COMMERCIAL REAL ESTATE AND ENERGY EFFICIENCY

Volatile energy costs, an uncertain regulatory environment, and weak local economies endanger the financial stability of commercial buildings. Improvements in energy efficiency empower owners of office, retail, and mixed-use spaces to address each of these challenges. Returns on energy investments are wide and deep, ranging from increased cash flow, lower utility bills, lower regulatory risk, and more productive employees. In just the first year after completion of an efficiency upgrade, New York's Empire State Building saved over $4 million in operating costs.[1] Such savings are not limited to iconic buildings. Owners of smaller buildings can customize projects to best suit needs as upgrades offer a great deal of flexibility. (Table 1)

Financial Benefits

While energy efficiency upgrades do require an initial outlay of funds, the return on investment for these projects often rivals or exceeds the return of other more traditional investments. For example a 2005 study found that the internal rate of return was greater than 15 percent on the vast majority of the 200 energy efficiency projects it analyzed.[2,3] The installation of a new high-efficiency HVAC system lowered natural gas bills by 72 percent at a 25,000 square foot office building in Nevada.[4]

The average commercial office space in the South Atlantic region spends $1.86 per square foot on energy each year.* An average retail building spends a similar amount annually at $1.90 per square foot. Using the average office space spend and current energy prices, if a 100,000 square foot mixed-use building in Charlotte were to cut its energy usage by 30 percent this would translate to an annual savings of $55,765.

Decreased energy costs increase net operating income. This increase in NOI also increases the asset value of a building.[2,3] Consider the same 100,000 square foot building from the above example. Assuming an eight percent capitalization rate (or the building owner's required rate of return), a 30 percent reduction in energy usage would also translate to an estimated $697,063 increase in the building's value.[2,3] Even a more modest 15 percent reduction in energy usage would increase asset value by a projected $348,537 and save $27,883 in energy costs every year.

Owners of multi-use facilities can reap financial benefits from energy upgrades even beyond lower utility bills. Owners can bank the savings associated with lower utility bills to establish capital asset reserve funds to finance repair projects. These projects are needed to maintain long term structural integrity as over 70 percent of retail buildings were built before 1980.[5] These savings can also be used to finance additional debt for repair projects.

* Electricity consumption data is 2003 CBECS data for Office and Retail Buildings from the U.S. D.O.E. for the South Atlantic Division. Energy prices are the March 2012 average retail price to Commercial consumers and from the US. E.I.A. A 30 percent savings rate is consistent with a major energy rehab. Actual results may differ as all buildings vary.

Table 1 - Energy Efficiency Project Type Options[2,3]

Building owners enjoy a great amount of flexibility in selecting upgrades.

Project Type	Energy Savings	Example Measures
Existing Building Commissioning	Up to 15%	• Replace weather stripping at exterior doors. • Clean HVAC coils. • Reprogram HVAC time clocks. • Install low flow plumbing fixtures. • Keep computers on standby.
"Significant savings can often be achieved with minimal risk and capital outlay by improving building operations and restructuring maintenance procedures. A nationwide study of commissioning projects by Lawrence Berkeley National Laboratory found median energy savings of 16% through this project type with an average simple payback period of 1.1 years."		
Standard Retrofit	15 to 45%	• Install occupancy sensors on lighting. • Install T-8 and T-5 fluorescent bulbs. • Add insulation to roof and walls. • Replace HVAC with higher efficiency system.
"This type of project includes the system retrofits that are most cost-effective and lowest risk. These standard retrofit measures are typically component-level replacements of existing equipment for improved energy efficiency. As a package of measures it is easy to achieve a range of 15-45% site energy savings."		
Deep Retrofit	45%+	• Install skylights and daylight harvesting. • Install more efficient lighting in parking lots and other outdoor areas. • Install demand-controlled ventilation system. • Replace windows.
"Deep retrofits take an integrated whole-building approach to energy savings projects. Savings beyond 45% are achievable when upgrades to the building envelope are combined with retrofits of lighting and mechanical systems."		

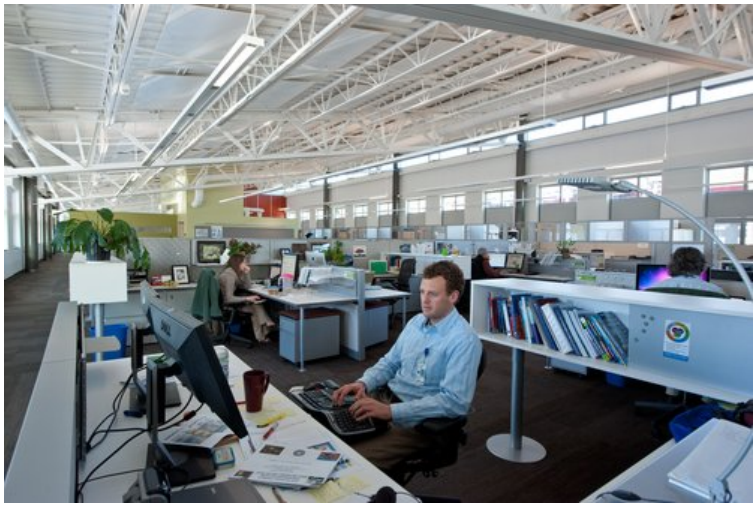
Source: Advanced Energy Retrofit Guide, Department of Energy

Non-Energy Related Financial Benefits

Energy efficiency upgrades also provide a host of financial benefits unrelated to the cost of energy. They act as a hedge against volatile utility rates, providing valuable financial stability for building owners. In addition efficiency improvements provide protection against the political and regulatory environment that may accompany rising energy rates.[2,3] Policymakers are

currently relying on incentives to achieve reductions in carbon emissions. If policymakers turn to increased regulation instead, energy prices are likely to rise even further. Lowering energy usage helps building owners defend against both these market and political risks.

Finally, upgrades reduce operations and maintenance expenses and extend the life of costly equipment. Recent studies show that green buildings both improve occupancy rates and command higher rents. [2,3] A 2009 study found that rents are 6 to 16 percent higher in green buildings than in comparable buildings.[2,3] These additional benefits also increase cash flow and asset value.



Each Workstation In This Office Uses Only 65 Watts Of Electricity. Daylighting Improves Worker Productivity.

Source: National Energy Renewable Laboratory

Other Benefits

An investment in energy efficiency is also an investment in improved worker health and quality of life. Energy efficient buildings can boost productivity levels of workers by providing a more comfortable working environment. A review of recent studies by Carnegie Mellon showed that increasing the ability to control temperature improved productivity by 3.6 percent on average.[6] The same review showed that installing high performance lighting increased productivity by an average of 3.2 percent.[6] While difficult to quantify, increases in employee productivity have a positive impact on any business' bottom line.

Energy efficiency improvements often lead to better indoor air quality which in turn leads to improved health of the building's occupants. Poor indoor air quality leads to increased incidences of asthma, flu, headaches and other illnesses.[6] 17 studies found that improved indoor air quality reduces reported incidences of these illnesses by 41 percent on average.[6] Asthma is reduced by 38.5 percent on average.[6] Cold and flus by 51 percent.[6] Reduction in illness increases productivity and means less time employees are out of the office.

Energy upgrades provide financial stability by lowering utility bills and increasing available cash flow. Additional benefits such as increased asset value and improved employee health also have positive impacts on bottom lines. As Table 1 demonstrates, there is a large amount of flexibility and variety with energy efficiency upgrades. Any potential project can be customized to best suit the needs of an individual building owner.

References

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