

The Performance Contracting Advantage: Using Energy Savings to Fund Infrastructure Improvements

by Shan Bates

Executive summary

As state and municipal governments, schools, and universities cope with tighter budgets, facility managers are often forced to defer maintenance and equipment upgrades in order to control costs. Performance contracting is an alternative to alleviate additional costs and help finance a project. Performance contracting is a funding method of using guaranteed energy savings to implement facility improvements, equipment upgrades and energy-efficiency techniques. This paper explains how performance contracts work and discusses the pros and cons of the various contracting methods.

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The Performance Contracting Advantage

Performance Contracting

Performance contracting is a funding method of using guaranteed energy savings to implement facility improvements, equipment upgrades and energy-efficiency techniques.

Municipal and state governments cope with tight budgets and pressure from citizens to keep taxes low. Schools, colleges and universities confront expanding enrollment and demands to improve academics. In each situation, facility managers and owners are often forced to defer maintenance and equipment upgrades in order to control costs. Performance contracting is an alternative project delivery method available to alleviate additional costs and help finance a project.

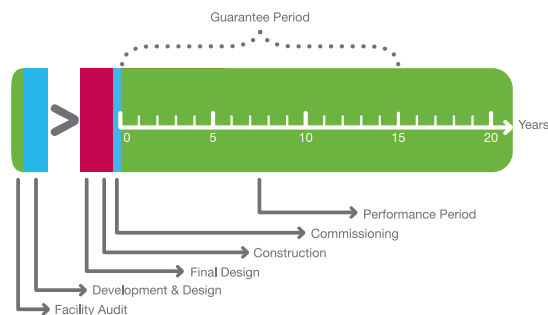
Performance contracting is a method of funding in which energy savings from utility expense reductions are used to pay for projects over the course of several years. Utility savings are realized through the implementation of various energy conservation measures (ECMs) that may include: high efficiency lighting retrofit, computer controlled energy management, and the replacement and redesign of older, inefficient heating ventilating and air conditioning (HVAC) equipment and systems, among others.

With a performance contract, upgrades of interrelated systems are bundled together into one comprehensive project that provides a customized solution based on a customer's needs. This maximizes the savings possible and allows the cost of the improvements to be a manageable expense.

A performance guarantee assures that annual savings will be achieved and if the guaranteed level of savings is not realized the energy services company (ESCO) that implements

the performance contract must write a check to cover the shortfall. The guarantee accomplishes three things:

- > It reduces the facility owner's risk.
- > It facilitates the procurement of the capital necessary to pay for the project.
- > It gives the ESCO impetus to ensure the system runs as efficiently as possible.



The performance contracting life cycle.

Selecting an ESCO

In general, one of three contracting methods is used by property owners seeking a performance contract: request for qualifications (RFQ), request for proposal (RFP) and negotiation. The method of selection can greatly affect the success of the project.

Using the RFQ method, a property owner issues a document that states the goals and objectives for the contract and describes the facilities involved, such as the number of buildings, location and square footage. Various ESCOs respond with proposals detailing their capabilities. The facility staff evaluates the respondents and selects the best-qualified ESCO to perform a detailed energy audit of the facility. Through the audit, the ESCO selects appropriate ECMs, determines the cost and the expected savings and develops a proposal

including the scope of work and all the financial details. Once the property owner is satisfied that the proposed ECMs will meet its infrastructure needs and financial objectives, the work begins.

The RFP method contains all the elements of the RFQ except that all the competing ESCOs must complete a preliminary energy audit, including the scope of work, estimated cost of the project and the preliminary savings figures, before a company is selected. Facility managers evaluate the proposals and select the ESCO for the contract based on the quality of the audit performed and the suitability of the ECMs proposed.

The negotiated approach to performance contracting can take many forms, but is usually very similar to the RFQ method. Typically, this approach applies only to private businesses or institutions that have no legal requirements for competitive bidding.

While each method offers its own advantages and disadvantages, there are some important points to consider. The cost of a preliminary energy analysis is substantial and increases the accuracy of the audit. When a project is bid as an RFQ, the ESCO is selected before the audit and is, therefore, more willing to dedicate resources to this costly analysis. On the other hand, if the project is bid as an RFP, each interested ESCO is required to commit its resources to performing an energy audit on a speculative basis. This forces ESCOs to either decrease the cost, and thus the accuracy of the audit, or bid on fewer projects, reducing the competition for a particular project. Using the negotiated method, there is no competition at all.

Therefore, the disadvantage of the RFP method versus the RFQ method is that fewer companies may respond to a bid due to the cost involved. In addition, there is a strong inclination to select a company on the preliminary savings and project cost instead of focusing on the best project expertise. It is also important to take into account that some companies may adjust the preliminary numbers before the contract is finalized.

In contrast, with the RFQ method, the company is selected on expertise, credibility, quality of references and proven ability. This allows for greater competition, a more accurate audit, and ultimately a higher quality project. After selection, the ESCO can work closely with the facility operators to ensure the best possible selection of building improvements. Regardless of the method of bidding, it's important to choose the method that gives the facility the highest quality improvements.

In addition to evaluating responses to the RFP or RFQ, there are other factors that facility operators must consider when selecting an ESCO, such as excellent references and 100 percent integrity on backing their guarantee. When evaluating an ESCO, facility professionals should contact as many of the company's references as possible. Important questions to ask include:

- Did the ESCO complete the project in a timely and unobtrusive manner?
- Did the ESCO sufficiently support and train the maintenance staff?
- Did the building improvements perform as intended?
- Is the project making or exceeding savings?
- If the savings ever came up short, did the ESCO stand by their guarantee and refund the shortfall? Was this done in a timely manner?
- Were the occupants comfortable after the project was complete?

Selecting the right ESCO is critical in order to have the highest quality performance contract, as the working relationship will generally last from 10-15 years.

The Energy Audit

The energy audit will determine the type and amount of savings to be expected from the performance contract. While these savings can take many forms, a well-designed and installed energy conservation project will typically generate utility bill savings, labor savings and lower repair costs. There are a variety of methods to calculate

these savings, including computer modeling, using individual ECM savings, targets, averages and load factor analysis.

Several computer-modeling programs are available for calculating a building's utility usage. With modeling, the effects of an ECM alone or in concert with other ECMs may be tested for utility savings as compared with the existing systems and operation. The positive side of computer modeling is its relative accuracy. The downside is its cost in terms of dollars and staff time, especially when multiple buildings are involved, because the models require detailed information on each building's energy consumption.

Energy savings can also be determined by calculating the results of individual ECMs, such as time scheduling savings or the savings derived from replacing older equipment with new, higher efficiency models. The positive side of individual calculations is the moderate cost in terms of dollars and staff-hours. The downside is accuracy when assumptions are made concerning equipment loading and building occupancy. Also, when various ECMs are applied to a project, the combined results may be different than if each measure were used independently.

Another popular method for determining the savings potential of a project is the use of targets, which are represented by energy units such as kilowatt-hours per square foot or British thermal units per square foot. The targets are either computer model generated or gathered from actual projects. When using targets, the ESCO must modify them based on the geographic area of the job, the type of occupancy and the weather conditions. The positive side of using targets is the relatively low cost of analysis and the limited amount of time required. The negative side is the relative accuracy of the method when viewing all facilities of similar occupancy as identical.

One method used in budgetary work is the use of average energy savings. In this method, experience with various types of occupancies is used to assign a potential savings. For example,

an energy conservation project at Plainview Independent School District in Texas has reduced utility bills by more than 28 percent. The positive side of this method is low cost; the downside is lack of accuracy and again a tendency to see all similar occupancies as identical.

Load factor can also be considered when determining energy savings. A building's electrical load factor is a calculation of the energy demand and usage represented by a single number. For example, a load factor of one (1) would indicate that the building ran continuously and had a constant load. Typically, a high load factor indicates excessive equipment runtime. If the load factor of high efficiency similar occupancies in similar geographic areas is known, a load factor target may be established. To calculate savings, a utility model of the studied facility may then be modified until the target load factor is achieved. The positive side of load factor analysis is its low cost and general accuracy. The downside is that surprises can occur if a building's utility profile is not thoroughly understood and that the method only applies to time scheduling ECMs.

Accuracy and Verification

While there are a number of techniques that may be used to estimate savings, the important factors to consider are accuracy and verifiability. Since the facility relies on the savings produced to meet the annual payments for the project, it is recommended that the bulk of the savings guarantee is based on actual energy bill savings, which are measurable and verifiable. Furthermore, the facility operators should receive regular savings reports that compare the expected payment without the energy conservation improvements to the actual invoice.

In addition, operational savings should be carefully considered and recognized if they can be substantiated. These savings fall into five general categories: equipment replacement savings based on life-cycle costs, repair cost

savings, maintenance contract savings, in-house labor savings and productivity savings. It is important to note that operational savings are rarely guaranteed and may not be budgeted dollars. They can be real, but it is important to carefully study the savings to understand which will really save currently budgeted dollars.

Finally, diligent monitoring is essential to a successful project. Experience has shown that in many cases, regardless of the ECMs applied, the energy efficiency of the facility may return to its original level over time. This occurs when technicians bypass problems rather than fix them or when changes are made in an effort to quickly

resolve occupant complaints without keeping in mind the long-term schedule needed for the building, among other causes.

For the energy conservation project to remain successful for many years, remote monitoring and/or active user involvement is needed. The ESCO's ability to remotely tune the system is also valuable in training the facility staff and in troubleshooting problems. Costly maintenance contracts on computerized energy management systems may be unnecessary if the operational staff receives quality training and is able to perform the necessary maintenance.

Conclusion

The performance contracting advantage is in enabling equipment and installation costs to be paid with funds the property owner would have normally spent on utility bills. This frees facility owners to focus on their primary organizational goals, from educating students to providing government services. Performance contracting is an excellent method to complete mechanical systems upgrades and resolve deferred maintenance problems while at the same time improving the comfort level of a building and saving money.

Schneider Electric

1650 West Crosby Road
Carrollton, TX 75006
Phone: + 1 866 822 4636
Fax: + 1 972 323 5359
www.schneider-electric.com