ENERGY SAVINGS PEFORMANCE CONTRACTS FREQUENTLY ASKED QUESTIONS (FAQs) AND ANSWERS
(As of December 2012)

What is an Energy Savings Performance Contract?

Q1: How is an energy savings performance contract (ESPC) different from a standard equipment specification and bid project?

A1: An ESPC relies on the technical expertise of an energy service company (ESCO) to design and build a comprehensive and creative technical energy project. Also, with an ESPC you buy a guaranteed performance result, not just new equipment. These contracts contain a guarantee of avoided utility and operating costs, along with guarantees of environmental comfort parameters, such as temperature, humidity, and carbon dioxide levels. Specifically, they provide compliance with applicable American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and Illuminating Engineering Society (IES) standards.

Q2: Why is a comprehensive project preferable to several single measure projects?

A2: A comprehensive approach maximizes the capture of savings opportunities available from a specific building or set of buildings. It also provides financial leverage to do more expensive individual measures that might otherwise not be economical to do on a stand-alone basis. A comprehensive project allows the measures with shorter payback periods to subsidize those with longer paybacks. A common error is for a facility to do only the shorter payback measures first and postpone more expensive upgrades. The agency has then lost the opportunity to bundle measures to maximize both energy and cost savings.

Q3: Why not just implement these comprehensive efficiency projects with our own technical staff and capital funds?

A3: Many public agencies do not have adequate capital funds appropriated to address many of their capital equipment replacement needs. They also may not have enough staff or the appropriate technical expertise to manage these complex projects in-house. There may be little incentive for in-house staff to accept the risk of project non-performance or financially guarantee the results of the project's performance. Agency staff may not have the expertise to measure and verify savings or commission the equipment. Also, the traditional procurement process for capital projects may require the acceptance of low-bid equipment instead of a best-value project design that minimizes life-cycle costs. The traditional capital budget process may require as long as five years or more to do a project that an ESCO could deliver in less than three years. The savings opportunities that are lost by waiting three extra years or more for capital funds to implement efficiency projects creates a huge cost of delay.

Q4: If our agency has been doing small efficiency projects for many years, haven't we already picked the "low-hanging fruit" of these savings and eliminated the opportunity for a comprehensive energy efficiency project?

A4: While this may be true in some cases, many owners are finding that even though they have spent hundreds of thousands or even millions of dollars over the last 10-15 years on energy efficiency projects, allowing an ESCO to evaluate their facilities comprehensively often results in their finding large untapped savings opportunities. One reason for this is the continual evolution of energy efficiency technologies. Lighting technologies have improved dramatically in the last five years. Also, the technology of direct digital control systems has dramatically improved and the opportunities to save energy, especially in larger buildings with larger equipment loads, may allow these new controls to provide economically feasible savings. It is recommended that all facilities be evaluated against an energy use index (EUI) of British Thermal Units BTUs per square foot in order to determine their relative efficiency compared to similar types of buildings. The costs of utilities (i.e. electricity and water) have increased in the last few years at a dramatic rate. Projects that may not have been economically attractive five years ago may be feasible today due to the higher utility costs.

Q5: Is energy savings performance contracting the same as a Power Purchase Agreement (PPA)?

A5: No, this is not the same as a Power Purchase Agreement (PPA). In a PPA, a 3rd party investor owns and operates the equipment (usually for large renewable energy or combined heat and power plant projects). Power purchase contracts require a user to take the output from this 3rd party owned generation asset for their power needs as part of a long term agreement to supply energy at a specified price. A power purchase agreement requires no up-front capital investment by the customer, and the 3rd party handles installation and operation and maintenance on behalf of the customer. The cost of power is based on a long-term rate with a pre-determined annual escalator. In contrast, with an energy savings performance contract, the ESCO would develop and install a turn-key solution, but it does not own or operate the equipment.

Q6: What are pros and cons of including renewable energy in ESPC? Is PPA a better approach than ESPC for implementing renewable energy projects? What about a combined ESPC/PPA project?

A6: In most cases where a renewable energy PPA would be economically viable, it is actually a better financial decision for the agency to acquire the renewable energy system as part of an ESPC. The ESCO can guarantee a level of energy performance output from the renewable energy system without requiring a separate contract which results in giving the agency ownership of the asset. It is possible to execute a separate PPA as one component of a larger ESPC project but it will result in two separate finance agreements. The PPA financing would be held by the ESCO. The ESPC financing would be held by the agency.

Type of Contract	Pros	Cons
ESPC with Renewable Energy	§ More flexibility with regard to contract term § Agency owns the assets § Agency has flexibility with regard to the level and cost of operations and maintenance services provided § ESCO can guarantee a specified level of energy performance from the installed equipment § May be less expensive on a life cycle cost basis than a PPA	§ Does not qualify for energy tax credits or depreciation § Owner assumes some performance risk § May have higher procurement costs
PPA for Renewable Energy	§ It requires no upfront capital investment § Provider bears all performance risk § Provider is eligible for state and federal energy tax credits § Provider can claim accelerated depreciation § Relatively low procurement costs for a PPA	§ Agency does not own the asset § Agency must agree to take-or-pay for the energy output § Less flexibility with regard to contract term § Generally limited to a single technology § Less attractive for small projects
Combined ESPC/PPA with Renewable Energy	§ Provider is eligible for state and federal energy tax credits § Provider can claim accelerated depreciation § Agency has flexibility with regard to the level and cost of operations and maintenance services provided under the ESPC	§ Two separate finance agreements § Greater legal complexity § May take longer to arrange multiple financing agreements § Agency does not own the PPA asset § Agency must agree to take-or-pay for the PPA energy output

Project Planning and Site Selection

Q7: What is the process for planning an ESPC project?

A7: The agency staff should determine whether modernizing facility infrastructure or generating excess utility cost savings is the primary focus. They should also decide what operational and maintenance or avoided equipment replacement cost savings they are willing to count for purposes of measuring the project's economic benefits. They should determine the target indoor environmental comfort standards that they would like the

project to deliver and identify any specific high priority equipment replacements that they would like the ESCO to include in the project.

In general, the following steps should be taken during the planning phase of the ESPC project:

- Determining there is a need for energy efficiency improvements
- Identifying a target list of potential improvements
- Committing to comprehensive building efficiency solutions
- Be willing to partner and share facility data with an ESCO
- Be open to new energy efficiency solutions (e.g., water, renewables)
- Recognizing the value of having a better understanding about how their buildings operate
- Understanding the value of buying best quality equipment
- Committing to use life-cycle costing for evaluating building solutions
- Viewing maintenance investments as insurance that provides reliable building operation
- Compare the selected facility against energy performance benchmarks

Q8: How do I evaluate whether my facility is a good candidate for an energy savings performance contract?

A8: Two indexes that can be used to quickly evaluate the size of an efficiency opportunity are the dollar costs spent for energy per square foot, and the building's energy consumption measured in BTUs per square foot. Many buildings can be benchmarked on the ENERGY STAR scale to see if they are efficient enough to qualify for a label certification. Most ESCOs prefer a minimum project size of at least $1 million. Also, equipment near the end of its useful life, which has very high maintenance and repair costs, indicates the potential for significant operating cost savings. If there are significant problems with the operational control of building comfort, this provides another opportunity to create value by dramatically improving indoor environmental quality. Due to the long-term nature of ESPCs, it is important that the agency have a long-term plan to use the building in the future.

Q9: What are the main obstacles to ESCOs delivering ESPC projects to state agencies?

A9: Lengthy government procurement processes extend the implementation cycle that increases ESCO project delivery costs and the cost of delay for agencies. Multiple agency decision-makers who need to approve projects can delay the process of finalizing the energy services agreement and project financing. The agency needs to establish an in-house team that is focused on selecting a project based on the best value rather than low bid. The agency team should include the facility manager, budget and finance staff, legal advisor, procurement officer, engineering staff and outside technical consultants if applicable. Agency facility and financial managers receive little or no recognition or incentives for championing ESPCs. Rather than combining several agency facilities into a single procurement, many building managers focus projects on either one or just a few

buildings, which makes the project's economics less attractive. Financing energy savings performance contracts over periods of less than 15 years erodes the opportunity to leverage financing for capital projects. Due to staff turnover, long-term relationships with customers are expensive for ESCOs to maintain.

What is an Energy Service Company (ESCO)?

Q10: How is an ESCO different from a standard architectural/engineering firm?

A10: An ESCO must financially guarantee energy and operating cost savings and measure project performance results over time. The ESCO assumes a financial risk that the project will produce the promised savings performance. Also, the ESCO typically provides a broader range of customer services, like measurement and verification of cost savings and commissioning of project equipment and systems. It provides more comprehensive engineering analyses of energy, water, and maintenance cost savings opportunities. It also assists in providing financing for projects. Part of the ESCO's turnkey approach is to provide on-site construction management services, as well as comprehensive post-construction training and maintenance services.

Q11: What are the distinguishing qualities of the most innovative ESCOs?

A11: The most innovative ESCOs typically have very experienced energy engineers on their staff. They excel at providing creative and comprehensive design engineering solutions for projects. They are responsive to their customers and provide high quality customer services. They are committed to long-term, sustainable savings performance for their customers and offer continuous project commissioning as a core competency. They have the technical breadth and depth to earn Leadership in Energy and Environmental Design (LEED) accreditation for their clients and are sophisticated about measuring improvements in indoor environmental quality and accounting for the environmental benefits of reduced air pollution.

Q12: How is an investment grade energy audit (IGA) conducted by an ESCO different from a traditional energy savings analysis?

A12: Since an investment grade audit (IGA) is the technical and economic foundation for a project that must produce guaranteed energy savings, it typically provides more detail on existing consumption levels, operating hours, and utility costs than a traditional energy analysis. It establishes and defines consumption and cost baselines for all operating costs savings. It also provides a description of the analysis methods, data logger measurements, savings calculations, and all of the detailed technical and economic assumptions used to calculate savings. The IGA serves as the technical basis for project development and justifies the economic feasibility of the project to secure financing.

Q13: How large is the annual ESCO market?

A13: Based on a market research study conducted by Lawrence Berkeley National Laboratories, the reported annual market size for ESCOs in 2010 was $6-7 billion. For the last 5 years the annual market growth rate is estimated to be between 15%-20%. The typical minimum size of an ESPC project is $1 million. Energy efficiency now provides at least 42 percent of all new U.S. energy resources as measured by the change in energy use per dollar of the U.S. GDP. Rising wholesale energy prices and technical efficiency innovations continuously expand the amount of economically feasible energy efficiency resources. Over the last 30 years, energy efficiency has been the most important, cheapest, and fastest growing energy resource available to building managers.

Benefits of ESPC

Q14: What are the main benefits of energy savings performance contracting projects?

A14: The most obvious economic benefits are utility and maintenance cost savings. The modernization and replacement of aging capital equipment, however, is probably an even more important project driver. Significant improvement in the indoor environmental quality resulting from better control of temperature, humidity, and ventilation is another benefit. Preserving scarce capital funds for priority projects that do not produce significant operating cost savings is an additional and important financial benefit.

Q15: What are the primary procurement benefits of using the ESCO project delivery model to implement energy efficiency projects?

A15: Using the design-build approach creates a mini-design competition between proposers, which results in more creativity in generating technical solutions. Ready access to project financing dramatically speeds up project implementation. The ability to select equipment and services based upon their quality and long term value rather than lowest first cost is a significant advantage. Having an ESCO design a comprehensive and creative technical solution provides single point accountability for project performance and reduces administrative costs compared to piecemeal implementation of project components.

Q16: Can an energy savings performance contract help my buildings earn an ENERGY STAR or LEED certification?

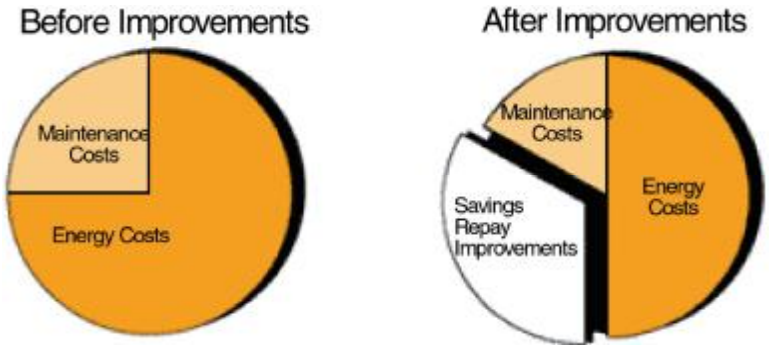
A16: Many ESCOs have staff members that are LEED certified and are familiar with the EPA's ENERGY STAR label program. They welcome the opportunity to create additional benefits for building owners. The economic benefits for human health and productivity from better thermal, visual, and acoustic comfort and better indoor air quality can provide significant project value. Properly measuring these benefits could lead to larger investments in energy efficiency projects. By reducing utility consumption of electricity and water, energy savings performance contracting projects significantly reduce air pollution.

Financial Benefits of ESPC

Q17: If energy savings performance contracting is such an effective way to fund comprehensive energy efficiency projects in state agencies, why don't states require agencies do what they can with ESPCs before spending capital appropriations on energy efficiency projects?

A17: Some states do require the use of energy savings performance contracting to implement feasible energy efficiency projects before spending appropriated funds on these capital projects (e.g., Texas, Georgia and Colorado). In other states, ESPC provides the primary basis for funding energy efficiency projects in state agencies (e.g., Kansas, Pennsylvania, Illinois and Missouri). If state comptrollers understood the favorable financial impact of using energy performance contracts to finance capital improvements from the cost savings produced by the improvements over time, perhaps more of them would require the use of ESPC as the preferred method for funding energy projects.

How ESPC Impacts Building Operating Costs



Q18: What are the primary reasons offered for not using ESPC to fund energy efficiency projects?

A18: Some people prefer low-bid and unbundled energy conservation measure (ECM) procurement as a strategy to keep their first costs low; unfortunately, this approach seldom minimizes life-cycle costs. Some believe that savings may be too difficult or too expensive to measure. Innovations in field data logger technology and refinements in the trend logging capabilities of control systems have decreased the costs and increased the accuracy of savings measurement. Some building operators believe that they will lose operating control of their facilities with an ESPC. Building operators retain the right and responsibility to maintain operational control of their facilities, but they should be accountable for the consequences of their operational decisions. ESPCs are specifically designed to recognize the partnership of the building owner and the ESCO in achieving mutual goals for reduced operating costs and improved indoor environmental quality.

Some managers believe that appropriated capital improvement funds are preferable to low-cost tax-exempt lease financing of projects. Whether capital funds are available

from taxes or bonds, they still create an obligation to collect tax revenues to pay project costs. One significant benefit of energy savings performance contracting is that it uses saved budget funds that would have been used to pay for operating costs (e.g. utilities, maintenance contracts, equipment replacement) to pay for the costs of capital improvement projects. Many building managers recognize the benefits of ESPC, but have trouble finding the time to implement a project at their facility. A number of states have created dedicated in-house technical assistance resources for ESPC or used program consultants to help agencies implement programs.

Q19: In addition to utility cost savings what other economic value is produced by an energy savings performance contract over a 20-year contract term?

A19: If we let X = average annual utility cost savings, then over 20 years the cumulative value of utility savings would be worth 20X. There are a a variety of non-energy benefits that will be produced from these projects over the 20 year term. For example improved employee health and productivity benefits are at least 2.2X (based on studies from Carnegie Mellon University). The economic development benefits from the purchase of local materials and services could be as large as 5X. Avoiding the cost of project delay could be worth 3X. Avoiding incremental utility systems line losses and capacity costs could be worth 6X. Operation and maintenance savings could conservatively be worth 1.5X. The value of air emissions reductions alone could be worth 1.5X. Utility rebates could total 0.3X for the project. The total energy and non-energy economic benefits produced from an ESPC over 20 years could be as much as 40 times the average annual utility cost savings.

Q20: What are the disadvantages of using appropriated capital improvement funds for energy efficiency projects?

A20: Capital funds are usually limited so energy efficiency projects face stiff competition from other budget priorities. The approval process for requesting new capital appropriations can be time consuming and expensive. Failure to obtain all the required capital funds for a comprehensive energy efficiency project leads to piecemeal project implementation which is more expensive. The crucial advantage of ESPCs is that they use operating cost savings from existing budgets to pay for the cost of capital projects.

Savings Guarantees

Q21: What does guaranteed energy savings mean? What happens if the ESCO does not meet the savings goal?

A21: A key aspect of this approach is that the ESCO provides a corporate guarantee that the project savings, which must be measured and verified at specific intervals, will cover all project costs. The ESCO guarantees a reduction in utility consumption which results in avoiding future utility costs. The ESCO does not guarantee lower future utility bills. Higher utility bills may result from increases in utility rates even if utility consumption levels have been significantly decreased from the implementation of the ESPC project. The ESCO does not guarantee the project financing payments which are an obligation of

the agency. ESPC project cash flows are designed so that guaranteed avoided utility costs are sufficient to repay the annual project financing costs. If the savings guarantee is not met, the ESCO is obligated to pay the difference to the agency. The use of savings measurement and verification and continuous commissioning help the agency and the ESCO ensure that the savings guarantee and equipment performance levels are achieved. In the event that the actual annual verified savings are less than the annual amount guaranteed, the ESCO is contractually obligated to pay the agency the difference between the guaranteed amount and the actual verified amount, based on an annual reconciliation. With an energy savings performance contract you buy a guaranteed performance result, not just new equipment.

Q22: What is the risk to my agency that the ESCO will miss their savings guarantee?

A22: Experience in the industry, especially in the last 10 years, shows that most ESCO projects achieve 110% percent of their total savings guarantees. They also have a substantial internal reserve fund to cover any savings guarantee shortfalls. On an industry-wide basis the percentage of missed savings guarantees is less than 1%. For the rare project that misses its savings guarantee, ESCOs promptly reimburse their customers for the savings shortfall and correct any issues that may have caused or contributed to the shortfall. Sound project design, installation, functional performance testing of installed equipment (e.g. commissioning), and performance monitoring are the most cost-effective methods to deliver promised project performance.

How to Competitively Plan and Procure an ESPC

Q23: Why use a Request for Qualifications (RFQ) to create a qualified list of proposers?

A23: An RFQ lets you comprehensively survey and quickly evaluate ESCO capabilities and experience. It is less risky and less costly for ESCOs to respond to an RFQ because there is no requirement for them to spend time on-site. It is helpful to disclose in the RFQ the economic potential of projects for which the agency intends to issue an RFP so that ESCOs have an incentive to respond to the RFQ.

Q24: What key elements should be included in a Request for Proposals (RFP) or Invitation for Proposals (IFP) for an energy savings performance contract?

A24: Well-defined evaluation criteria are the essence of a best-value RFP. A clear description of the procurement process and schedule is critical to creating credibility for a project. Providing reasonable technical building profile data on the energy characteristics of your project facility assists ESCOs in evaluating the economic feasibility of your project. Specific goals you would like to achieve for this project should be identified in the RFP. The RFP should also describe an evaluation process that is objective, clear, fair, efficient, and effective. If ESCOs know that proposals will be evaluated on their merits, they will be highly motivated to provide high quality proposals.

Q25: What are the benefits of the best-value approach to evaluating ESPC project proposals?

A25: Focusing on the quality of the proposals increases the likelihood of selecting the best long-run solution. It also provides greater flexibility in comparing the strong and weak points of competing proposals. It takes advantage of the technical knowledge of the selection committee to evaluate the best approach from a wide range of proposed solutions.

Q26: What can I do to improve the ESPC process and outcome for my agency project?

A26: Develop a partnership ethic that emphasizes cooperation and clear understanding of each party's roles and responsibilities. Full and timely communication between all relevant agency and ESCO staff is crucial to project success. Keep good records of revisions to the project scope as the project evolves so no one is surprised at the final project scope. It is important to budget realistically for project commissioning, training, maintenance, and measurement and verification services. Making quality decisions at every step of the process will produce high quality project results. Create a clear and detailed plan for measuring project performance, including the role of agency staff in providing notice of building changes and utility data to the ESCO. Consistently apply realistic standards and fairness as you negotiate the allocation of project responsibilities between the agency and the ESCO.

Q27: What can the state do to help individual agencies with the ESPC process?

A27: The state can develop standardized procurement, evaluation, and contracting procedures and documents (e.g., RFQ, RFP, audit contract, energy services agreement, evaluation forms, etc.). They can offer technical assistance and training to agency staff for the evaluation and negotiation of energy savings performance contracting projects. They can centralize and streamline the project review and approval process. The state should provide the maximum flexibility in project financing by allowing the use of appropriated capital funds, federal grants, tax-exempt leases, etc., to permit larger ESPC projects to be completed as a single transaction. For example, the Hawaii Department of Accounting and General Services (DAGS) Phase I Project combined capital funds, federal grant funds and a tax-exempt lease to finance the project.

Managing and Measuring Project Performance

Q28: What are the benefits of measuring and verifying project operating cost savings?

A28: Ongoing measurement of cost savings gives ESCOs real feedback on the performance of their design, installation, and operation strategies. Monitoring savings over the contract term improves both the persistence and reliability of savings achieved. Savings measurement and verification helps agencies document the economic benefits of their projects.

Q29: How is project commissioning relevant to ESPC projects?

A29: Formal building commissioning is a systematic, interactive, and documented quality control process. Commissioning functionally tests and verifies the performance of a building system's design, installation, operation, and maintenance procedures against the customer's requirements specified in the project commissioning plan. The initial commissioning report should certify that all newly installed equipment is operating and performing in accordance with the design parameters contained in the commissioning plan. Proper training of building operators and adequate documentation of the building's systems are also essential components of effective commissioning. The goal, which formal building commissioning shares with energy savings performance contracting, is to deliver verifiable building performance results. The plan should also address a continuous commissioning process to assure the performance of the energy conservation measures (ECMs) over the life of the project.

Q30: Why has project commissioning for energy savings performance contracts become more important in recent years?

A30: Building equipment has become more technically sophisticated and for major systems, may have specialized and packaged controls (e.g., chillers). Building automation systems have become much more complex and require effective calibration and programming. Building heating and cooling systems are being designed with less excess capacity which requires the systems to perform as designed. Building and safety codes are becoming more stringent. The economic value of health and productivity benefits from properly operating buildings has become a more urgent concern for building owners.

Q31: What are the main benefits of commissioning ESPC projects?

A31: Project commissioning provides the knowledge to optimize building equipment system efficiency. During project construction, commissioning provides more complete communication between the ESCO and the agency. This results in shorter punch lists and fewer callbacks, as well as a faster and smoother equipment startup process. Commissioning extends the life of the equipment due to the verification of proper design and installation. It also prevents future equipment performance problems over time. Another valuable benefit from commissioning comes from better building control, which improves thermal comfort and indoor air quality.

Q32: What is the difference in Measurement & Verification (M&V) options? Where do we find information on them?

A32: The International Performance Measurement and Verification Protocol (IPMVP) offers four options for measuring and verifying performance and energy and water savings. These options, titled A, B, C, and D, are the cornerstones of the standardized set of procedures contained in the IPMVP. In brief, Options A and B focus on the performance of specific ECMs. Option C assesses the energy savings at the whole-facility level by metering and analyzing utility costs before and after the implementation of ECMs.

Option D is based on computer models of the energy performance of equipment or the whole facility, calibrated against historical utility consumption data to verify the accuracy of the simulation model.

Further information regarding measurement and verification can be found in the *M&V Guidelines* document published by the Federal Energy Management Agency (FEMP) and accessed at *http://www1.eere.energy.gov/femp/pdfs/mv_guidelines.pdf*.

IPMVP Public Library of Documents*: http://www.evo-world.org/*

Q33: What are allowable avoided costs in ESPC?

A33: Utility savings from energy and water and fuel savings from propane and diesel fuel are allowable avoided costs. In addition, avoided operations and maintenance costs and avoided equipment replacement costs are also allowed.

Q34: If operations & maintenance (O&M) services are included in the ESPC contract, in addition to the O&M for contractor-installed equipment, what happens to existing maintenance contracts?

A34: As part of the ESPC project, ESCOs often propose repairs to existing systems, such as re-installation of damaged or missing controls or repairs of leaks in chilled water or landscape irrigation piping. Generally, the ESCO assumes some responsibility for preventive maintenance and repairs to new equipment installed. Existing maintenance contracts can often be renegotiated to revise the scope of services or, in some cases, be eliminated due to the installation of new equipment or maintenance services provided by the ESCO.

Q35: How can Direct Digital Control (DDC) systems be used to manage ESPC project performance?

A35: The following are recommended strategies for using DDC systems to effectively manage project performance:

- Select a system that has energy information data management capabilities.
- Use trend log data to verify equipment operating compliance with energy saving schedules and operating parameters.
- Store trend log data in a data warehouse so that it can be analyzed to refine equipment control strategies.
- Design the trend log data to provide actionable information to building operators and maintenance contractors to optimize equipment performance.
- Use the DDC system effectively for remote equipment operation fault detection and diagnostics.

- Design equipment control alarms so that they are prioritized to provide valuable information.

- Be sure that ESCO staff or building maintenance staff is trained to properly use the information provided by the DDC system.

- Establish clear lines of responsibility for who is accountable for taking corrective action based on the data provided by the DDC system.

Q36: What are the major technical risks of ESPC projects to owners and how can they be mitigated?

A36: It is important to effectively manage the long term contractual relationship with the ESCO. This requires full and timely project communication and adequate documentation of problem resolution. The following are examples of common technical risks and mitigation strategies:

Making incorrect design decisions

- Pay careful attention to sizing equipment properly
- Evaluate interactions between equipment to maximize system performance and efficiency

Having inadequate detail in the definition of the project performance specifications

- Clearly define the scope of work in sufficient detail
- Base designs on accurate existing conditions data
- Spot-check installation to catch quality issues

Basing decisions on lowest first-cost

- Design projects to minimize life cycle costs

Failing to adequately budget for operations and maintenance to support long term project performance

- Budget sufficient maintenance funds to prevent customer operation and maintenance performance problems
- Be realistic about what customer maintenance staff can be trained to do and what maintenance support will have to be provided by the ESCO or its subcontractors
- Standardize design choices to reduce maintenance costs by simplifying equipment and materials inventory
- Review long-term operations and maintenance of every ECM

- § Coordinate early planning with other construction projects to avoid confusion and delays
- § Keep records of agreements regarding various contractual items.

Q37: What kind of equipment warranties should be expected in ESPC?

A37: Typically the ESCO will provide a comprehensive equipment and labor warranty for one year from the date of beneficial use of major equipment systems installed as part of an ESPC. Due to the fact that construction on large projects can range between 18 and 24 months, it is possible that some warranties could expire prior to completed project construction. It is often possible to negotiate to arrange for the ESCO warranty period to run for one year from the date of project completion and acceptance. Specific equipment manufacturer's warranties do vary significantly based on the type of equipment selected. For example, electronic ballasts for fluorescent lighting generally has a 5-year warranty, LED and induction lighting may offer 15 year warranties. In contrast, most HVAC equipment manufacturers only offer one year warranties although extended warranties may be purchased. Agencies need to do a careful evaluation of the expected value gained from purchasing extended warranties.

Q38: What does the "cost of delay" mean and how can it be mitigated?

A38: By deferring the implementation date of a project for years at a time, the savings that would have occurred had that project been implemented earlier represents the cost of delay. The quick access to cost-effective tax-exempt financing allows agencies to pay for energy projects without waiting for capital appropriations. Savings from comprehensive energy efficiency projects occur over time, irrespective of how the agency pays for the project.

Q39: How should repairs to equipment not being replaced, but being made to operate more efficiently, be treated in the ESPC process?

A39: Recognize that buildings function as a set of interdependent systems. Equipment that is not being replaced must still function properly as part of the system. Sometimes ESCOs establish a repair and replacement fund for large buildings to spend at the owner's discretion to make sure that all the small components in large buildings can respond properly to control signals from a new DDC system or other equipment. It is not practical to identify every single component which may require repair even with a detailed investment grade audit. Usually these component repairs will be selected during installation based on their contribution to improving the energy savings performance of the new equipment being installed. For large projects with major deferred maintenance, the repair fund could be as much as 5% of total project cost.

Q40: What is the most common method for financing ESPC projects?

A40: The tax-exempt status granted to a public agency enables it to access lower-cost financing than is available to an ESCO. Tax exempt lease purchase agreements (TELPs)

are the most common method of project financing. Project financing can be readily obtained and financing agreements can be executed quickly after receipt of project technical approvals. Third-party tax-exempt financing transactions offer customized structures to maximize the agency's flexibility (e.g. non-levelized repayment schedules). It is standard to fund the project costs into an escrow account and permit progress payments to an ESCO during construction. Combining available capital funds with TELP financing including incentives and rebates allows a more comprehensive project to be implemented more rapidly, avoiding excessive costs caused by piecemeal project implementation. A TELP agreement typically does not require legislative or voter approval. This type of financing also allows the agency to receive title to the equipment with an equipment security interest held by the lender.

Q41: What are the most important factors to evaluate when reviewing the projected cash flow for an ESCO project?

A41: The accuracy, reasonableness, and documentation of utility and other operational savings amounts, are critical to a proper economic analysis. The interest rate and utility escalation rates have a significant effect on the project cash flow due to the length of these contracts (i.e. 20 years). It is important to be realistic, since choosing rates which are too high or low can skew the economic analysis of project feasibility. Also it is important to evaluate the difference between the level of savings being guaranteed and what is projected. If guaranteed savings are less than 90% of projected savings, it may raise concerns about the accuracy of savings calculations. If guaranteed savings are 100% of projected savings, there should be a significant amount of excess net savings in the cash flow to hedge project performance risk.

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