficiency resolutions result in SEC petitions. Investors are prepared to get involved in a dialogue and withdraw the resolution if the company agrees to certain requests. The Nathan Cummings Foundation, for instance, has worked closely with other investors to encourage the practice of filing shareholder resolutions with companies in the homebuilding, REIT and retail sectors, asking them to report on their approaches to climate change and to establish voluntary greenhouse gas emission reduction goals for products and operations.

Sample shareholder resolution language

WHEREAS: Buildings are the largest source of the greenhouse gas (GHG) emissions that are causing global warming, and in the United States, half of building-related emissions are from houses. The EPA estimates that the residential end-use sector accounted for 21 percent of CO₂ emissions from fossil fuel combustion in 2007.

With residential end-use accounting for such a high proportion of GHG emissions stemming from fossil fuel combustion, a number of recent studies have focused on energy efficiency improvements in residential dwellings as a potential source of emission reductions. One study in The McKinsey Quarterly found that nearly a quarter of cost-effective GHG abatement potential involves efficiency-enhancing measures geared toward reducing demand in the buildings and transportation sectors. A second McKinsey study concluded that the residential sector represents the single-largest opportunity to raise energy productivity, noting that, “The adoption of available technologies (including high-efficiency building shells, compact fluorescent lighting, and high-efficiency water heating) would cut ... end-use demand for energy by 32 QBTUs in 2020, equivalent to 5 percent of global end-user demand in that year.”

RESOLVED: Shareholders request that the Board of Directors adopt quantitative goals, based on available technologies, for reducing total GHG emissions from the Company’s products and operations and report to shareholders by December 31, XXXX, on its plans to achieve these goals. Such a report will omit proprietary information and be prepared at reasonable cost.

When shareowners agree to withdraw a resolution, they work directly with the target company to come up with a collaborative solution that satisfies both parties and the intent of the resolution. Engagement with companies also occurs outside of the proxy process through investor statements and collaborative engagement initiatives. These types of initiatives include the INCR and the Carbon Disclosure Project (CDP). For a comprehensive list of collaborative engagement initiatives, please see Appendix A.

Case Study: Energy efficiency-focused shareholder resolutions

Organization: Nathan Cummings Foundation (NCF)

Type: Foundation

Size: \$400 million (approximate endowment)

Management structure: External manager, internal responsible investment and shareholder work

The Nathan Cummings Foundation focuses most of its energy efficiency work on the equity side of its portfolio. In 2005, the foundation first began to look at the energy efficiency of homes produced by the homebuilders in its portfolio. In 2006, the foundation added a focus on big-box retailers, which tend to own and operate large amounts of energy-intensive space. The decisions to focus on homebuilders and retailers were driven by the belief that more energy efficient buildings lead to both lower operating costs and more competitive products.

The foundation has filed a number of successful shareholder resolutions with companies in the homebuilding and retail sectors asking them to report on their approaches to addressing climate change, including energy efficiency, and to establish voluntary GHG emission reduction goals for products and operations. It has not asked companies to set specific goals, but rather requested that they develop voluntary reduction targets on their own.

The foundation has had particular success with homebuilders. A number of homebuilders, including KB Home, Centex and D.R. Horton, have increased their disclosure after receiving shareholder proposals. Two of the companies have also set concrete goals for increasing the energy efficiency of the homes they build.

In July 2008, Centex announced plans to implement its Energy Advantage program in all homes it builds throughout the United States, beginning in January 2009. The announcement followed several years of shareholder filings by the foundation asking the company to disclose information on its approach to energy efficiency and climate change. Centex Energy Advantage homes are estimated to achieve a 10 to 22 percent efficiency improvement when compared to standard efficiency houses built to the current code. Taken together, these homes will avoid the production of thousands of tons of GHG emissions over their lifetimes.

Retailers have also increased their disclosure and set energy efficiency targets following engagement by the foundation. For instance, after receiving two shareholder proposals focusing on climate change and energy efficiency, Kroger set a goal of reducing overall energy consumption in its stores by 30 percent by 2010. The company also set a goal of reducing vehicle miles traveled by 2 percent by 2010. When the foundation first submitted its resolution, the company had no reporting on climate change and no publicly reported emission reduction efforts. The foundation's first resolution at Kroger received 37.44 percent voting support. The 2008 resolution received 39.6 percent of the vote. When nearly 40 percent of its shareholders say an issue is important, a company begins to take notice.

Most recently, Nathan Cummings secured a commitment from Pulte to report on the number of homes it builds to various energy efficiency program specifications and a promise to include a discussion of strategies for increasing these numbers going forward. The company also responded for the first time to the CDP survey, as a result of shareholder resolutions.

Institutional investors owning real estate either directly or indirectly have an interest in policy reforms that will initiate energy efficiency in the real estate sector.

The financial crisis of 2008 and the momentum leading up to global climate change talks in Copenhagen in December 2009 have prompted institutional investors managing trillions of dollars to appeal to governments, regulators and industry associations to establish formal targets for reducing global GHG emissions. The current US federal administration is open to dialogue on green building, green jobs, energy efficiency and responsible investment in general. A number of agencies within the US government have authority to facilitate investment and programs to develop new products and energy and cost saving measures. These developments can help remove market barriers to widespread energy efficiency initiatives. Investor involvement in ENERGY STAR, US Green Building Council and Green Globes can also help ensure that research and development of new tools for tracking and measuring energy efficiency help improve energy efficiency throughout the real estate sector.

This year, investors signed a joint statement regarding the Obama administration's stimulus plan. The letter urged Congress to pass legislation that would create a stable framework within which private investment could drive energy efficiency. It recognized the immediate impact of energy efficiency measures for reducing greenhouse gas emissions, but focused on the need for a strong national Energy Efficiency Resource Standard. This letter is printed below.

Whether it be by adopting proxy voting guidelines that address energy efficiency, conducting shareholder engagement and dialogue, filing shareholder resolutions, or reviewing climate and environmental efficiency issues at the portfolio and stock level, investors in real estate funds and public equity have a variety of opportunities to improve energy efficiency across the real estate sector.

Case Study: Moving the market through public policy

Excerpt from a February 25, 2009 letter:

Dear Majority Leader Reid and Republican Leader McConnell:

We are 35 treasurers, comptrollers, institutional investors, asset managers, and other leaders representing over \$3.2 trillion in assets. With the stimulus bill, the President and Congress have made a significant public investment in the transition to a clean energy economy. Now we urge you to move quickly to pass other legislation – including on energy, transportation, and climate change – that will create a framework in which private investment can drive energy efficiency, renewable energy, and reduce greenhouse gas emissions and that will change public transportation investment to lower oil use and greenhouse gases. Today, our investments face an uncertain policy environment, making it difficult to invest in the clean energy approaches we need. As long-term investors, we need stable national policy to help guide the companies in which we invest so that they can be profitable over the next several decades in a low carbon, clean energy economy.

Making that long-term future a reality requires action now, and the major opportunity in the short-term is energy efficiency. The American Council for an Energy-Efficient Economy (ACEEE) suggests that the U.S. could cost-effectively achieve energy savings of 25-30% or more over the next 20-25 years,⁶² [and the McKinsey Global Institute similarly suggests that global energy demand growth could be cut by at least half by 2020 with additional investments in energy efficiency.]⁶³ As fiduciaries and long-term investors, we recognize that energy efficiency and conservation are the fastest, easiest, and cheapest ways to significantly reduce greenhouse gas emissions and improve the bottom line of the companies and real estate in which we invest, especially with demand for energy increasing. Furthermore, electricity markets generally do not reward energy efficiency, which means there is a need for this highly-regulated arena to have policies that send the right signals to utilities and that remove barriers to efficiency.

Accordingly, **we urge you and your colleagues to enact a strong national Energy Efficiency Resource Standard (EERS).** According to the Federal Energy Regulatory Commission (FERC), more than ten states already have a stand-alone EERS (and about the same number include energy efficiency as part of their renewable energy goals);⁶⁴ several others are considering such a standard. But the important national economic and energy security ramifications here necessitate national focus and leadership. Energy efficiency should be the “fuel of first choice,” and setting national energy savings targets can help ensure that all states share in the benefits of energy efficiency – including saving consumers money, reducing air pollution, and promoting economic development. ACEEE estimates that a robust national EERS (15% electricity savings and 10% natural gas savings by 2020) will create 260,000 net jobs and save utility customers a net \$144 billion.⁶⁵ Energy efficiency is the cheapest form of power we can produce, and it is time for national policy to step in and tell electric utility companies that they need to shift their business practices to deliver a lot more of it.

Sincerely,

PENSION FUNDS, LABOR, STATE TREASURERS, STATE/CITY COMPTROLLERS

California Public Employees' Retirement System
California State Teachers' Retirement System
Connecticut State Treasurer
Illinois State Board of Investment
Maryland State Treasurer
New York City Comptroller
New York State Comptroller
Oregon State Treasurer
SEIU Master Trust
Vermont State Treasurer
California State Controller
California State Treasurer
Florida State Chief Financial Officer
Maine State Treasurer
Massachusetts State Treasurer
New York City Employees' Retirement System
North Carolina State Treasurer
Rhode Island General Treasurer
UNITE HERE

FINANCIAL SERVICES FIRMS, ASSET MANAGERS & OTHER LEADERS IN INVESTING

BlackRock
Calvert Asset Management Company
F & C Asset Management
Green Century Capital Management
MissionPoint Capital
Portfolio 21
Tri-State Coalition for Responsible Investment
Walden Asset Management
Boston Common Asset Management
Deutsche Asset Management
Friends' Fiduciary Corporation
Local Authority Pension Fund Forum
Pax World Funds
Trillium Asset Management
Unitarian Universalist Association
Winslow Asset Management

⁶² Ehrhardt-Martinez, Karen and Laitner, John A. “Skip,” American Council for an Energy-Efficient Economy, “The Size of the U.S. Energy Efficiency Market: Generating a More Complete Picture,” May 2008, <http://www.aceee.org/pubs/e083.htm>.

⁶³ McKinsey Global Institute, “The case for investing in energy productivity,” February 2008, http://www.mckinsey.com/mgi/publications/Investing_Energy_Productivity/.

⁶⁴ Federal Energy Regulatory Commission, “Energy Efficiency Resource Standards,” December 2008, <http://www.ferc.gov/market-oversight/mkt-electric/overview/elec-ovr-eeeps.pdf>.

⁶⁵ ACEEE, “Energy Efficiency Resource Standard (EERS) Retail Electricity and Natural Gas Distributors,” February 2009, http://www.aceee.org/energy/national/FederalEERSfactsheet_Feb09.pdf.

Best practice action list: A 'How-to' for real estate investors

This section outlines some best practices for direct owners of property and investors in real estate funds and public equity. As this report has shown, all types of owners and shareholders have opportunities to affect energy efficiency in the real estate sector. In order to take advantage of these opportunities, owners and shareholders should review the following practices and initiate actions best suited for their real estate portfolios.

Direct owners of property

Because direct owners of property each have different levels of internal resources and commitments to promoting green real estate, there is no standard approach to enhancing the energy efficiency of real estate holdings. Based on the current state of direct owners' holdings and the actions they have already taken to promote energy efficiency or other sustainability practices, practical next steps vary. The following items highlight common steps in a logical order and some important issues for further discussion and exploration.

Across all steps and considerations investors are encouraged to make use of the growing network of experts and peers practicing in this space. A list of resources is provided in Appendix A.

1. Education and buy-in

A recommended first step is to develop sufficient knowledge in-house and garner enough support to launch and implement an energy efficiency program. This step includes educating trustees, staff and other stakeholders on the business case for energy efficiency, outlining resources and costs, and raising questions. A next step consists of gathering data on the existing portfolio through preliminary discussions with property managers and investment partners, and then, for owners with sufficient resources, formally benchmarking. Owners can consult existing databases and sources such as ENERGY STAR and USGBC to evaluate their own next steps.

Discussion topics may include:

1. What interest is there internally (among trustees, staff and asset managers) and from external stakeholders?
2. What is the business proposition for pursuing energy efficiency gains in the direct real estate portfolio?
3. What are some recent developments among real estate services firms and other key players in this area?
4. What existing networks and partners can be useful in gathering information and assisting with project planning?
5. What are the appropriate action items and who will manage and implement them?

2. Benchmarking and policy

Benchmarking represents arguably the single most important step owners can take toward improving energy efficiency in real estate investments. The development of realistic and meaningful targets and goals for energy efficiency programs hinges on first conducting a careful baseline measurement of existing holdings' current energy performance. Benchmarking also enhances the internal knowledge base among trustees and property managers.

Discussion topics may include:

1. Will the policy/targets include:
 - Sub-asset class distinctions?
 - Qualitative as well as quantitative goals?
 - Monitoring and disclosure provisions?
2. What benchmarking tools/framework will be utilized?
3. How and over what time frame will benchmarking be implemented?
4. What milestones should be set to track incremental progress?
5. Is there a threshold for ROI or payback period that will frame the policy-setting and implemented projects?
6. What will be the monitoring and reporting mechanism and process?

3. Choosing property managers and service providers

When designing or implementing an energy efficiency or green policy, a direct property owner may consider including energy efficiency provisions in service agreements and contracts. These may include mandatory use of ENERGY STAR or other benchmarking tools, training, etc.

Many pioneering green real estate firms and investors favor employing union labor due to energy efficiency training programs offered by unions. Owners may need to change existing responsible contracting policies to specify union labor or other pro-green practices.

Specific considerations potentially include:

1. Is there an existing responsible contractor or procurement policy that can be modified to include energy efficiency goals?
2. Are existing contractors and property managers qualified to implement greater energy efficiency measures?
3. Can specific energy efficiency criteria be built into hiring practices for real estate-related services?
4. What type of support (and how much) can your organization offer to contractors to improve their knowledge and capabilities?
5. What deadlines need to be defined to ensure timely delivery of energy efficiency services by contractors?

Indirect investors: Real estate funds and public equity

In order to promote enhanced energy efficiency in real estate funds and public equity, investors and real estate funds can work through their asset or fund managers to engage property and building managers, developers, builders, or companies with large real estate holdings, such as retailers. The following steps highlight some best practice actions.

Across all steps and considerations investors are encouraged to make use of the growing network of experts and peers practicing in this space. A list of resources is provided in Appendix A.

1. Engage with asset managers

Many asset or fund managers are benchmarking and improving energy performance within their real estate portfolios. Investors can initiate dialogue with their managers, as they explore the next steps toward benchmarking.

Some questions to ask managers include:

1. In what ways do you consider energy efficiency a valuable and variable characteristic of properties?
2. Do you analyze energy consumption and efficiency of properties before investing and throughout the holding period?
3. What efforts have you made to benchmark the energy efficiency of your existing portfolio?
4. What is your familiarity and experience with LEED and ENERGY STAR programs and tools?
5. In what ways do you encourage property managers and tenants to conserve energy and promote more energy efficient properties?

2. Engage with portfolio companies

Investors holding companies indirectly through real estate funds or public equities can promote energy efficiency by engaging with portfolio companies through proxy voting, shareholder dialogue and resolution filing.

Blueprints of successful engagement campaigns come from The Nathan Cummings Foundation in the US, Ethical Funds in Canada, and F&C Asset Management in the UK. Networks promoting shareholder engagement include the Interfaith Center for Corporate Responsibility (ICCR) and the United Nations Environment Programme Finance Initiative's (UNEP FI) Principles for Responsible Investment (PRI).

Considerations include:

1. Do funds have proxy voting guidelines that stipulate support for shareowner resolutions encouraging energy efficiency measures?
2. Do funds have a track record on shareholder dialogue with portfolio companies around energy efficiency issues?
3. Have funds filed shareowner resolutions asking portfolio companies to improve or report on energy efficiency measures?
4. Does your organization have its own voting policies to support these issues?
5. Is your organization positioned to lead or join a campaign for improved energy efficiency performance or disclosure in the public markets?

Recent shareholder resolutions and engagement topics have included:

1. Increased disclosure on energy efficiency or GHG emissions of products/portfolio
2. Incorporation of green building strategies and use of alternative energy into operations
3. Evaluation of climate change risks
4. Use of environmental management systems
5. Governance structure for climate change and energy efficiency⁶⁶

3. Participate in industry networks

Existing industry initiatives offer a range of opportunities for investors interested in embarking on an energy efficiency program to collaborate with other investors. ICCR and Ceres are coalitions of investors that engage in research and advocacy on environmental topics. INCR, a program of Ceres, has a dedicated Real Estate Working Group (which is responsible for this paper.) Other initiatives, such as the PRI and Boston College's Institute for Responsible Investment, have working groups dedicated to Responsible Property as well. The EPA and the US Green Building Council also offer opportunities to communicate with experts and other practitioners. If you are part of a smaller organization or do not yet have a large commitment to improving energy efficiency in your real estate portfolio, you might want to begin speaking to others about the range of approaches and best practices.

Considerations could include:

1. What groups and networks do you already have access to that might offer exposure to energy efficiency and green building expertise?
2. What additional initiatives may be most appropriate to participate in given resources, organizational support and momentum?
3. Are there conferences related to green building, real estate, energy efficiency, responsible property investing or climate change that would be helpful?

⁶⁶ Compiled from www.ethicalfunds.com, www.unpri.org and Shaffer, Laura. Nathan Cummings Foundation. Personal Interview. Feb. 9, 2009.

Conclusion

This report set out to equip investors with the latest developments and best practices around improving energy efficiency in real estate portfolios. No matter how an investor is exposed to real estate, whether through outright ownership of properties, through related public equity investments there are a variety of ways to become engaged and realize benefits. The benefits will vary depending on the program implemented and the types of investments targeted. However, research to date demonstrates that:

- Energy efficient buildings offer a measurable financial benefit over non-green buildings, in the form of higher rent, occupancy, valuation and lower operating costs
- No- or low-cost energy efficiency improvements can have quick and dramatic impacts on property operating costs
- Poorly performing buildings represent an opportunity for a significant investment gain when it comes to energy efficiency
- Additional improvements require planning, partnerships and initial investments, but can also decrease operating expenses and raise resale and leasing value
- Investment managers and products that consider energy efficiency and green building practices are increasingly available to investors
- Barriers to implementing energy efficiency improvements are eroding as demand grows, research on the benefits continues, and supporting products and services improve feasibility and cost-effectiveness
- A growing number of strong networks, initiatives and tools are helping investors, owners and property managers measure and improve energy performance and prioritize new projects and programs
- All of the above factors facilitate indirect approaches to energy efficiency improvements, which provide further opportunities to investors

First steps for investors wishing to delve more deeply into their real estate portfolio to uncover potential energy efficiency benefits, may consider the following steps:

1. Review current real estate investment in terms of direct, indirect and public equity exposure to energy efficiency opportunities.
2. Examine the current policies and practices of property managers, investment managers or related public companies for energy efficiency programs.
3. If necessary, build support internally by communicating the energy efficiency business case, sharing case studies, and taking relatively simple first steps.
4. In launching an energy efficiency initiative, consider a practical plan for benchmarking (This may take place on a building-to-building, manager-to-manager, or company-to-company basis).
5. Once a baseline is established, create and communicate meaningful and achievable targets and implement projects.

The following section provides a list of websites where additional information and contacts can be found. This report, along with those additional resources, provides a detailed illustration of how investors can address climate-related concerns while maintaining and enhancing the value of their real estate portfolios.

Appendix A: Resources for investors

Organization	Description	Website
Building Owners and Managers Association (BOMA)	BOMA International is a primary source of information on office building development, leasing, building operating costs, energy consumption patterns, local and national building codes, legislation, occupancy statistics and technological developments. BOMA manages the "7 Point Challenge" and the BOMA Energy Efficiency Program (BEEP), in addition to publications, conferences, and lobbying.	http://www.boma.org/
Carbon Disclosure Project (CDP)	The Carbon Disclosure Project (CDP) is an independent not-for-profit organization that holds the largest database of corporate climate change information in the world. The goal is to facilitate a dialogue between companies and investors to encourage corporate disclosure of climate data.	http://www.cdproject.net/
Ceres	Ceres is a national network of investors, environmental organizations and other public interest groups working with companies and investors to address sustainability challenges such as global climate change.	http://www.ceres.org
Green Globes	Green Globes system is a building environmental design and management tool. It delivers an online assessment protocol, rating system and guidance for green building design, operation and management. It provides market recognition of a building's environmental attributes through third-party verification.	http://www.greenglobes.com/
Interfaith Center on Corporate Responsibility (ICCR)	ICCR's membership is an association made up of almost 300 faith-based institutional investors, including national denominations, religious communities, pension funds, foundations, hospital corporations, economic development funds, asset management companies, colleges and unions. ICCR and its members press companies to improve their social and environmental sustainability, primarily by sponsoring over 200 shareholder resolutions per year on major social and environmental issues.	http://www.iccr.org/
Investor Network on Climate Risk (INCR)	INCR is a \$8 trillion network of investors that promotes better understanding of the financial risks and opportunities posed by climate change. Its climate change action plan aims to boost investments in energy efficiency and clean energy technologies and require tougher scrutiny of carbon-intensive investments that may pose long-term financial risks.	http://www.incr.com
Rocky Mountain Institute (RMI)	Rocky Mountain Institute is an independent, entrepreneurial nonprofit think-and-do tank™ that drives the efficient and restorative use of resources. Rocky Mountain Institute's work in the built environment takes an integrated approach by seeking to increase energy efficiency while simultaneously addressing building and community design, comfort, and health.	http://www.rmi.org
RPI Center (Boston College)	The Institute for Responsible Investing at Boston College works with Professor Gary Pivo of the University of Arizona to stimulate new vocabulary, research, and investments in the field of Responsible Property Investing (RPI). To that end, the IRI and Professor Pivo have developed the RPI Center to coordinate collaborative activity, information sharing, and research into the theory and practice of responsible investing.	http://bcccc.net
UNEP Finance Initiative Property Working Group	This working group aims to encourage property investment and management practices that achieve the best possible environmental, social and governance (ESG) and financial results.	http://www.unepfi.org/work_streams/property/
UN Principles for Responsible Investment (PRI)	The UN PRI provides a framework to support the growing view among investment professionals that responsible management of environmental, social and corporate governance (ESG) issues is a fiduciary duty that can affect the performance of investment portfolios.	http://www.unpri.org/
US Environmental Protection Agency (EPA)	EPA leads the nation's environmental science, research, education and assessment efforts. The mission of the Environmental Protection Agency is to protect human health and the environment. ENERGY STAR® is a joint program of the EPA and the US Department of Energy.	http://www.epa.gov/ http://www.energystar.gov
US Green Building Council (USGBC)	The USGBC is a non-profit membership organization with a vision of a sustainable built environment within a generation. Its membership includes corporations, builders, universities, government agencies and other non-profit organizations. USGBC is dedicated to expanding green building practices and education, and its LEED® (Leadership in Energy and Environmental Design) Green Building Rating System™.	http://www.usgbc.org/

Important notices

The findings, ratings and/or opinions expressed herein are the intellectual property of Mercer and are subject to change without notice. They are not intended to convey any guarantees as to the future performance of the investment products, asset classes or capital markets discussed. Past performance does not guarantee future results.

This does not contain investment advice relating to your particular circumstances. No investment decision should be made based on this information without first obtaining appropriate professional advice and considering your circumstances.

Information contained herein has been obtained from a range of third party sources. While the information is believed to be reliable, Mercer has not sought to verify it. As such, Mercer makes no representations or warranties as to the accuracy of the information presented and takes no responsibility or liability (including for indirect, consequential or incidental damages), for any error, omission or inaccuracy in the data supplied by any third party.

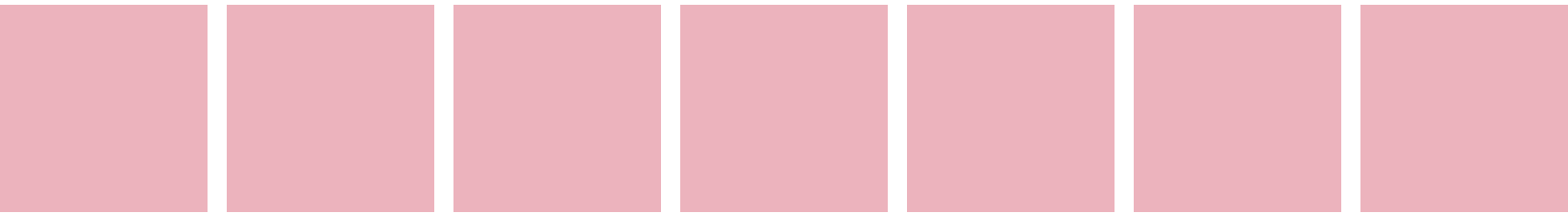
This does not constitute an offer or a solicitation of an offer to buy or sell securities, commodities and/or any other financial instruments or products.



MERCER



MARSH MERCER KROLL
GUY CARPENTER OLIVER WYMAN



For further information, please
visit our websites at:

www.mercer.com
www.ceres.org

