



## COMMITTEE REPORT: INVESTMENTS

By **John H. Sweeney**

# The Good Business of **Green** Buildings

Economic and environmental benefits are accelerating the adoption of sustainable real estate practices

**F**or all its glamour, real estate is a dirty business. The construction of a commercial building requires heavy use of both materials and energy, and once a building is erected, it almost never stops consuming natural resources. Operational systems such as lighting, ventilation, heating, cooling, refrigeration and the powering of computers and other equipment require huge amounts of electricity. In the United States, for example, the U.S. Energy Information Administration estimates that buildings account for approximately 40 percent of the country's total energy consumption.<sup>1</sup> Similarly, the U.S. Environmental Protection Agency (EPA) estimates that buildings consume approximately 14 percent of all potable water in the United States annually through sewage, cleaning and other uses.<sup>2</sup>

Partially as a result of their resource consumption, buildings are also a major source of greenhouse gas (GHG) emissions. The United Nations Environment Programme estimates that buildings account for approximately one third of global carbon emissions and are therefore a leading contributor to global warming and climate change.<sup>3</sup> With the population of global cities expected to double by 2050, sustainable real estate practices must play a central role in any comprehensive effort to reduce carbon emissions and combat global climate change.

### Superior Economics

In recent years, the global real estate industry has been adopting numerous green building strategies and technologies to reduce its overall environmental impact, and

these initiatives are gaining popularity. According to the *World Green Building Trends 2016 SmartMarket Report* by Dodge Data & Analytics, the global green building sector doubles roughly every three years. In the United States, growth in the green building sector is continually outpacing overall construction growth. The U.S. Green Building Council (USGBC) estimates that 40 percent to 48 percent of new, nonresidential construction projects will be considered green in 2016, versus only 2 percent in 2005.<sup>4</sup> This progress has been driven in large part by the actions of governments and advocacy groups encouraging the implementation of green standards. However, the most powerful driving force behind the trend towards greener buildings—and the one most likely to ensure its long-term continuation—is that green buildings tend to produce better economics for real estate owners and developers. This result carries significant implications for real estate investors who wish to remain competitive amidst a changing marketplace.

Studies and empirical data have shown that green initiatives can boost profits for developers, landlords and tenants in a variety of ways. For developers and landlords, green buildings tend to command better rents, higher occupancy and reduced operating expenses than typical commercial buildings. For tenants, green initiatives often result in health improvements, leading to better worker productivity and employee retention. The costs of implementation, historically viewed as a barrier to widespread adoption, are also becoming less of a headwind due to the emergence of economies of scale. While the moral argument for greener buildings will continue to influence the real estate industry, the ultimate success of the movement will likely be driven by green buildings' superior economics.

**Industry Advocates of Green Buildings**  
A host of advocacy organizations have encouraged



**John H. Sweeney** is vice president at Park Madison Partners in New York City



the advance of green building practices, including the Urban Land Institute, the U.S. Green Buildings Council (USGBC), Energy Star and the Building Research Establishment. These organizations provide the real estate industry with sustainability standards and benchmarks, as well as guidance for their implementation. Within the United States, USGBC and Energy Star sponsor the most widely adopted green building programs.

The USGBC is a non-profit organization led by participants from across the real estate and construction industries to promote sustainable real estate practices. Today, the USGBC has over 12,000 member organizations. The main product of the USGBC is its Leadership in Energy and Environmental Design (LEED) certification program. LEED grades buildings based on a 100-point scale for various interrelated sustainability factors, such as water efficiency, energy efficiency, site selection, building materials, indoor environmental quality (IEQ) and design innovation. LEED standards are applicable to both the construction and operation of buildings. A wide range of buildings are eligible for certification, including new and existing commercial or multi-family projects, commercial interiors and even single family homes.

Since its inception in 1994, LEED has become widely adopted and cemented the USGBC's place as one of the premier advocates for sustainable building practices. Today more than 15 billion square feet of building space worldwide is LEED-certified, representing more than 79,000 projects in at least 160 countries. More than 850 million square feet of real estate space became LEED-certified in 2015 alone.<sup>5</sup>

The EPA's program, Energy Star, is a label awarded to the 25 percent most energy-efficient buildings and is therefore more exclusive than LEED. Energy Star also differs from LEED in the sense that it focuses primarily on energy efficiency and the reduction of GHG emissions, whereas LEED addresses a broad range of interrelated sustainability measures. Because Energy Star buildings are scored on a relative basis, ratings should become even more exclusive and difficult to attain over time as the trend towards green building accelerates.

Governments also have been strong advocates of green building initiatives, often leading by example in

the adoption of standards such as LEED and Energy Star. For instance the U.S. General Services Administration (GSA), which is essentially the federal government's landlord and one of the largest landlords in the United States, has mandated that, in all but a few exceptions, new federal leases must be in Energy Star-rated buildings. Additionally, more than 400 U.S. cities, counties, states and federal agencies have implemented policies either supporting or mandating LEED standards for new or renovated government facilities. Because gov-

The data overall seems to support the idea that green buildings produce significant long-term cost savings while also benefiting the environment.

ernments themselves are some of the largest commercial tenants in the United States, these policies create a strong economic incentive for developers and landlords to pursue green building practices.

Real estate investors, particularly large institutions such as public pension funds and sovereign wealth funds, are also increasingly adopting investment policies that incorporate environmental, social and governance (ESG) considerations into investment decision making. In real estate, green building policies are a large component of ESG considerations. Fund managers and real estate operators who wish to invest capital on behalf of these large institutions must often adopt their own ESG policies, thereby reinforcing the overall industry trend towards sustainability.

### Implementation Costs

There's a common perception that green building initiatives are costly to implement, and therefore may reduce profits for developers, landlords and investors. There's certainly some truth to this; the most environmentally



## COMMITTEE REPORT: INVESTMENTS

friendly building materials aren't necessarily the cheapest, and adding systems to support green initiatives will likely require increased capital expenditures to implement. For buildings that seek LEED certification, even the certification process itself is expensive. Certification fees can exceed more than \$1 million for a large project and tend to average around 2 percent of a construction project's total cost.<sup>6</sup> For a developer fighting to protect profit margins, that extra 2 percent isn't unsubstantial.

Government tax credits and subsidized financing often help to at least partially offset these increased costs. But more importantly, construction costs are becoming

As green features become more of the norm, commercial tenants—from both the public and private sectors—expect their buildings to have them.

less of a barrier to green building due to the emergence of economies of scale. As green building has become more widely adopted and less exceptional in nature, material supply chains have matured and become more affordable. Architects, contractors and construction workers also have become more skilled and efficient in the implementation of green initiatives, rendering them less expensive and more a part of business as usual. In this regard, there are some parallels between green building and what's transpired in the solar industry, in which the price of a photovoltaic cell has fallen from \$76.67 per watt in 1977 to less than \$0.30 per watt in 2016 as solar has become a more mainstream energy source.<sup>7</sup>

### Operating Efficiencies

In addition to green practices becoming more cost-efficient, there's a growing body of evidence that suggests such measures are actually accretive to overall profits. Some of the most obvious benefits of green initiatives are the corresponding reductions in operating costs through

reduced energy and water use. Typical green initiatives often have a payback period of seven years or less and rates of return that rival those of traditional value-add real estate improvements.

Numerous studies have attempted to prove a correlation between green real estate practices and better operating results. These studies typically compare buildings that are LEED or Energy Star-rated with similar projects that have no such rating. Critics of such studies would argue that the data is biased by certain factors, such as building age and location. This criticism is valid, as real estate market data is characteristically asymmetrical, and each study's methodology is imperfect. For example, green buildings by definition incorporate the latest technology into their design and are therefore more likely to be either newer constructions or recently retrofitted. Newer or recently retrofitted buildings tend to command certain value premiums independent of their environmental friendliness. Additionally, green buildings are more prominent in urban centers, where rents and valuations tend to be higher. As such, isolating a true green premium isn't a straightforward exercise.

Nevertheless, the data overall seems to support the idea that green buildings produce significant long-term cost savings while also benefiting the environment. The



### SPOT LIGHT

#### Down by the River

"The Mighty Mississippi" by Wolf Kahn, sold for \$2,750 at Swann Auction Galleries' American Art sale in New York City on June 9, 2016. Kahn was known for his unique blend of realism and color field. His work predominantly covers landscapes from his extensive travels.



USGBC, for example, has compiled numerous statistics to support the idea that LEED-certified buildings are more efficient from an operational standpoint. A USGBC study of 7,100 LEED-certified construction projects showed that a typical project was at least 10 percent more energy-efficient than peer projects.<sup>8</sup> Additionally, the USGBC estimates that LEED-certified projects use 11 percent less water, have 34 percent lower carbon emissions, contribute less waste to landfills and have 20 percent lower maintenance costs than typical commercial buildings.<sup>9</sup> Similarly, the GSA recently analyzed its portfolio and found that buildings with high LEED ratings consume 25 percent less energy and generate 34 percent lower GHG emissions than typical commercial buildings in the portfolio. So, for real estate investors seeking to maximize returns, green strategies may offer a way to increase a building's net operating income and property value while also benefiting the environment.

What if a developer buys an existing building that's in bad shape or doesn't incorporate the latest technology? Rather than demolish the building, the developer should consider adaptive re-use of the building. For more information, see "Adaptive Re-Use," this page.

## The Human Factor

In addition to operating efficiencies, evidence suggests that green space provides a variety of health benefits. The average person spends approximately 90 percent of his time indoors. So, in addition to their impact on the environment, buildings have a very real impact on the people who inhabit them. Particularly, IEQ factors such as lighting, air quality, thermal comfort, acoustics, building cleanliness and outdoor views have a direct impact on health and stress levels. As such, IEQ improvements can affect companies' bottom lines through increased worker productivity. In office buildings, for instance, studies have shown that IEQ improvements may lead to lower employee absenteeism due to sickness, reduced stress, better attitudes, better memory function and faster work speeds. According to a 2007 study by Greg Kats of Capital E. Analytics, the productivity benefits from IEQ improvements may be as much as 10 times more valuable to tenants than energy savings from other green building initiatives.<sup>10</sup> As such, IEQ factors can impact the lease rates, occupancy and overall compet-

## Adaptive Re-Use

*A win-win for both developers and the environment*

An often overlooked example of real estate strategies that are both profitable and sustainable is the adaptive re-use of an existing building rather than demolition and ground-up construction of a new one. From an investment standpoint, adaptive re-use is almost always cheaper and less risky than ground-up development. It allows a developer to capitalize on a property's highest and best use, while also keeping overall costs constrained by optimizing various elements of the existing structure, often referred to as the "bones" of the building. One of the most common examples today is the conversion of old warehouse space to either loft apartments or creative offices. Due to the environmental impacts of a new construction project, the choice of adaptive re-use is also much greener than ground-up development. Far fewer materials are needed to retrofit an existing building than to build a new one from scratch. A 2011 study by the National Trust for Historic Preservation found that it can take between 10 years and 80 years for the operational efficiencies of a new energy-efficient building to outweigh the negative environmental impacts created during the actual construction process.<sup>1</sup>

### Endnote

1. "The Greenest Building: Quantifying the Environmental Value of Adaptive Re-use," National Trust for Historic Preservation (2011), [www.preservationnation.org/information-center/sustainable-communities/green-lab/lca/The\\_Greenest\\_Building\\_lowres.pdf](http://www.preservationnation.org/information-center/sustainable-communities/green-lab/lca/The_Greenest_Building_lowres.pdf).

— John H. Sweeney

itiveness of a building, with clear implications for real estate investors.

## The Green Premium

In part due to the operating efficiencies and health benefits, being green may lead to better marketability and higher lease rates for developers and landlords, an effect known as the "green premium." Commercial leases are often structured to pass through certain operating costs directly to the tenant. In these cases, better energy and water efficiency will directly affect a tenant's bottom line. Similarly, commercial tenants in buildings with better IEQ features may find it easier to attract and retain talented workers, as well as get high rates of productivity from those workers. Landlords can often demand



premium lease rates in exchange for these benefits.

Commercial tenants also increasingly perceive green as being synonymous with quality. As mentioned previously, governments and public sector agencies are often some of the largest office tenants in a market, and several government tenants require minimum green certifications before signing a lease. This has led developers to incorporate green initiatives into new office construction to attract these tenants. As a result, in many markets, virtually all new Class A office buildings have green features. As green features become more of the norm, commercial tenants—from both the public and private sectors—expect their buildings to have them.

As green real estate practices become more common, technological advancement is likely to unlock new strategies to reduce resource consumption and carbon emissions.

Developers, in turn, may be forced to adopt such standards not in pursuit of a green premium, but to avoid a “brown discount.” Real estate investors may also wish to consider this when assessing the risk profile of a particular property or investment strategy.

### Case Studies

In addition to the myriad statistical studies to support the dual economic and environmental benefits of green buildings, the most compelling evidence is likely provided through empirical examples. The real estate case studies described below demonstrate several green initiatives that produce both environmental benefits and better operating results at the property level. In all of these cases, the owners of the buildings performed a financial cost/benefit analysis on various green initiatives to determine if such projects would be profitable. These case studies are also all

retrofits of existing buildings rather than new constructions, which makes for a more direct comparison of operating results before and after implementation:

- **Empire State Building (office).** In 2008, the Empire State Building Company partnered with Jones Lang LaSalle, the Clinton Climate Initiative, Johnson Controls and the Rocky Mountain Institute to assess the cost-effectiveness of various energy efficiency retrofits at the Empire State Building in New York City and their impact on GHG emissions. Additionally, the building’s owners wanted to review other sustainability issues such as recycling, water conservation and indoor air quality.

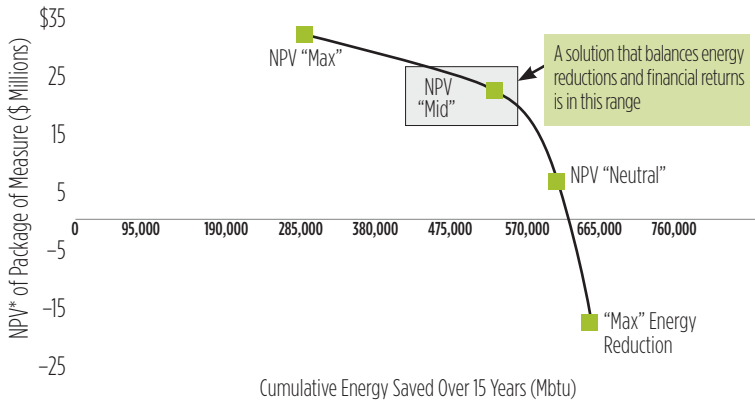
To determine each project’s feasibility and cost-effectiveness, the expected cost savings and rent premiums over a 15-year period were used to calculate the net present value (NPV) using an 8 percent discount rate. Forty energy efficiency ideas were analyzed, with the expected NPVs of each project aggregated to determine the most optimal combination of measures from a cost-benefit perspective. The result, shown in “The Best of Both Worlds,” p. 47, resembles an efficient portfolio frontier commonly used by investment management professionals. Based on this analysis, the owners of the Empire State Building chose to implement 17 of the 40 measures presented, which are expected to reduce the building’s carbon emissions by 38 percent and save approximately \$4.4 million per year in operating expenses.<sup>11</sup>

- **Miracle Marketplace (retail).** After acquiring this seven story Florida retail property in 2013, real estate development firm Heitman began reviewing options to upgrade its parking lot and garage lighting systems with LED bulbs to save energy. Heitman determined that the upgrades would cost \$385,000, or approximately \$170,000 more than normal non-LED light bulbs, but would result in annual energy savings of 1 million kWh, or \$90,000. The resulting payback period on the incremental cost was less than two years, representing a 53 percent annual return on investment. Long-term maintenance fees are also expected to be reduced because LED bulbs require less frequent replacement.<sup>12</sup>
- **AvalonBay Communities (multi-family).** In



## The Best of Both Worlds

Finding a solution that balances financial returns and energy reductions



\*NPV = Net present value

— Jones Lang LaSalle

response to California's prolonged drought, in 2014 national apartment manager AvalonBay Communities retrofitted 2,546 apartment homes throughout the state with low-flow toilets. In addition to saving money for tenants on their water bills, this simple retrofit is expected to save 4.2 million gallons of water per year. These measures required no incremental cost to AvalonBay, as the entire project was funded by rebates from the Los Angeles Department of Water and Power.<sup>13</sup>

### Recent Challenges

Green building certainly has its opponents. In particular, LEED certification has become a political hot button in recent years for a few reasons. The LEED certification process relies heavily on third-party professionals to review each building for compliance. The real estate industry has perhaps never before been so reliant on independent third-party reviewers, other than for matters regarding accounting or valuation, and as discussed previously, these certifications can directly affect tenant appeal and property value. As such, the USGBC's growing influence and power within real estate makes some industry players uneasy.

Additionally, there's growing political controversy surrounding LEED's peculiar impact on the use of wood

in a building. Within LEED's 100-point certification system, one point relates to the source of wood used in construction and whether that wood was harvested by sustainable means. Quite often, locally sourced wood doesn't meet those sustainability standards, which forces developers to purchase their wood elsewhere. When Congressman Larry Kissell (D-N.C.) discovered that the U.S. Marine Corps' Camp Lejeune was planning to use imported bamboo from Asia rather than a local source, he took the matter to Congress. An amendment to a 2012 defense spending bill effectively limited the military's ability to pursue the highest, most expensive LEED ratings without a cost/benefit analysis and a demonstrated pay-

back period. Certain state governments have taken similar actions. Alabama, Georgia, Maine and Mississippi—all states with strong ties to the timber industry—have banned the use of LEED in new government buildings.

While such drastic measures over a single point out of LEED's 100-point scale may seem like a waste, banning LEED doesn't necessarily mean banning green practices altogether. Other green certification programs have emerged in recent years as alternatives to LEED, such as the International Green Construction Code, Green Globes and the 2010 California Green Building Standards Code. Governments and developers that oppose LEED often turn to its less stringent competitors. Though the controversy over LEED is a potential near-term setback for green building advocates, having more certification options should ultimately be a long-term positive for the green building industry by fostering competition and providing developers with additional incentives to target sustainability goals.

### The Future


As green real estate practices become more common, technological advancement is likely to unlock new strategies to reduce resource consumption and carbon emissions. The central computers that monitor large commercial buildings' energy use may develop the



## COMMITTEE REPORT: INVESTMENTS

ability to “learn” the patterns of their occupants and adjust electrical and heating, ventilation and air conditioning systems accordingly. Smart buildings could then be integrated into smart utility grids, with the ability to communicate and share information with neighboring buildings. The cities of the future may be fine-tuned and synchronized in such a way that provides more efficient use of resources, better comfort for residents and a much reduced ecological footprint.

Regardless of profession, nearly everyone has a stake in the real estate industry, and therefore the ability to help drive the movement towards greener buildings. Tenants can ask their landlords about green certifications and sustainability initiatives. Investors can encourage their real estate managers to adopt ESG policies and pursue environmentally friendly investment strategies. Governments and advocacy groups can continue to incentivize and encourage the adoption of minimum sustainability criteria. And of course, developers and landlords should continue exploring green initiatives that pay financial dividends.

The real estate industry isn't renowned for its fast pace of technological innovation. A building, once constructed, tends to stand for a long time, and any major technological improvements over the course of its life cycle will generally require heavy capital investment. As a result, progress towards greener real estate will likely be gradual. But, progress is certainly needed if we wish to reduce GHG emissions and build a more sustainable world. For now, the market signals are encouraging. 

### Endnotes

1. “Frequently Asked Questions: How much energy is consumed by residential and commercial buildings in the United States?” U.S. Energy Information Administration (April 6, 2016), [www.eia.gov/tools/faqs/faq.cfm?id=86&t=1](http://www.eia.gov/tools/faqs/faq.cfm?id=86&t=1).
2. “Benefits of Green Building,” U.S. Green Buildings Council (April 1, 2016), [www.usgbc.org/articles/green-building-facts](http://www.usgbc.org/articles/green-building-facts).
3. “Buildings and Climate Change,” United Nations Environment Programme—Sustainable Buildings and Climate Initiative (2009), [www.unep.org/sbci/pdfs/SBCI-BCCSummary.pdf](http://www.unep.org/sbci/pdfs/SBCI-BCCSummary.pdf).
4. “About Benefits of Green Building,” U.S. Green Buildings Council (June 2016).
5. *Ibid.*
6. Timothy Hughes, “The True Cost of LEED-Certified Green Buildings,” *Hpac.com* (Jan. 1, 2011).
7. “New Energy Outlook 2016,” Bloomberg (2016), [www.bloomberg.com/company/new-energy-outlook/](http://www.bloomberg.com/company/new-energy-outlook/).
8. See *supra* note 4.
9. *Ibid.*

10. Norm Miller, Jay Spivay and Andy Florance, “Does Green Pay Off?” U.S. Green Buildings Council (July 12, 2008), [www.usgbc.org/Docs/Archive/General/Docs5537.pdf](http://www.usgbc.org/Docs/Archive/General/Docs5537.pdf).
11. Anthony Malkin, “A landmark sustainability program for the Empire State Building,” Empire State Realty Trust 2014, <http://global.ctbuh.org/resources/papers/download/2482-a-landmark-sustainability-program-for-the-empire-state-building.pdf>.
12. Greenprint Performance Report, Vol. 6, ULI Greenprint Center for Building Performance (2015), <http://uli.org/research/centers-initiatives/greenprint-center/greenprint-performance-report/>.
13. 2014 Corporate Responsibility Report, AvalonBay Communities (2014), [www.avaloncommunities.com/-/media/Images/Corp/CorporateResponsibilityRevamp/2014%20corporate%20social%20responsibility%20report.pdf?la=en](http://www.avaloncommunities.com/-/media/Images/Corp/CorporateResponsibilityRevamp/2014%20corporate%20social%20responsibility%20report.pdf?la=en).



### SPOT LIGHT

#### Adam and Eve 2.0

“The Encounter” by Benny Andrews, sold for \$4,250 at Swann Auction Galleries’ American Art sale in New York City on June 9, 2016. Andrews’ paintings portrayed themes of suffering and injustice, including the Holocaust and Hurricane Katrina. In addition to his paintings, Andrews produced numerous collages.