



Financing for Energy Efficiency

Rising fuel prices have many business owners and facilities managers looking for ways to cut energy bills. While conservation measures help, many facilities are still wasting thousands of dollars in energy costs through older and inefficient heating and cooling systems, improper lighting, inadequate insulation, and leaks through doors and windows. Energy efficiency projects, such as upgrading to newer, better-performing equipment and building renovations, are a great way save on energy bills over the long term. Such projects also contribute to the health of the environment, improve indoor air quality, and contribute to employee morale and productivity.

Despite these benefits, energy efficiency retrofits often require significant upfront costs that cause many business owners to shy away. Fortunately, there are a number of financing options available that allow organizations to spread the costs out over time, while realizing the energy savings that will help to pay for the financing. Energy performance contracts are financing packages that come with guaranteed energy savings specifications. In addition, there are a variety of state and federal government financial incentives that can help to defray the costs of energy efficiency investments.

Technologies for Energy Efficiency

Energy efficiency projects can range from single system retrofits, such as a lighting upgrade, to a whole building approach, where each system is designed based on how it interacts with other building processes. There is a wide variety of energy efficient equipment and building products that can help to improve the energy performance of your facility.

Building Envelope. The building envelope is what separates your indoor environment from the outdoor elements, and includes walls, ceilings, doors, and windows. Replacing your insulation with better-performing material (measured in r-value) is one of the best ways to improve energy efficiency. Other innovative technologies include high efficiency windows, foundations with [insulated concrete slabs](#) and [advanced framing techniques](#), as well as [cool or reflective roofs](#).

Heating, Ventilation and Cooling. Energy efficiency in heating and cooling can be improved through the use of automatic thermostats and intelligent building controls, natural ventilation techniques, duct insulation, and advanced technologies, such as [desiccant dehumidification](#) and [radiant heating](#). For boiler systems, consider energy saving add-ons, such as economizers, air preheaters, and turulators, or newer and more energy efficient systems.

Water Heating. Appropriate tank insulation can help to improve the energy performance of existing water heaters and older units can be retrofitted with newer, more efficient models. Significant energy savings can be achieved through the use of water conservation technologies, such as aerated faucets and low-flow shower heads.

Lighting. Energy efficient compact fluorescent lights (CFL), as well as T-5 and T-8 lamps, can save significant amounts of energy over older incandescent or T-12 applications. Light-emitting-diodes (LEDs) are an energy efficient choice for exit signs and other displays. Consider also the use of controls such as timers and occupancy sensors. For new builds or reconstruction projects, consider [daylighting techniques](#).

Whole Building Design. For both new builds and reconstruction projects, this approach involves designing and integrating all building components and systems to maximize energy performance and minimize environmental impact. For more information see, the [Whole Building Design Guide](#).



The [Energy Star](#) web site contains information on energy efficient appliances, equipment, and building products. The Leadership in Energy and Environmental Design (LEED) [Green Building Rating System](#) is a national standard for energy efficient design in new and existing commercial buildings.

Financing Options

While energy efficiency projects can generate tremendous savings in the long run, they often come associated with significant upfront costs. Therefore, careful consideration should be given to the various types of financing available, keeping in mind the size and scope of the project, and associated risks and rewards. Direct internal funding is one option, of course. This has the advantage of avoiding any financing costs. However, given the large investment often necessary for energy efficiency improvement, the funds may not be available. The project may also tie up funds that could be used for other purposes, such as marketing or product development. Fortunately, there are a number of other financing options available to help fund energy efficiency projects.

Borrowing - Debt financing through a commercial lenders is a common approach for both commercial and non-profit organizations. The goal of the borrower is to retrieve the financing costs through savings from the energy efficiency investments. Local governments sometimes issue bonds or other debt instruments to fund energy efficiency projects. Borrowing is a better option for larger investments involving multiple buildings, where significant energy savings are assured. When evaluating debt financing, organizations should look at the type and complexity of the financing options against the size and risk of the project.

Lease Purchase Agreements - Lease purchase agreements can help to defray the upfront capital costs associated with energy efficiency projects. Lease purchase agreements are typically offered by commercial leasing corporations, management and financing companies, banks, investment brokers, or equipment manufacturers. Similar to debt financing, the lease is ideally structured so that energy savings from the project are enough to cover finance charges. The time period of the typical lease ranges from about five to ten years. Specific lease agreements, however, will vary according to a number of factors, such as the complexity of the project, state laws, and specific lending policies.

Energy Performance Contracts - Energy performance contracts are financing packages from Energy Service Companies (ESCOs) that include energy savings guarantees and associated design and installation services. Under an energy performance contract, the ESCO will provide financing for a specified set of energy efficiency retrofit measures, along with associated design, engineering, and installation services. The scope of the contract can vary widely, from a single lighting system to a project that encompasses the entire building system. The contract should outline project costs and expected energy savings, and should establish a procedure for distributing those savings.

See the U.S. Department of Energy [fact sheet](#) for more information about what to look for in an energy performance contract. To locate an energy service company in your area, use the [ESCO Finder](#) from the National Association of Energy Service Companies (NAESCO)

Incentives for Energy Efficiency Projects

State Incentives - Many states provide low-interest loans, tax credits, and other financing to help with energy efficiency investments. The [DSIRE Database for State Incentives for Renewable Energy](#) provides a comprehensive list of state and federal incentives for energy efficiency. See



also [Financing Energy Efficiency](#), a list of energy efficiency funds and programs operating in North America available from the Alliance to Save Energy (ASE).

Federal Incentives - The Energy Policy Act of 2005 included a provision for an Energy Efficient Commercial Building Tax Deduction. This deduction includes expenses incurred for energy efficient building expenditures made by a building owner. The deduction is limited to \$1.80 per square foot of the property, with allowances for partial deductions for improvements in interior lighting, HVAC systems, hot water systems, and building envelope systems. The provision is effective for property placed in service from January 1, 2006 through December 31, 2007. For more information, see [The New Commercial Building Tax Deduction: Frequently Asked Questions](#).