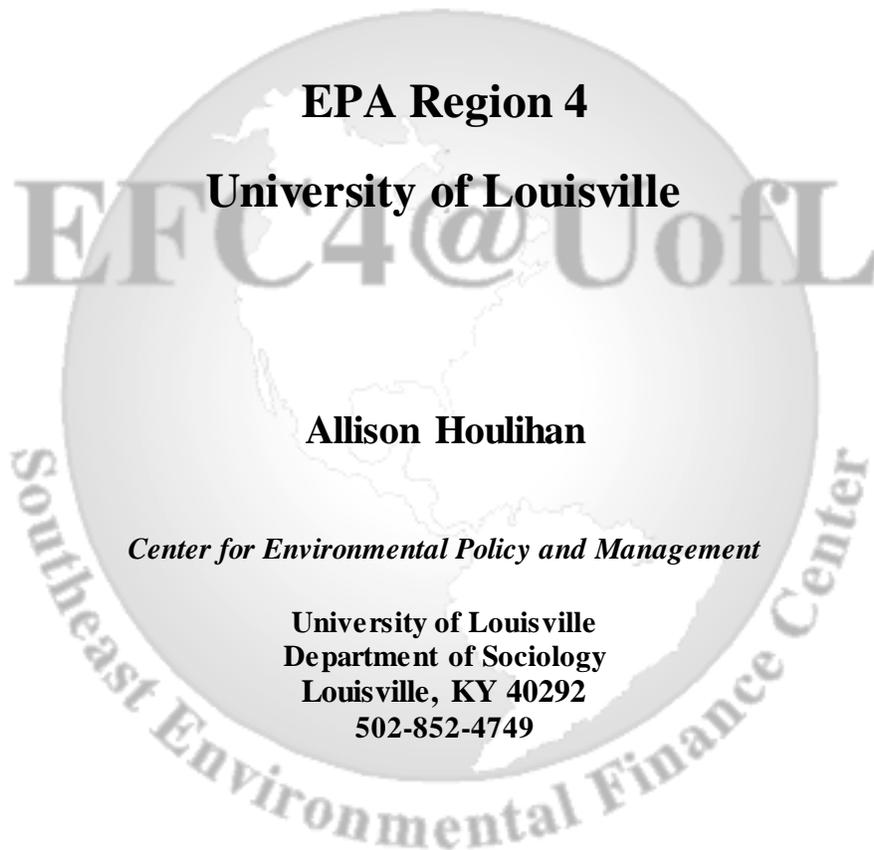


Financing Energy Efficiency Improvements

Practice Guide #21

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Introduction

Energy efficient buildings are simply better buildings—better for business and better for the environment and society. Undertaking projects to improve energy performance can provide significant savings on building operating costs, reduce environmental impact, and create a healthier and more productive work environment. In addition to being the most constructive and cost-effective way to contend with the challenges of high energy prices, actions to enhance energy efficiency improve community health, strengthen the nation's economic competitiveness, and potentially help combat global climate change.

Energy performance projects are unique business investments because they provide an immediate and predictable positive cash flow resulting from lower energy bills. Because of this unique quality, there is a wide range of financing mechanisms, both familiar and unconventional, available to building owners and managers. Regardless of organizational requirements or constraints, there are building-appropriate financing options available.

In order to realize the profitability of energy performance improvements, it is important to investigate multiple finance options and carefully consider which alternative is best. Determining the most effective project plan depends on several factors, including the type of organization (public or private), size and complexity of project, internal capital constraints, and available expertise. This practice guide introduces five general financing mechanisms and discusses when each is viable and appropriate. While several of these financing options can be used when planning and designing the construction of new buildings, the purpose of this practice guide is to inform building managers and owners how to improve the energy efficiency in existing buildings in a cost-effective manner.

The five financing mechanisms included in and described by this practice guide are:

1. **Internal Financing**—when energy efficiency improvements are financed by an organization's internal capital or operating budget
2. **Debt Financing**—when an organization borrows from private lenders to finance energy efficiency improvements
3. **Lease and Lease-Purchase Agreements**—when improvements in energy efficiency are realized by leasing new, energy-efficient equipment
4. **Energy Performance Contracts**—between an organization and a third party engaged to finance, install, and maintain energy efficiency improvements based on guaranteed savings and payments derived from those savings
5. **Utility Incentives**—when energy utilities offer equipment rebates, design assistance, and low-interest loans for the design and purchase of more energy-efficient equipment

Internal Financing

The most direct way to pay for energy efficiency improvements is to allocate funds from the internal capital or operating budget. Financing internally has two clear advantages over the other options: it retains internally all the savings from increased energy efficiency, and it is usually the simplest option administratively. All or some of the resulting savings may be used to decrease overall operating expenses in future years or retained within a revolving fund and used to support additional efficiency investments. Many public and private organizations regularly finance some or all of their energy efficiency improvements from internal funds (Lefevre, 2004).

Internal financing, or more plainly, cash purchases, are the simplest and most straightforward method for financing energy performance improvements. A cash purchase makes sense for organizations that have cash reserves and a strong balance sheet (see Choosing the Optimal Finance Mechanism: Evaluation Factors section). Cash purchases are especially appealing because all cost savings derived from efficiency upgrades are immediately available to the organization. Furthermore, the depreciation of the equipment becomes a tax deduction. The primary disadvantages associated with this financing option are the opportunity costs incurred when that capital is unavailable for other investments. Cash purchases are most appropriate for relatively inexpensive, simple efficiency measures that are likely to pay for themselves within a year (United States Environmental Protection Agency [EPA], 2004).

Debt Financing

Direct borrowing of capital from private lenders can be an attractive alternative to internal funding for energy efficiency investments. While the standards for providing credit and or the amounts of credit available may be limited, where debt financing is possible, it is a worthwhile funding alternative. For both public and private organizations, this approach avoids tapping internal funding, and financing costs can be repaid by the savings from increased energy efficiency. Additionally, municipal governments often issue bonds or other long-term debt instruments at substantially lower interest rates than private corporate entities. As in the case of internal funding, savings from efficiency improvements, minus the cost of financing, are retained internally. Debt financing is administratively more complex than internal funding, and financing costs will vary according to the credit rating of the borrower. This approach may also be restricted by formal debt ceilings imposed by corporate or municipal policy, accounting standards, and/or federal or state legislation. As a key example of the latter, the Tax Reform Act of 1986 placed a cap on the total amount of revenue bonds that a state and its local public agencies may issue. This cap has resulted in substantial competition for the available bonds and can reduce the availability of tax-favored financing (Lefevre, 2004).

In general, debt financing should be considered for large projects that involve multiple buildings and pose relatively little risk in achieving their energy savings targets. When considering debt financing, organizations weigh the cost and complexity of the type of financing against the size and risk of the proposed projects (Levevre, 2004).

Lease & Lease-Purchase Agreements

Leasing and lease-purchase agreements provide a means to reduce or avoid the high, up-front capital costs of new, energy-efficient equipment. This section discusses general lease and lease-purchase agreements, as well as guaranteed savings leases and tax-exempt lease purchase agreements. These agreements may be offered by commercial leasing corporations, management and financing companies, banks, investment brokers, or equipment manufacturers. As with direct borrowing, the lease should be designed so that the energy savings are sufficient to pay for the financing charges. While the time period of a lease can vary significantly, leases in which the lessee assumes ownership of the equipment generally range from 5 to 10 years. Specific lease agreements will vary according to lessor policies, the complexity of the project, and whether or not engineering and design services are included (EPA, n.d.).

Operating leases are usually for a short term and occasionally, for periods of less than one year. At the end of the lease period, the lessee may renegotiate the lease, buy the equipment for its fair

market value, or acquire other equipment. The lessor is considered the owner of the leased equipment and can claim tax benefits for its depreciation (EPA, 2004).

Financing leases are agreements in which the lessee essentially pays for the equipment in monthly installments. Although payments are generally higher than for an operating lease, the lessee may purchase the equipment at the end of the lease for a nominal amount (commonly \$1). The lessee is considered the owner of the equipment and may claim certain tax benefits for its depreciation (EPA, 2004).

Guaranteed Savings Leases

Guaranteed savings leases are the same as financing or operating leases, but with an additional guaranteed savings clause. Under this type of lease, the lessee is guaranteed that the annual payments for leasing the energy efficiency improvements will not exceed the energy savings generated by them. The building owner pays the contractor a fixed payment per month. However, if the actual energy savings are less than the fixed payment, the owner pays only the amount saved and receives a credit for the difference (EPA, 2004).

Tax-exempt Lease-Purchase Agreements

Tax-exempt lease-purchase agreements, also known as a municipal leases, are available only to tax-exempt entities such as school districts or municipalities as stated in Section 265(b)(3) of the Internal Revenue Code (EPA, 2004). Under this type of lease, the lessor does not have to pay taxes on the interest portion of the lessee's payments, and can offer an interest rate that is lower than the usual rate for financing leases. Because of restrictions against multi-year liabilities, the municipality specifies in the contract that the lease will be renewed each year. This places a higher risk on the lessor, who must be prepared for the possibility that funding for the lease may not be appropriated. Therefore, the lessor may charge an interest rate as much as 2 percent above the tax-exempt bond rate, but still lower than rates for regular financing leases. Even so, municipal leases are generally faster and more flexible financing tools than tax-exempt bonds (United States Department of Energy [DOE], 2004).

This type of lease functions more like an installment-purchase agreement than a rental agreement. At the close of the finance term, lessees will own the upgraded equipment. In addition to eventual ownership, tax-exempt lease-purchase agreements typically include a non-appropriation provision, i.e. the lessee's payment obligation terminates if the lessee fails to appropriate funds for lease payments in future budgets. Thus, neither the lease nor the lease payments are considered debt, and payments can be made from the energy savings in an operating budget (DOE, 2004).

Energy Performance Contracts

While not a financing mechanism on its own, energy performance contracts package performance guarantees with other useful components, which include but are not limited to financing, equipment purchases, and maintenance. This section introduces the general concept of energy performance contracts and distinguishes between several common varieties of this practice, including shared savings contracts, paid from savings contracts, and guaranteed savings

insurance. In addition, the section offers basic guidelines for choosing an Energy Service Company (ESCO).

Energy performance contracts can be extremely beneficial when renovating existing commercial office space. Provided by a local ESCo or equipment manufacturer, these contracts include a guarantee on energy savings from any retrofit mechanisms installed by the company or manufacturer. In addition, the contracts generally offer various cost saving design, installation and maintenance services (DOE, 2004). Customers are required to have a minimum level of capital investment (usually \$200,000 or more) and contracts extend for periods of 5-10 years (DOE, n.d.).

An energy performance contract service package typically provides the design and engineering, financing, installation and maintenance of all retrofit mechanisms. Even though customers must have certain levels of capital investment, the scope of the project can range from improvements to one aspect of a single building's energy-using infrastructure (such as heating and air-conditioning) to completely retrofitting an entire building or multiple facilities. Savings are typically contracted as results from improved energy and maintenance efficiencies. Most large utilities, as a result of increasing deregulation, have subsidiaries that offer a wide assortment of energy efficiency services (DOE, n.d.).

The fundamental elements of an energy performance contract identify and characterize the baseline costs and savings, the methodology for establishing these costs and savings as well as the dissemination of the savings. Furthermore, the contract should address possible contingencies such as fluctuating utility rates or changes in the use or occupancy of a building. There are many guides available to building owners and property managers in the process of selecting and negotiating energy performance contracts; however, for large and/or complicated contract negotiations, experienced legal counsel should be consulted.

Some guidelines suggested by the United States Department of Energy (DOE) for a successful ESCo project include:

1. Look for more than the low bid. Select an ESCo with a good track record that can provide other necessary services such as project design, installation and maintenance. Get references.
2. Negotiate a contract that reasonably limits ESCo profit-making and establishes a win-win arrangement. Carefully weigh the pros and cons of shared savings versus fees for services and other contractual arrangements.
3. Require the ESCo to take a "comprehensive approach" to energy conservation—bundling measures with rapid paybacks and measures with longer paybacks—rather than a "cream-skimming approach" (the practice of doing only easy, quick payback measures).
4. Ensure the agreement does not allow the ESCo to sacrifice quality for energy savings.
5. Ask your ESCo to incorporate extended product warranties and personnel training into the bid specifications.
6. Organize an in-house project team to work with the ESCo to choose appropriate energy measures, prepare bid specs, pre-qualify prospective bidders, and perform other tasks when the contract is signed.
7. Work with the ESCo to test new technologies in order to determine their performance and applicability.
8. Design the project and coordinate construction in a way that minimizes disruption of the building's functions.
9. Document both energy and non-energy benefits of your project and publicize its success to the community (DOE, n.d.).

Various types of performance contracts exist. “Shared savings” or “paid from savings” contracts are the most common and are distinguished by the manner in which payment for the upgrade is made (Steinhacker & Ruiz, 2003).

Shared Savings

With shared savings contract, the dollar value of the measured savings is divided between the customer, or contracting organization, and the service provider. If no cost savings are realized, the customer pays the energy bill, but does not owe any thing to the contractor for that period. The percentage distribution of the savings between the service provider and the customer is agreed upon in advance and documented in the performance contract. Ownership transfers to the building owner at the close of the contract as specified in the contract, either purchased at fair market value or the customer may assume ownership of the equipment paid for during the contract term.

Paid from Savings

The majority of energy performance projects are financed through the savings created by reduced energy usage; thus, the term “paid from savings” can be applied to various types of energy-upgrade contracts. Here, it refers to performance contract payment whereby the customer pays the service provider a predetermined amount each period (for example, an amount equal to 80 percent of the expected energy bill before the upgrade) (Steinhacker & Ruiz, 2003).

Guaranteed Savings Insurance

Guaranteed savings insurance is an effective risk reduction tool that guarantees energy cost savings will exceed an established minimum dollar value. To ensure a positive cash flow during the financing term, the guaranteed minimum typically equals the financing payment for the same period. Like any insurance policy, the customer pays a premium that covers monitoring costs and compensates the guarantor for any performance risk. The premium is simply added to the customer’s loan or lease payment. In return, the guarantor will maintain and monitor the performance of all upgrades. Most suppliers, installers, or service providers selling upgrades offer this guarantee (Steinhacker & Ruiz, 2003).

For two reasons, tax-exempt lease-purchase agreements and energy performance contracts are some of the most popular mechanisms for financing energy efficiency projects in the public sector. First, both serve as alternatives to traditional debt financing and, ideally, allow organizations to use money from existing utility operating budgets to pay for energy efficiency upgrades. And secondly, both mechanisms allow public managers to draw on future energy savings to pay for new, energy-efficient equipment and renovations today (EPA, 2004).

The following table, provided by ENERGY STAR (EPA, 2004, p.10), summarizes the benefits of these two popular financing mechanisms and compares them against issuing bonds or paying cash. It is important to note, however, that statutes vary from state to state. Before entering any lease agreements it is important to ensure that the lease agreement complies with state provisions.

Comparison of Finance Mechanisms

Table 1

	CASH	BONDS	TAX-EXEMPT LEASE	PERFORMANCE CONTRACTS
Interest Rates	N/A	Lowest tax-exempt rate	Low tax-exempt rate	Can be taxable or tax-exempt
Financing Term	N/A	May be 20 years or more	Up to 10 years is common, 12 - 15 years is possible for large projects	Typically up to 10 years but may be as long as 15 years
Other Costs	N/A	Underwriting legal opinion, insurance, etc.	None	May have to pay engineering costs if contract not executed
Approval Process	Internal	May require taxpayers' approval or public referendum. Requires bond counsel opinion letter	Internal approvals needed; requires simple attorney letter	RFP usually required; internal approvals necessary
Approval Time	Current budget period	May be lengthy; process could take years	Fast; generally within one week of receiving proper documentation	Fast; similar to Tax-Exempt Lease
Funding Flexibility	N/A	Very difficult to go above the dollar ceiling	Can set up a Master Lease, where funds can be drawn down as needed	Relative flexibility; an underlying Municipal Lease often used
Budget Used	Either	Capital	Operating	Operating or Capital
Greatest Benefit	Direct access IF included in the budget	Lowest interest rate because it is backed by the full faith and credit (taxing powers) of the public entity	Allows you to buy capital equipment using operating dollars	Provides performance guarantees which help approval process
Greatest Hurdle	Never seems to be enough money	Very time consuming	Identifying the project to be financed	Identifying the project to be financed and selecting the ESCo

Utility Incentives

Some utilities still offer financial incentives for the installation of energy-efficient systems and equipment, although the number and extent of such programs appears to be decreasing as utility deregulation proceeds. These incentives are available for a variety of energy-efficient products including lighting, HVAC systems, energy management controls, and others. The most common incentives are equipment rebates, design assistance, and low-interest loans (DOE, n.d.).

In general, the primary purpose of utility incentives is to lower peak demand. Overall energy efficiency is an important but secondary consideration. Incentives are much more commonly offered by electric utilities than by natural gas utilities. Utility assistance that is typically available includes:

1. **Equipment Rebates** – Some utilities offer rebates on the initial purchase price of selected energy-efficient equipment. The amount of the rebate varies substantially depending on the

type of equipment. For example, a rebate of 50 cents to \$1 may be offered for the replacement of an incandescent bulb with a more efficient fluorescent lamp, while the installation of an adjustable-speed drive may qualify for a rebate of \$10,000 or more.

2. **Design Assistance** – A smaller number of utilities provide direct grants or financial assistance to architects and engineers for incorporating energy efficiency improvements in their designs. This subsidy can be based on the square footage of a building, and/or the type of energy efficiency measures being considered. Generally, a partial payment is made when the design process is begun, with the balance paid once the design has been completed and installation has commenced.
3. **Low-Interest Loans** – Loans with below-market rates are provided by other utilities for the purchase of energy-efficient equipment and systems. Typically, these low-interest loans will have an upper limit in the \$10,000 to \$20,000 range, with monthly payments scheduled over a 2-to-5-year period (DOE, n.d.).

State Assistance

Some states provide financial assistance to nonprofit organizations and small businesses for operating improvement upgrades. Funding may be available through the State Energy Programs, energy conservation programs supported by the DOE. To explore these opportunities, businesses and organizations should begin by contacting the state agency that monitors the type of service they provide (EPA, n.d.). The Database of State Incentives for Renewables & Efficiency (DSIRE) is a comprehensive source of information on state, local, utility, and federal incentives that promote renewable energy and energy efficiency.

Choosing the Optimal Finance Mechanism: Evaluation Factors

Since there are many finance mechanisms available, businesses and organizations should evaluate their options based on several factors to determine which of the following is the most appropriate and effective means to meet their objectives (EPA, 2004).

- Balance sheet
- Initial payment
- Payments
- Ownership
- Tax deductions
- Performance risk

Other Funding Opportunities

Numerous sources of funding for green building are available at the national, state and local levels for homeowners, industry, government organizations and nonprofits. Links are provided below for a variety of funding sources that includes grants, tax-credits, and loans.

- [National Programs](#)
 - [General Funding Web sites](#)
 - [National Green Building Funding Opportunities](#)
- [State & Local Programs](#)
 - [Guides to State and Local Green Building Programs](#)

- [Select State Green Building Programs](#)
- [Select Local Green Building Programs](#)

Conclusion

Enhanced energy performance can provide significant savings on building operating costs, reduce environmental impact, and create a healthier and more productive work environment. Furthermore, projects to improve energy efficiency boost community health, strengthen the nation's economic competitiveness, and potentially help combat global climate change.

There is a wide range of financing mechanisms available to building owners and managers. The most traditional approaches include: internal financing, debt financing, lease and lease-purchase agreements; energy performance contracts, and utility incentives. Internal financing, allocating funds from the internal capital or operating budget, is the most direct and often the simplest way to pay for energy efficiency projects. With this approach, all the savings from increased energy efficiency are retained by the organization. Debt financing, while more administratively complex than internal financing, is an available alternative. Organizations can avoid using internal funds and eventually repay financing costs with the savings from increased energy efficiency. Leasing and lease-purchase agreements help organizations get around the high, up-front costs of new, energy-efficient equipment and, in some cases, include guaranteed savings clauses. While not a financing mechanism on its own, energy performance contracts package performance guarantees with other useful components, which include but are not limited to financing, equipment purchases, and maintenance. Some utilities offer incentives in the form of equipment rebates, design assistance and low-interest loans, to decrease energy demand.

It is important to investigate multiple finance options and carefully consider which alternative is best. Determining the most effective project plan depends on several factors, including the type of organization (public or private), size and complexity of project, internal capital constraints, and available expertise.

Appendix A: EPA Region 4 Financial Resource Directory

Appendix A provides links to national financial resources as well as financial resources specific to the states of EPA Finance Region 4. The lists are provided by ENERGY STAR, a joint program of the EPA and the DOE, and may not be exhaustive. Each of the links represents a single organization and provides a complete address, phone and fax number, email contact information, and a brief list of the services and products provided by the organization. To search for financial sources available in non-Region 4 states, go to http://www.energystar.gov/index.cfm?c=sb_join.sb_financeproducts.

Financial Resources Available in all 50 States:

[AETNA Capital](#)

[American Express](#)

[CREST](#)

[EnviroTech Financial](#)

[Eurobancorp, Inc.](#)

[Malcolm Pirnie, Inc.](#)

[National Association for the Self Employed](#)

[National Association of Development Companies \(NADCO\)](#) The SBA 504 loan program can help small businesses expand with fixed-asset financing for real estate, construction, renovation and equipment acquisition — including energy efficiency upgrades. Contact [NADCO](#) for a listing of the Certified Development Companies who arrange SBA 504 loans.

[SBA Loans](#)

[US Energy Capital Corporation](#)

[Wells Fargo Bank](#)

Alabama

[Alabama SBA District Office](#)

[Alabama Small Business Incubator](#)

[Greater Providence Chamber of Commerce](#)

[Office of Minority Business Enterprise](#)

Florida

[Barnett Bank, N.A.](#)

[Clewiston National Bank](#)

[Comeric Bank of California](#)

[First National Bank](#)

[Florida State Small Business Development Center](#)

[Mercury Mechanical Service Inc](#)

[Millien Financial Consultants](#)

[National Association for the Self Employed](#)

[Regent Bank](#)

[SBDC - Florida State Office](#)

[Wakulla Bank](#)

Georgia

[Barnett Bank, N.A.](#)

[Millien Financial Consultants](#)

[Reynolds Electric Co](#)

Kentucky: Finance, Products & Services

[Bank One](#)

[Bank One, West Virginia, Huntington, N.A.](#)

[Kentucky District SBA Office](#)

[Kentucky Small and Minority Business Division](#)

[Millien Financial Consultants](#)

[National City Bank of Columbus](#)

Mississippi

[K & L Environment Testing, Inc.](#)

[Mississippi Development Authority](#)

[Mississippi SBA District Office](#)

[University of Mississippi SBDC](#)

North Carolina

[Millien Financial Consultants](#)

[North Carolina SBA District Office](#)

[North Carolina Small Business and Technical Development Center](#)

South Carolina

[Carolina Capitol Investment Corporation](#)

[Millien Financial Consultants](#)

[South Carolina Chamber of Commerce](#)

[South Carolina Energy Office](#)

[South Carolina Jobs Economic Development Authority](#)

[South Carolina SBA District Office](#)

[US Small Business Administration](#)

Tennessee

[Millien Financial Consultants](#)

[State of Tennessee Office of Minority Business](#)

[Tennessee Association of Business](#)

[US Small Business Administration](#)

Appendix B: Energy Efficiency & Beyond

Appendix B provides a variety of informational websites related to energy efficiency. The list begins with several EPA and DOE sponsored sites. Next, some general information sources regarding energy efficiency and renewable energy are listed. Finally, links to sites that deal specifically with energy performance contracts are provided.

EPA & DOE Resources

ENERGY STAR, a joint program sponsored by the EPA and the DOE, is designed to help individuals, homeowners, and business save money and protect the environment through energy efficient practices.

<http://www.energystar.gov/index.cfm?c=home.index>

The DOE's Building Technologies Program seeks to advance the research and development of energy efficient building technologies and practices of building in the United States.

<http://www.eere.energy.gov/buildings/>

The EPA's Green Building initiative is an effort to ensure that EPA's buildings and practices reflect their mission—to protect human health and natural environment—by implementing a range of strategies from constructing new, environmentally sustainable buildings to improving the energy efficiency of existing buildings. The Energy Conservation page of this website highlights many elements critical to any energy efficiency project including, but not limited to, federal energy requirements, innovative renewable energy technologies, and energy savings performance contracts.

EPA Green Building Home <http://www.epa.gov/greeningepa/index.htm>

Energy Conservation <http://www.epa.gov/greeningepa/energy/index.htm>

Energy Savers, sponsored by the DOE, provides information on how to implement energy efficiency improvements in a variety of environments, including private homes, businesses, vehicles, and industrial plants. The links on Energy Savers furnish direct access to resources from a range of Federal agencies for homeowners, contractors and builders, building managers, realtors, state agencies, drivers and fleet managers, and industry managers.

<http://www.energysavers.gov/>

General Renewable Energy & Energy Efficiency Information Sources

The Database of State Incentives for Renewables & Efficiency (DSIRE) is a comprehensive source of information on state, local, utility, and federal incentives that promote renewable energy and energy efficiency.

<http://www.dsireusa.org/index.cfm?EE=1&RE=1>

The Alliance to Save Energy is a nonprofit coalition of business, government, environmental, and consumer leaders who promote the efficient and clean use of energy worldwide to benefit the environment, the economy, and national security. Specifically, their page targeting energy professionals—building code officials, corporate business owners and managers, corporate executives, federal energy managers, and industrial energy managers—is a useful resource for the practical implementation of energy efficiency improvement projects.

Alliance to Save Energy Home <http://www.ase.org/>

Energy Professionals http://www.ase.org/section/_audience/eprofessionals

ESCo Related Links

The Energy Services Coalition is an organization that seeks to empower individuals, organizations and businesses by providing unique up-to-date information regarding the energy industry and related fields. Its areas of specialty include energy efficiency, Dc power supplies , energy efficient windows, energy management , and renewable energy.

Energy Services Coalition <http://www.escperform.org/>

The National Association of Energy Service Companies (NAESCO) is a national trade association which has been promoting the benefits of the widespread use of energy efficiency for over 20 years. NAESCO seeks to open new markets for energy services by directly promoting the value of demand reduction to customers through seminars, workshops, training programs, publication of case studies and guidebooks, and the compilation and dissemination of aggregate industry data.

National Association of Energy Service Companies <http://www.naesco.org/>

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