

# Energy Management & Investor Returns: The Real Estate Sector



Leaders in Energy Management  
Achieve Superior Stock Market  
Returns in the Real Estate Sector

October 2002



Innovest Strategic Value Advisors

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Cover Photo: Howard Hughes Tower in West Los Angeles, California. Owned by Arden Realty, Inc. Photographed by Robert Reiff

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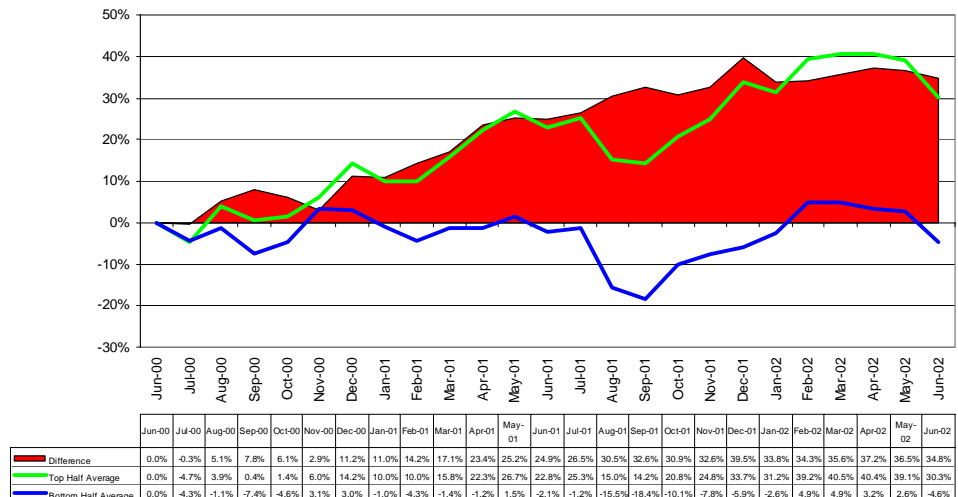
# Real Estate Sector

## 1. INTRODUCTION

Innovest Strategic Value Advisors, a financial research firm based in New York, London and Toronto, analyzed relative energy efficiency and energy management performance in the real estate sector.<sup>1</sup> The study found that leaders in energy management achieved superior stock market and financial performance over the past two years.<sup>2</sup>

Company-specific energy consumption data are usually not available in this sector (in general, only the most proactive companies disclose it in an effort to enhance stakeholder relations). To analyze performance in the absence of data, Innovest developed a comprehensive rating model comprised of over 25 quantitative and qualitative metrics. Appendix A describes the methodology used for selecting and rating companies.

Of the twelve companies analyzed in this report, Figure 1 shows that the six companies with above average energy management performance, taken as a group, outperformed the below average companies over the past two years by over 3,400 basis points (thirty four percentage points) in the stock market. (This summary report does not include company-specific ratings and analysis. The full report, which includes this information, is available from Innovest at 646-237-0220 or fdixon@innovestgroup.com.)



**Figure 1- Stock Market Performance of Top Half vs. Bottom Half Companies**  
(Source: Innovest)

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## 2. ENERGY STAR PARTNERS: STOCK MARKET PERFORMANCE

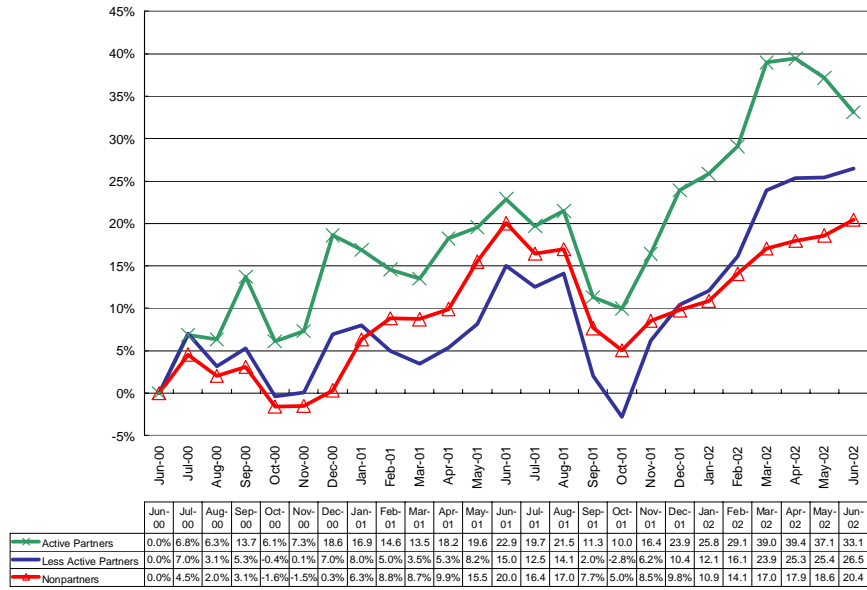
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To further assess possible links between energy management and stock market performance, a less complex analysis was performed. In this study, companies actively engaged in the U.S. Environmental Protection Agency's (EPA) ENERGY STAR® program were compared to companies with little or no involvement in the program. The ENERGY STAR program is one way for companies to demonstrate environmental leadership through improved energy management by reducing the greenhouse gas emissions that cause global warming. Elements of the program include providing labels indicating superior energy efficiency performance for consumer products and commercial, institutional and residential buildings.

Companies participate in ENERGY STAR through voluntary partnerships with the EPA. Participating companies are able to access a suite of tools and services that support companies' efforts to measure, benchmark and improve the energy-efficiency performance of their facilities. As part of Innovest's analysis, 36 companies were divided into three groups: active ENERGY STAR partners, less active ENERGY STAR partners, and non-partners. Active and less active partners were differentiated based on whether the company had a relatively high or low number of buildings that had received the ENERGY STAR label. Any company receiving the ENERGY STAR partner of the year award was automatically categorized as active. The third category was comprised of companies not involved in ENERGY STAR.

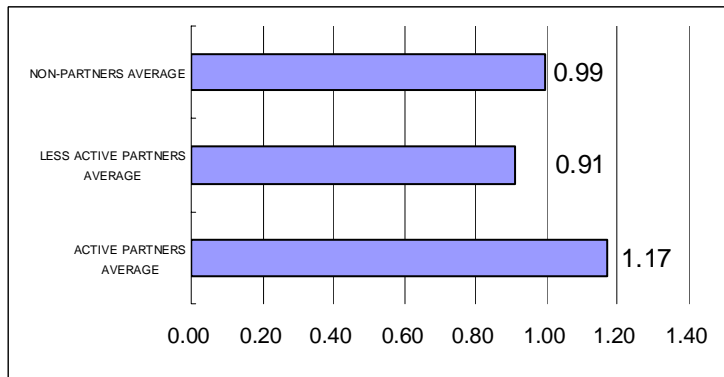
*Figure 2 shows that, over the past two years, active partners outperformed less active partners by over 600 basis points in the stock market. Additionally, active ENERGY STAR partners outperformed non-partners by over 1,200 basis points over the same period.*

Figure 2 shows that, over the past two years, active partners outperformed less active partners by over 600 basis points in the stock market. Additionally, active ENERGY STAR partners outperformed non-partners by over 1,200 basis points over the same period.



**Figure 2 - Stock Market Performance of EPA's ENERGY STAR Active-Partners vs. Less Active Partners vs. Non-Partners (Source: Innovest)**

Figure 3 shows the performance of the three groups on Tobin's Q, a measure of intangible value. Over the past two years, the active ENERGY STAR partners outperformed the less active and non-partners by over 18%. This indicates that the market places a significant premium on these companies.



**Figure 3 - Active Energy Star Partners vs. Less Active Partners and Non-Partners – Tobin's Q (Source: Innovest)**

Accurately assessing corporate energy management performance is a complex task, probably outside the expertise of most financial analysts. Innovest's research in many sectors indicates that companies significantly involved in ENERGY STAR usually are leaders in overall energy management. A study by Hicks and Von Neida supports these findings by showing that the energy intensity of ENERGY STAR labeled buildings was 44% lower than the market average.<sup>3</sup> Given this relationship, assessing the level of involvement in ENERGY STAR provides an easy way for analysts to estimate relative energy management performance.

*Innovest has found in nearly every sector that companies with above average environmental performance, taken as a group, outperform below average environmental performers by 300 to 3000 basis points (3 to 30 percentage points) per year in the stock market.*

Since many factors influence financial performance, it is likely that energy management is not the only driver of financial results in these studies. Nevertheless, given the large differentials found, the proxy value for management quality, and the significant financial benefits accruing from improved energy performance, it is likely that enhanced energy management does increase investor returns.

Management quality is a primary determinate of stock market performance. Yet management quality is difficult to quantify since it is subjective. Having analyzed relative corporate environmental performance in over 50 sectors, Innovest has found in nearly every sector that companies with above average environmental performance, taken as a group, outperform below average environmental performers by 300 to 3000 basis points (3 to 30 percentage points) per year in the stock market. This occurs mainly because environmental performance is a strong proxy for management quality. (Innovest's primary business is conducting comprehensive, financially-oriented assessments of corporate environmental and social performance. Financial institutions such as ABN-AMRO, Dreyfus, ING, Mellon Capital, Rockefeller & Co, Schroders, T. Rowe Price and many others, use Innovest research to develop investment products intended to outperform mainstream funds—see [www.innovestgroup.com](http://www.innovestgroup.com) for more information.)

Effective environmental management is one of the most complex challenges facing management. There are high levels of technical, regulatory and market uncertainty as well as many stakeholders and complex issues to address. It is implied that companies dealing well with this high level of complexity have the sophistication to succeed in other parts of the business and thereby earn superior returns. Energy management is an important aspect of environmental performance which also poses a complex challenge to management. As a result, it is likely that energy management performance is also a strong indicator of management quality and stock market potential.

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### **3. THE BUSINESS CASE FOR ENERGY MANAGEMENT**

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The correlations found in the above studies are partly explained not only by the proxy value for management quality, but also by financial and competitive benefits resulting from improved energy management. In the real estate sector, companies reported achieving the following benefits:

- ◆ **Reduced Operating Costs.** Energy costs typically represent 30-35% of the total operating cost of a building. As a result, reducing energy costs by improving energy efficiency can significantly increase



earnings. Leaders in the sector have been able to lower annual energy consumption by as much as 30-40%. For example, [Arden Realty](#) reduced annual energy costs by \$4.8 million through energy efficiency measures, while [Equity Office Properties](#) and [TrizecHahn Corporation](#) reduced annual energy expenses by \$1.7 million and \$2 million, respectively.

- ◆ **Enhanced Property Values.** Improving energy efficiency can increase net operating income (NOI) significantly. Higher NOI, in turn, can lead to increased property values and preferable loan arrangements. A study by the Institute for Market Transformation found that a dollar invested in energy efficiency with a 20% return on investment could increase property value by two dollars.<sup>4</sup> Research done by the EPA found that \$1 invested in energy efficiency could actually increase asset value by as much as \$3.<sup>5</sup>
- ◆ **Increased Productivity and Potential Labor Cost Savings.** Labor is usually the single largest cost in office environments. Improved energy management procedures and technology upgrades can significantly increase worker productivity. A study by the Rocky Mountain Institute found that high-efficiency lighting designs and retrofits can improve lighting quality, intensity and color, which can dramatically reduce worker eye-strain and vision-related errors.<sup>6</sup> This can increase productivity by reducing absenteeism. The RMI study noted that similar productivity increases have been associated with energy optimization projects involving air conditioning and building materials that increase worker comfort.
- ◆ **Enhanced Tenant/Guest Satisfaction.** The introduction of energy efficient practices and technologies can enhance the comfort of room occupants while providing bottom-line benefits. For example, the hotel chain La Quinta installed a digital control system that provides full temperature control when a room is occupied, but automatically reverts to an energy-saving mode when the room is empty.
- ◆ **Enhanced Image as a Responsible Corporate Citizen.** As environmental problems such as global warming continue to receive greater media attention, consumers and the public in general focus more on corporate environmental performance. In the face of this trend, companies consistently report that improving performance significantly enhances their reputation as responsible corporate citizens. Image enhancement is one of the most common benefits reported by partners. Michael Steele, COO of Equity Office Properties, states “having an energy efficient building gives the owner an opportunity to win over the customer, especially when that is the difference between otherwise similar buildings.”

*Energy management, a key element of environmental performance, is also likely to be a strong indicator of superior management and stock market potential.*

- ◆ **Enhanced Image as a Well-Managed Company.** As noted above, environmental performance consistently correlates well with financial performance. This occurs mainly because the environment represents a complex challenge to management and is therefore a good indicator of management quality, a primary determinate of financial performance. As indicated by this study, energy management, a key element of environmental performance, is also likely to be a strong indicator of superior management and stock market potential.
- ◆ **Enhanced Appeal to Socially-Responsible Investors.** SRI funds have grown rapidly in North America, Europe and Japan over the past five years. The Social Investment Forum estimates that over \$2 trillion of invested U.S. assets are invested through some type of environmental or social screen.<sup>7</sup> Many of the largest financial institutions in the world have introduced SRI funds based on research provided by Innovest and other organizations. When screening for environmental issues, SRI researchers usually consider energy management to be a key element of environmental performance, partly because it has a significant impact on global warming. As the growing SRI market increasingly favors companies with superior energy management performance, energy management leaders will likely receive greater premiums in the stock market.

With intangible value comprising a growing percentage of market capitalization, investors are seeking greater clarity on the drivers of intangible value. Energy management, as an indicator of overall management quality, reputation and other factors, can be used as one indicator of superior intangible value potential. Innovest's analysis found wide variations in corporate energy efficiency performance in the real estate sector. Given the financial benefits resulting from improved energy performance found in this study, it is likely that incorporating energy management analysis into traditional financial analysis will increase investor returns.

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#### **4. ENERGY CONSUMPTION TRENDS AND ASSOCIATED RISKS**

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A study by the U.S. Department of Energy (DOE) estimates that commercial buildings account for 27% of total electricity consumption in the U.S.<sup>8</sup> The energy consumption of commercial buildings is projected to increase by 6% from 1997 to 2010.<sup>9</sup> Partly due to electric utility sector deregulation, energy price volatility has increased in recent years. Firms with superior energy management are less vulnerable to energy price fluctuations. For office REITs, risk exposure related to rising energy prices varies based on whether or not

tenants pay for energy costs. Even when tenants are responsible for energy costs, improving energy efficiency can benefit building owners since the building is potentially more attractive to prospective tenants due to lower operating costs.

Another potential risk area involves greenhouse gas (GHG) emissions. The DOE study noted above estimates carbon emissions from the commercial building sector will increase by 12% from 1997 to 2010. While the Bush Administration has declared that the United States will not participate in the Kyoto Protocol, the Administration has expressed interest in market-based alternatives like the successful sulphur dioxide emission trading program operating in the U.S. since the late 1990's. Individual states have also initiated various efforts to reduce GHG emissions. Emissions trading proposals continue to receive high levels of attention and interest internationally. For example, the UK has operated an emissions trading market since 2000 and several other European countries are also in the process of implementing emissions trading. This growing focus on global climate change may increase pressure on the real estate sector to improve energy efficiency. More directly, international customers seeking office space in the U.S. may be more inclined to favor energy efficient properties.

*A Lawrence Berkeley Lab study released in 1999 estimated that the electricity used to run one workstation (computer and monitor) left on after business hours results in the emission of one ton of carbon dioxide per year.*

Real estate companies that fail to improve energy management miss opportunities to reduce costs and market themselves as environmentally responsible companies. Relatively speaking, rent earnings are static, fixed by competition in the marketplace. To measure relative performance, financial analysts usually analyze the expense side. The negative impacts of taking a laggard approach on improving energy management are likely to appear in cash flow. Impacts may include decreased shareholder value and future earnings as well as increased GHG emissions abatement costs and future potential future liabilities.

In summary, real estate companies face the following potential risks associated with energy consumption:

- Uncertainty in the energy market and energy price increases.
- Possible future GHG emissions reduction regulations.
- Negative impacts on cash flow and shareholder value.

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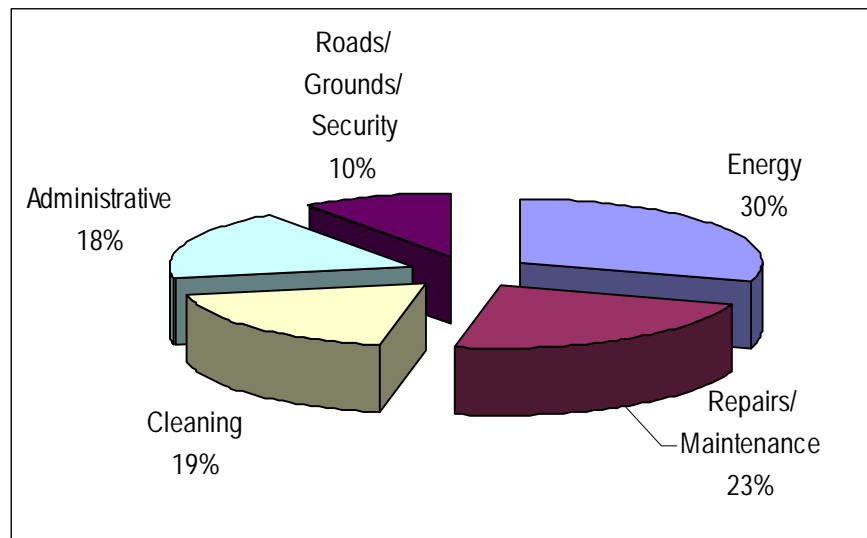
## **5. THE BOTTOM LINE – ENERGY COST SAVINGS**

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Energy costs can represent as much as one-third of a typical office building's operating expenses. The EPA estimates that energy use in a building can be reduced by up to 30% by adopting a comprehensive energy management

strategy and by investing in cost-effective technologies. Leading companies in this sector are saving millions of dollars annually as a result of their proactive energy management efforts. Energy management benefits extend well beyond dollar savings and include increased property and shareholder value, enhanced tenant/guest satisfaction, and improved corporate image.

Figure 4 presents the average breakdown of operating costs for office buildings in the United States. Apart from fixed expenses (taxes & insurance), energy is the largest operating cost item. In states where energy prices are relatively high, such as New York, Connecticut and California, energy costs can represent up to 30-35% of total operating costs.



**Figure 4 - Expense Breakdown for Office Buildings (Source: BOMA Experience Exchange Report)**

Figures 5 and 6 show potential financial benefits resulting from improved energy efficiency.

End-use	Potential energy savings in end-use load
Space heating (electric and gas & oil)	48%
Space cooling (electric and gas)	48%
Ventilation	48%
Miscellaneous electronic end-uses	33%
Refrigeration	31%
Lighting	25%
Electric water heating	20%
Gas and oil water heating	10%
Miscellaneous gas and oil end-uses	10%

**Figure 4 - Energy Savings Potential for Selected End-Uses in Commercial Buildings (Source: Annual Review of Energy and the Environment, 1998)**

Technology	Average Payback Period (Years)	Average ROI
Meters & Monitors	0.5	200%
Lighting	2.2	45%
Controls	2.3	43%
Motors & Drivers	2.4	42%
HVAC	3.6	28%
On-Site Power	4.3	23%
Building Automation	5.9	11%

**Figure 5 - Average Payback Period and Return on Investment of Single Technology Projects (Source: Energy Cost Savings Council)**

The Energy Cost Savings Council analyzed data from 1,000 energy efficiency retrofit projects completed between 1996 and 1998 in the United States. The study indicates that while the initial cost of investments in energy efficiency systems can be high, payback periods are often short.

- The average project reduced annual energy costs by over \$250,000.
- The average payback period was 3.09 years.
- The average ROI (return on investment) was 32.4 percent.
- More than half of the projects reduced costs by at least 50 cents per square foot per year.

Several other studies have shown that energy efficiency retrofit projects are financially attractive.<sup>10</sup> One study by the EPA, for example, found that energy efficiency retrofit projects consistently increase cash flows and are attractive on a net present value and internal rate of return basis.<sup>11</sup>

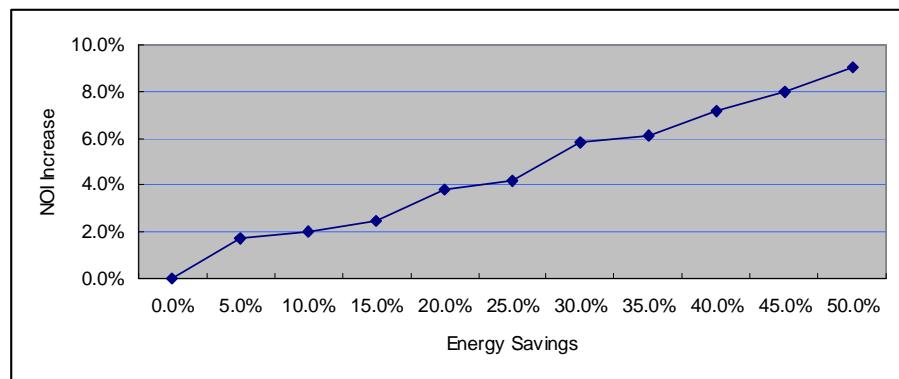
Many real estate companies have realized cost savings through improved energy management and technology upgrades. In 1999, [Arden Realty](#) upgraded 35% of its properties by retrofitting lighting and HVAC systems and implementing computer-based energy management systems. These measures allowed the company to reduce annual energy costs across its building portfolio by \$4.8 million. [Equity Office Properties](#), the largest office REIT in the U.S., implemented initiatives including routine energy audits, comprehensive lighting retrofits, and installation of energy management systems. One initiative, installing lighting retrofits in 20 buildings, reduced annual operating costs by \$1.7 million. [TrizecHahn Corporation](#) reduced annual operating costs by approximately \$2 million through energy efficiency measures.

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## 6. OTHER BENEFITS OF IMPROVED ENERGY MANAGEMENT

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Improving energy management can increase net operating income (NOI) which in turn can increase the asset value of buildings (asset values are typically calculated as 8-10 times NOI). Figure 7 shows how energy savings can increase NOI. A study by the Institute for Market Transformation found that at a 20% rate of return on energy efficiency investments, every dollar invested in energy efficiency produces as much as a two dollar increase in asset property value.<sup>12</sup> Research done by ENERGY STAR using QuickScope, an energy analysis software tool, found that each \$1 invested in energy efficiency could increase asset value by as much as \$3. Increased asset values allow more favorable financing terms.<sup>13</sup>



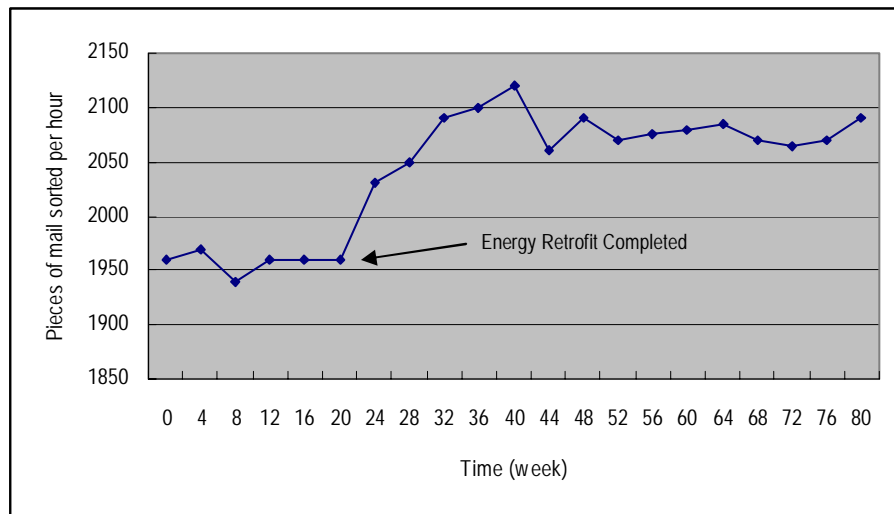
**Figure 6 - Impact of Energy Savings on NOI (Source: 2000 BOMA Experience Exchange Report)**

Another benefit of improving building energy efficiency is the ability to take advantage of tax credits. Green building tax credits are designed to encourage sustainable building practices. The U.S. House of Representatives recently approved a bill that would allow building owners to deduct energy-efficiency expenditures of up to \$2.25 per square foot for new construction or renovation in the same year a property is placed in service. At the state level, New York and Maryland passed green building tax credit legislation which is being implemented in 2002. Other states, including Massachusetts, Pennsylvania and Rhode Island, are considering similar policies.<sup>14</sup>

Labor is usually the largest cost in office environments. Improved energy management procedures and technology upgrades can significantly increase worker productivity. A study by the Rocky Mountain Institute found that high-efficiency lighting designs and retrofits can improve lighting quality, intensity and color, which can dramatically reduce worker eye-strain and vision-related errors.<sup>15</sup> This can increase productivity by reducing absenteeism. The RMI study noted that similar productivity increases have

been associated with energy optimization projects involving air conditioning and building materials that increase worker comfort.

Figure 8 presents an example of productivity improvements related to energy efficiency. In 1986, the Main Post Office in Reno, Nevada improved lighting conditions by lowering the ceiling and installing an efficient lighting system. The lower ceiling made the room easier to heat and cool. It was sloped to enhance indirect lighting and replace harsh direct downlighting. More efficient, longer-lasting lamps that gave off a more pleasant light quality were installed. Forty weeks after the installation, worker productivity had increased by more than 8%.<sup>16</sup>



**Figure 7 - Productivity Gain after Lighting Retrofit at the Reno Post Office in 1986 (Source: “Greening the Building and the Bottom Line”, Rocky Mountain Institute)**

*Fifty percent of adults polled in a Roper/Co-op America study were more likely to buy from a company with a good social reputation.*

Guest satisfaction is critical for hotel REITs. Improving energy management practices and technologies can enhance worker productivity and hotel guest comfort, while providing measurable, bottom-line benefits. Other potential benefits of improved energy management include enhancing corporate image and depicting companies as responsible environmental stewards. This can increase sales since a growing number of consumers take environmental performance into account when making purchase decisions.

In summary, real estate companies can obtain the following benefits by improving energy management:

- Reduced energy costs by as much as 30-35%.
- Higher NOI, leading to increased property asset values and preferable loan arrangements from lenders.
- Increased worker productivity and potential labor cost savings.
- Enhanced tenant/guest satisfaction.

- Enhanced corporate image as a responsible environmental steward.

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## 7. ENERGY MANAGEMENT BENEFITS IN THE HOTEL SECTOR

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Energy costs in the hotel industry are lower than in the office building sector, generally ranging between 2-6% of total revenue. Nevertheless, with approximately 2.4 billion square feet of hotel space in the United States<sup>17</sup>, the hotel industry is the fourth largest user of energy in the U.S. commercial real estate sector. On average, hotels spend \$771 annually per available room for electricity.

By improving energy management, hotel REITs can obtain many of the benefits described above for office REITs. For example, [La Quinta](#) installed energy efficient lighting systems in many properties which reduced overall electricity use by 8% and cut annual energy costs by \$1.3 million. [Marriott International](#) and [FelCor Lodging](#) also improved energy efficiency by installing energy-efficient air conditioning systems and upgrading lighting systems and motors at many of their properties.

The EPA estimates that ENERGY STAR partners in the hospitality industry have realized the following benefits:

- Generated \$73 million in shareholder wealth as a result of energy-efficient lighting upgrades.
- Realized paybacks of less than three years on average for their energy-efficiency lighting upgrades.
- Realized greater returns on energy-efficiency investments than would have been achieved by investing in the New York Stock Exchange or the S&P 500.
- Received expected savings of \$6.27 for every dollar invested in energy-efficient lighting upgrades.

(Source: Energy Efficiency in the Hospitality Industry, Press Kit, EPA, 2000)



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## APPENDIX A: INNOVEST ENERGY MANAGEMENT ANALYSIS

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This study analyzed commercial office and hotel Real Estate Investment Trusts and Operating Companies (REITs). REITs are among the largest real estate owners in the U.S. and therefore have the most to gain from implementing a comprehensive energy strategy focused on improving energy efficiency. Office and hotel REITs were analyzed, as opposed to residential, industrial and retail REITs, since office and hotel REITs usually have the greatest control over energy costs. With other REITs, energy costs are usually passed through to tenants. This is also true for office REITs, but to a lower degree. In other words, office REIT owners frequently are responsible for energy costs. In addition, the ENERGY STAR program focused initially on hotels and office properties, which makes it easier to gather data and analyze relative performance in these sectors. Within the hotel and office sectors, the largest REITs, in terms of market capitalization, generally were chosen. However, an effort was made to balance the number of REITs that were active in ENERGY STAR with those that were not.

To analyze relative energy management in the real estate sector, Innovest developed a multi-factored model (shown below). Metrics in the model are equally weighted. Quantitative data were not available for some of the metrics. Nevertheless, Innovest has found through the analysis of environmental performance in over 50 sectors that using a multi-factor model allows accurate rating even if some data points are missing or inaccurate. This occurs since, even if a few metrics are incorrect, companies are still placed in approximately the same ranked order.

In nearly all sectors analyzed by Innovest, environmental leaders achieved superior stock market performance. Finding similar results in this analysis indicates the energy management rating model is probably accurately projecting relative energy management and overall management quality. The accuracy of the model is further indicated by the correlation to ENERGY STAR involvement.

Data for this analysis were gathered from many sources including government websites, industry reports and company documents. This was supplemented by interviews with senior corporate executives. Of the twelve companies, only one describes energy management initiatives and programs in its annual report. No energy cost figures were available in 10Ks or 10Qs. None of the companies published a corporate environmental or sustainability report. Ten of the twelve companies provided information through a telephone interview. Two declined to discuss their management strategies and indicated that their programs were either not well developed or that they had no program in place.

At present, there are no FASB/SEC guidelines on energy use reporting. As Wall Street analysts recognize the growing financial risks related to energy, real estate companies will most likely come under greater pressure to disclose information. On the upside, information disclosure can enhance a company's image and reputation. Four companies mentioned that they plan to disclose energy management information in their annual reports in the near future. Given the large impact this information can have on profitability and investor returns, it is probably a good idea to do so.

ENERGY RATING MATRIX	
Category	
1. Energy Management & Strategy	1. Company Energy Strategy/Policy
	2. Integration with Core Business Strategy
	3. Energy Management and Operating Procedures
	4. Globally Consistent Energy Approach
	5. Level of Participation in ENERGY STAR
	6. Corporate Energy Manager
	7. Training: Promotion of Energy Efficiency Among Employees and Customers
	8. ENERGY STAR Sq. Ft. / Total Sq. Ft.
	9. ENERGY STAR Certified Buildings / Total Buildings
	10. Energy Price Fluctuation Risk Hedging Policy
2. Energy Risk & Performance	1. Compliance with Legislations and Voluntary Codes
	2. Energy Consumption per Sq. Ft. (BTU/ft2)
	3. Normalized Energy Consumption (BTUs/ft2/Occupancy rate)
	4. Energy Expense per Sq. Ft. (\$/ft2)
	5. Energy Expense/Total Operational Expense
	6. Performance Trends
	7. Energy Savings
	8. Fuel Mix Risk
	9. Geographic Risk/Exposure
	10. Technology Risk (Lighting and HVAC)
	11. Building Risk (Average Age, etc.)
	12. Energy Related Emissions
3. Energy Efficiency Initiatives	1. Energy Efficiency Initiatives
	2. Computerized Energy Management Technologies (Multi-Site Energy Tracking - Web based, etc.)
	3. Purchasing Procedures (ENERGY STAR equipment, etc.)
	4. Frequency of Re-Commissioning Properties
	5. Cooling Technologies
	6. Lighting Technologies
	7. Heating Technology
	8. Air Distribution Technology
	9. Use of Natural Ventilation
	10. Waste Heat Recovery System
	11. Maintenance Policies (preventative, etc.)
	12. Distributed or On-Site Generation
	13. Alternative/renewable Energy Use
4. Strategic Energy Opportunities	1. Marketing Strategies and Resources
	2. Products and Services
	3. Market Positioning
	4. Financing Mechanisms (Savings pass through, tenant incentives, etc.)

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## APPENDIX B. PROFILES OF THE TWO TOP RATED COMPANIES

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Arden Realty and Equity Office Properties received the highest rankings in this study. The following profiles summarize the companies' energy management strategies and programs. For the full version of this report, which includes profiles and rankings on all the firms analyzed, contact Innovest at 646-237-0220 or [fdixon@innovestgroup.com](mailto:fdixon@innovestgroup.com).

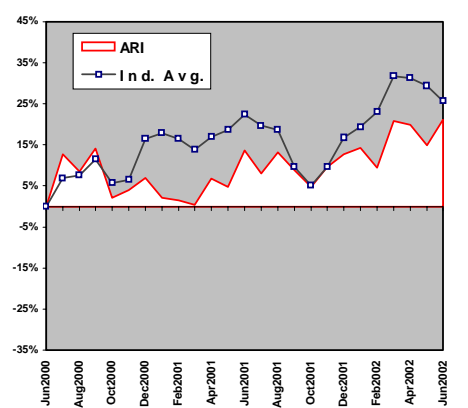


Energy issues are having a growing impact on corporate financial performance due to factors including increasing regulations and concerns about the environment. Innovest's Energy Management ratings identify risks, management quality and profit opportunity differentials typically not identified by traditional equity analysts. As a result, Energy Management ratings indicate a company's ability to effectively address complex management challenges, reduce operating costs and improve bottom-line performance to succeed in the longer-term.

**Overview**

Arden Realty operates more than 140 commercial properties primarily in Los Angeles County, but also in Orange, San Diego, and other southern California counties. Through approximately 45 management offices, the company owns, manages, leases, and renovates more than 18 million sq. ft. of office, industrial, and retail space. It handles all property management, construction management, accounting, finance and acquisition activities, and a majority of leasing transactions. Tenants include Walt Disney, Boeing, Salomon Smith Barney, and Sony. Federal and state governmental entities are also lessees.

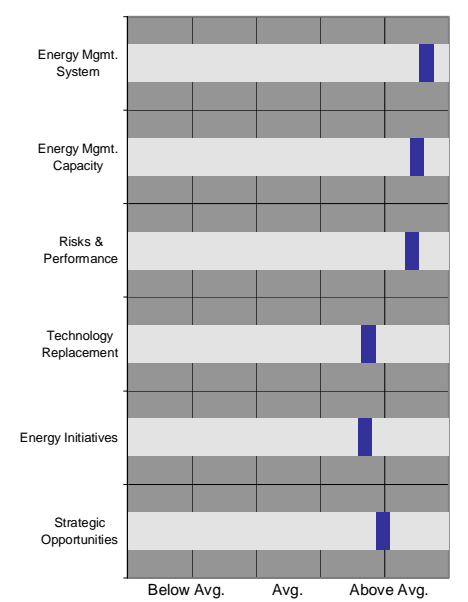
**Financial Performance (change in stock price)**



**Energy Strategy & Management**

Energy Strategy: Arden has the most aggressive energy efficiency program in the sector. With more than 100 ENERGY STAR labeled buildings, the company has reduced annual energy costs by \$4.8 million through its energy efficient measures. Since 1999, Arden has devoted considerable resources to energy efficiency programs with the goal of reducing energy consumption, enhancing efficiency, and lowering operating costs. Robert Accomando, First Vice President of Arden, states that "Arden's high performance buildings deliver energy efficient space at a lower cost. This results in a lower cost structure, fewer hydrocarbons in the atmosphere, and lower pass-through costs to our tenants." ENERGY STAR: Arden was named ENERGY STAR Partner of the Year in 2000, 2001, and 2002. Of the 215 ENERGY STAR labeled office buildings in the U.S., 93 are in California. Arden owns 80 of them. Reporting: Arden is the only company in the sector that describes energy efficiency policies and programs in its Annual Report.

**Relative Energy Performance**



**Energy Performance & Initiatives**

Energy Efficiency Initiatives: Arden has a group-wide policy of installing and retrofitting energy efficient lighting, computer-based energy management systems, and HVAC equipment. It uses natural gas to produce electricity in some of its buildings. It has installed a computer program to track energy costs. Tenants: Arden Realty reports that in addition to considering yields and payback periods on investments, it also considers compelling non-financial factors especially tenant retention. One property manager said that if a tenant experienced an energy-related problem, finance-based considerations would be overridden to satisfy the customer. Renewable Energy and Distributed Generation: Arden is working with energy firms to develop viable new applications of on-site generation systems such as photovoltaics, fuel cells, microturbines, natural gas reciprocating engines, and other "green" power alternatives.

**Energy Risk Factors**

Deregulation: The company's 10K states that "problems associated with deregulation of the electric industry in California have resulted in intermittent service interruptions and significantly higher costs in some areas. Approximately 55% of its buildings is located within municipalities that either do not produce their own power or have not entered into long-term, fixed price contracts." However, the company's excellent energy management programs are likely to offset risk resulting from its geographic location. Arden's proactive strategy also enhances tenant satisfaction and market image.

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Equity Office Properties

EOP

Rating: **AAA** Ranking: **2**

Energy Management

Sector: **Real Estate Companies**

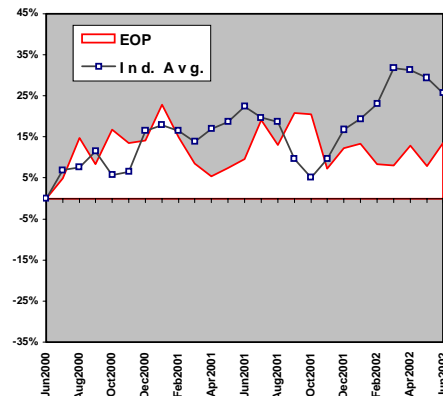


Energy issues are having a growing impact on corporate financial performance due to factors including increasing regulations and concerns about the environment. Innovest's Energy Management ratings identify risks, management quality and profit opportunity differentials typically not identified by traditional equity analysts. As a result, Energy Management ratings indicate a company's ability to effectively address complex management challenges, reduce operating costs and improve bottom-line performance to succeed in the longer-term.

**Overview**

Equity Office Properties Trust is the largest office REIT in the United States. It is a fully integrated, self-managed real estate company engaged in acquiring, owning, managing, developing, and leasing office properties. Its strategy is to achieve sustainable long-term growth in cash flow by owning and operating office buildings and providing high quality service to its tenants. The company owns or has an interest in more than 750 office buildings comprising about 125 million sq. ft. The office properties are located in 24 states and the District of Columbia.

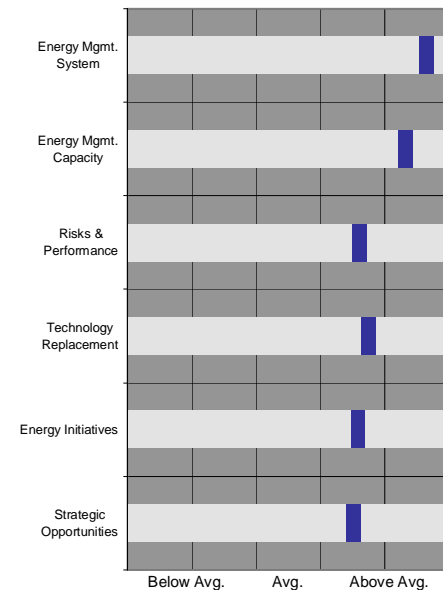
**Financial Performance (change in stock price)**



**Energy Strategy & Management**

Energy Strategy: Equity Office is a leader in energy conservation. Its proactive programs include routine energy audits, wholesale lighting retrofits and commissioning, and installation of energy management systems. Tim Callahan, CEO of the company, states that energy efficiency is an important focus area. Governance: On-site professional energy managers report energy issues to regional energy co-coordinators, who then report the issues to the group's real estate investment unit. ENERGY STAR: Equity Office has benchmarked the energy performance of 113 properties using ENERGY STAR's online tool. Forty-three buildings earned the ENERGY STAR label. The company states that "the ENERGY STAR label signals to its tenants and investors that it has capitalized on an extraordinary opportunity to make its buildings environmentally and fiscally sound." Reporting: Annual Report, 10K, and 10Q do not contain energy information.

**Relative Energy Performance**



**Energy Performance & Initiatives**

Energy Efficiency: Equity Office recognizes that there is a growing number of tenants sensitive to environmental issues. Its leading energy efficiency strategy helps it attract these customers. Its in-door air quality programs also enhance reputation and facilitate attracting new tenants. Auditing: Regional energy coordinators annually audit the energy efficiency of all buildings. Programs: At many of its properties, the company has implemented environmental management systems, web-based energy tracking systems, automated air distribution systems, and ice storage systems (to make use of off-peak electric rates). It has extensive energy efficiency training programs for staff and tenants.

**Energy Risk Factors**

Energy Consumption: Equity Office states that it is difficult to track total energy usage because many of its tenants pay their own bills. The company has established financial mechanisms to share the benefits of energy efficiency with its tenants. Deregulation: To reduce exposure to energy price fluctuations the company has established long-term procurement programs with energy suppliers. In addition, it is actively implementing on-site energy generation systems and is using waste-heat for heating and cooling at some locations. Renewable Energy and Distributed Generation: Although Equity Office considered the use of microturbines and fuel cells, it concluded these were not technologically or economically attractive. The company is considering installing solar PV and purchasing green power for some properties on the West Coast.

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## APPENDIX C. ENDNOTES

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<sup>1</sup> The term “energy efficiency” is typically defined as intensity of energy use, or energy used per unit of output, or

$$EE = \frac{\sum E_c}{\sum_1^n P_i}$$

In which EE is the resultant energy efficiency,  $E_c$  is the total energy consumed by a company via its processes and activities, P is a unit product or service offered by the company, and n is the total number of individual products or services. In the real estate sector,  $E_c$  is the total energy consumed by a real estate company across its building portfolio, P is the total square footage of a property that a company operates, and n is the total number of individual properties.

<sup>2</sup> Partial funding for this study was provided by the U.S. Environmental Protection Agency.

<sup>3</sup> A study conducted by Thomas Hicks and Bill von Neida concludes that the energy performance of ENERGY STAR labeled buildings is better than average buildings. According to the study, the average energy intensity of ENERGY STAR buildings in 1999 was 44% lower than the market average. Hicks, W. Thomas and von Neida, Bill, (2000), *An Evaluation of America’s First ENERGY STAR Buildings: The Class of 1999*, Environmental Protection Agency.

<sup>4</sup> The Institute for Market Transformation has studied the linkage between lower operating costs in commercial buildings and higher property value. For further information, see Chao, Mark and Parker, Gretchen (2000), *Recognition of Energy Costs and Energy Performance in Commercial Property Valuation – Recommendation and Guidelines for Appraisers*, Institute for Market Transformation

<sup>5</sup> Sturdevant, Nicole (1999), *Multitenant Buildings: The Energy Opportunity*, Energy Cost Savings Council.

<sup>6</sup> Romm, J. Joseph and Browning, D. William (1998), *Greening the Building and the Bottom Line, Increasing Productivity through Energy-Efficient Design*, Rocky Mountain Institute.

<sup>7</sup> Social Investment Forum (1999), *Socially Investment Forum News 1999 Report on Socially Responsible Investing Trends in the United States*.

<sup>8</sup> A study conducted by the U.S. Department of Energy concludes that in the business-as-usual scenario, energy use in the commercial building sector will increase by 6.5% from 1997 to 2010. Carbon emissions produced in this sector are projected to grow faster (by 10.2%), mainly due to changes in the fuel mix used to produce electricity. Brown, A. Marilyn, Levine, D. Mark, Romm, J. Joseph, Rosenfeld, H. Arthur and Koomey, G. Jonathan (1998) “Engineering-Economic Studies of Energy Technologies to Reduce Greenhouse Gas Emissions: Opportunities and Challenges”, *Annual Review of Energy and the Environment* 23:287-385.

<sup>9</sup> Brown et. al., op.cit., note 8.

<sup>10</sup> Chao and Gretchen, op.cit., note 4.

<sup>11</sup> Environmental Protection Agency (1998), *Business Analysis For Energy-Efficiency Investment* EPA-430-B-97-002.

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<sup>12</sup> Chao and Gretchen, op.cit., note 4.

<sup>13</sup> Sturdevant, op.cit., note 5.

<sup>14</sup> For the information on green building tax credit schemes, refer to a paper published by the American Council for an Energy-Efficiency Economy, ACEEE (2001) Opportunities for State Action: Green Buildings Tax Credit.

<sup>15</sup> Romm and Browning, op.cit., note 6.

<sup>16</sup> Romm and Browning, op.cit., note 6.

<sup>17</sup> Environmental Protection Agency (2000), Energy Efficiency in the Hospitality Industry, Press Kit.