FCIP GUIDELINES

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Guidelines for Energy Performance Contracting in the Kansas Facility Conservation Improvement Program (FCIP)

These guidelines are meant to be read in conjunction with the master Investment Grade Audit Agreement (IGAA), the master Energy Performance Contract (EPC), and K.S.A. 75-37,125.

What is Energy Performance Contracting?

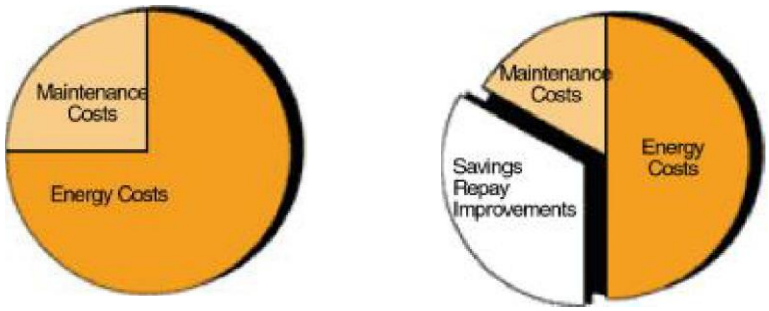
Energy performance contracting is a project approach that uses energy savings to pay for the cost of new energy efficient equipment and systems over time. It involves a single procurement contract with an Energy Service Company (ESCO) that:

- covers everything from initial design and engineering through installation, startup, and measurement and verification of outcomes;
- identifies energy savings opportunities sufficient to pay for all costs associated with developing and implementing the project (e.g., equipment, materials, labor, fees, bonds, permits, and debt service); and
- guarantees the energy savings, and reimburses the customer for shortfalls in the event savings are not achieved due to the fault of the ESC.

The process pays for itself by reallocating money already in the utility budget to purchase efficiency and capital improvements. That is, the money that is anticipated to be budgeted for utilities year after year is repurposed to repay borrowed funds used to replace failing or inefficient systems AND to pay the utility bills associated with lower usage. There should be no budget impact beyond what would have been expended for utilities and O&M in the absence of changes to equipment or operations.

The charts below demonstrate how energy performance contracting impacts building operating costs. But remember, performance contracting is based on the assumption that the Customer will continue to fund utility costs in its budget each year during the financing period AS IF none of the improvements had been made, so that the energy savings can be used to make debt service payments.

Before Improvements **After Improvements**



Because energy performance contracting pays for new equipment with the savings from reduced energy usage, the best candidates for a project are facilities with higher energy bills and outdated, energy-inefficient equipment.

Energy performance contracting provides many advantages over conventional approaches. In a conventional approach to replacing energy equipment, multiple contracts and often multiple firms, may be involved in designing a project, purchasing equipment, installing equipment, and commissioning. Even under a design/build contract, which integrates these processes under a single company, once the project has been accepted, the long-term operational risk lies with the customer. In contrast, energy performance contracting centralizes all elements of the project under a single ESCO, which acts as the general contractor and bears the financial risk if guaranteed energy savings are not achieved.

The comprehensive approach of energy performance contracting maximizes the energy savings opportunities available from a building or set of buildings. It provides the leverage to include more expensive individual measures that otherwise might not be economical to do on a stand-alone basis, by allowing energy improvements with shorter payback periods to offset those with longer paybacks in a single package.

In addition, many public agencies have neither the appropriate staff nor enough money to address capital equipment replacement needs on their own. In-house staff may not have the technical expertise to manage a complex project, commission the equipment, or measure and verify savings. The traditional procurement process may require the acceptance of low-bid equipment instead of a best-value project design. And waiting to accrue sufficient capital funds for a project carries with it the energy costs of delay – years

of paying higher utility bills and additional maintenance costs resulting from inadequate and inefficient equipment.

Kansas Facility Conservation Improvement Program (FCIP)

Kansas enacted legislation authorizing energy performance contracting in 2000. KSA 75-37,125 authorizes political subdivisions and state agencies to enter into a contract or lease-purchase agreement for an energy conservation measure, which is defined as an energy study, audit, improvement or equipment designed to provide energy and operational cost savings at least equivalent to the amount expended for the study/audit/improvement/ equipment over a period of not more than 30 years after the equipment or improvement is installed or becomes operational.

Under the statute, political subdivisions and state agencies can contract directly with an ESCO, or can participate in the state's Facility Conservation Improvement Program managed by the Kansas Corporation Commission.

Why use FCIP? Performance contracting is a comprehensive, interactive process. Energy performance contracts that are *not* conducted within FCIP may need to follow the applicable local contracting process – developing an RFP for a project, evaluating bids, selecting an ESCO, and monitoring the project.

FCIP allows the Customer to maintain control of the project while removing many administrative hurdles and providing professional support:

- Twelve ESCOs have been assessed and prequalified by the KCC and the State purchasing office. These ESCOs have been reviewed for financial soundness, experience with performance contracting, staff credentials, legal entanglements, and evaluations from customer-references. In addition, they have agreed to a lengthy list of State of Kansas terms and conditions. Customers select the pre-qualified ESCO that best fits their needs. There is no need to develop and issue an RFP and evaluate the qualifications of respondents. While the KCC pre-qualifies ESCOs, they cannot guarantee the performance of any ESCO for any particular project.

- The State's master contract with the ESCOs requires them to provide one-stop, turnkey energy services from project identification and analysis to design, implementation, maintenance (if desired by the Customer) and measurement and verification of achieved outcomes.

- Open book pricing is required and ESCO rates are capped. Under the State of Kansas master contract, ESCOs must fully disclose the actual costs for labor and materials.

Sec. 2.3 of the Energy Performance Contract requires the ESCO to compensate the Customer if actual costs are lower than estimates. In addition, each ESCO has a cap on the rate it can charge for its services (e.g. design, markup on equipment procured, etc.). Customers may be able to negotiate a lower rate with the ESCO. For example, if the project is straightforward, the ESCO may agree to a rate lower than the maximum rates specified in its State contract.

- ESCOs are required to guarantee that the amount of energy saved each year will be sufficient to cover the annual debt service costs for the project assuming utility rates increase as projected, i.e., the project must be budget neutral during each year of its financing.

- FCIP provides professional assistance and represents the Customer's interests throughout the process, attending many meetings and reviewing the investment grade audit, the proposed contract for services, commissioning, and M&V reports.

FCIP is a fee-funded State program, with fees based on the size of the project.

Step By Step in FCIP

Contact the Kansas Energy Office at 785-271-3352 to learn more about energy improvements through FCIP. Staff will provide a general overview of the FCIP process, provide direction to some fundamental resources, and answer questions. FCIP staff can make a presentation to governing bodies or management, if desired, to explain and answer questions about how the program works, the benefits, details of how to participate, costs, and so on.

Preliminary energy audit. FCIP can arrange for a facility walk-through by 3-4 pre-approved ESCOs to conduct a preliminary audit, which is a very high-level review. The Customer is required to provide, in advance, 36 months of utility bills, floor plans, and a Technical Facility Profile, which describes the current status. The ESCOs tour the site, and based on their observations and the data provided, they develop preliminary proposals of improvements. FCIP schedules a meeting for the proposals to be presented. There is NO CHARGE for preliminary audits, and NO COMMITMENT to proceed further.

Alternatively, some Customers already may have been approached by an ESCO, been provided with its preliminary proposal, and decided to work with that company. FCIP encourages Customers to have multiple ESCOs perform a preliminary energy audit and present their findings before selecting one ESCO to perform an in-depth Investment Grade Audit (IGA), but it is not required.

Selection of an ESCO. If the results of the preliminary energy audits suggest it is reasonable to proceed with a formal investment grade audit of the facility, the next step is to select an ESCO from the list of pre-qualified companies (typically it would be one of the firms that conducted a preliminary audit).

The choice between ESCOs on the State contract is based on the factors most important to each individual Customer. Some Customers select an ESCO that has approached them or whose work is known to them, while others base their choice on experiences during the preliminary audit process, or on other factors. Reviewing the ESCOs' maximum rates (listed on the KCC website) and discussing with them the discount they are likely to provide from the maximum (if any) will provide a financial basis for comparison. ESCOs may be asked to provide the names of recent projects (including contact persons) carried out for similar facilities, or in similar locations, for additional reference checks. Once an ESCO is selected, it is likely to be a multi-year relationship, from initial investment grade audit to post-construction measurement and verification of outcomes, so it is important to select an ESCO with the potential for a satisfactory working relationship.

ESCO Fees

ESCOs bidding to be on the State contract submit the maximum fee rates they will charge for an Investment Grade Audit (IGA) and for Construction Markups in the Energy Performance Contract.

The cost of an IGA is based on the square footage of the facilities being evaluated. ESCOs bid the maximum dollar amount they will charge per square foot. They can bid different rates for different types of facilities (e.g., schools vs. hospitals vs. prisons) and for different regions of the state.

The Construction Markup fee compensates the ESCO for project design, construction management, construction period interest, commissioning, training, measurement and verification (M&V) services for three years, and ESCO overhead and profit. It is a percentage applied to the construction costs of a project. ESCOs bid the maximum percentage rate they will charge, which can vary by the size of the project and by region of the state.

ESCOs are bound by the maximum fee rates they bid in response to the State Request for Proposals (RFP), but each ESCO does not charge the same rates. The customer should review the maximum rates bid by any ESCOs it is considering, and should discuss with them the level of discount they would offer. Because projects vary greatly in level of complexity, the customer should expect to negotiate lower-than-maximum fees for anything other than the most complex project in a complex environment.

In FCIP, there is no financial obligation to an ESCO until both parties have signed an Investment Grade Audit Agreement (IGAA) and the Agreement has been reviewed by the KCC.

Investment Grade Audit Agreement (IGAA). This is a standardized contract created by FCIP, and signed by the Customer and the ESCO. The KCC must approve the

signed contract in order for the project to proceed in FCIP. The IGAA spells out in great detail the types of reviews an ESCO must conduct during the investment grade audit (the scope of work), compensation for the audit, the factors the ESCO may consider in determining energy savings, elements allowed as construction costs, etc. It also sets out in detail the format of the IGA report – the document that will provide the basis for determining whether it is feasible to enter into a subsequent contract to install energy saving equipment. Entering into an IGAA is not a commitment to enter into an energy performance contract. However, a fee normally will be incurred for the work carried out during the IGA, whether or not the Customer proceeds with installation of energy saving equipment. The Customer has no obligation to pay the IGA fee if the IGA does not identify a viable project in accordance with Sec. 4.7 of the IGAA.

Memorandum of Understanding (MOU). After signing an IGAA, a Customer will enter into an MOU with FCIP. As noted earlier, FCIP is a fee-funded State program. The MOU defines services FCIP staff will provide and spells out charges for program participation. FCIP fees, which are in addition to project costs incurred with an ESCO, are based on the size of the project exclusive of financing costs. They are calculated using a formula that results in a declining percentage fee. For example, the FCIP fee for a $1 million project would be $26,000, or 2.6% of the cost; the fee for a $5 million project would be $66,000, or 1.32% of the cost.

FCIP does not invoice its fee until after the Customer and the ESCO have a signed, approved energy performance contract (EPC). If, for any reason, no EPC is signed there is no payment obligation to FCIP, regardless of the amount of work performed by FCIP up to that point.

Investment Grade Audit (IGA). An IGA is an exhaustive review of facility energy systems that results in a written assessment of the energy efficiencies achievable through performance contracting. The purpose of an IGA is to determine the feasibility of entering into a subsequent Energy Performance Contract to install and implement energy and operational cost savings measures, and to show how the guaranteed savings will be proven and documented.

During the IGA, the ESCO will review energy systems, including but not limited to:

- Heating and heat distribution systems
- Cooling systems and related equipment

- Automatic temperature control systems and equipment
- Lighting (indoor and outdoor)
- Insulation
- Air distribution systems and equipment
- Outdoor ventilation systems and equipment
- Hot water systems
- Electric motors, transmission, and drive systems
- Special systems (kitchen/dining equipment, swimming pools, laundry equipment, etc.)

ESCO staff also will review factors such as hours of occupancy of various parts of the facility, comfort and maintenance problems, current temperature settings, as well as Customer priorities for improvements and future plans for equipment replacement or building renovations.

The Customer will identify an internal team to work with the ESCO during reviews of systems, including staff representing maintenance/engineering, finance, and administration. This team, along with FCIP representatives, will hold several formal meetings with ESCO staff during the course of the IGA to receive progress updates, address questions and concerns, and clarify issues. The internal team also will work with the ESCO on a more informal basis throughout the process.

Based on the reviews, the ESCO will generate a list of potential cost savings that could be achieved by installation of new equipment, changes in operations and maintenance practices, building infiltration improvements, and the like. Calculation of potential savings is based on a comparison of current usage and costs (baseline) to estimates of usage and costs after installation of new, energy efficient equipment and changes in practices. This means calculation of the baseline is critical to achieving reasonable estimates of savings. (Remember – it is the money saved on utility bills that pays for the project.) A good baseline relies on not just the most recent year of usage (which could be skewed by unusually hot or cold weather, atypical occupancy in the buildings, etc.), but on an average of multiple years, normalized for weather.

The ESCO will present the cost savings information in a meeting with representatives of both the Customer and FCIP. Based on the results, the Customer identifies energy

conservation measures, or ECMs, for the ESCO to evaluate in more detail and combine into "packages" of improvements for consideration in the IGA report.

The IGA report will include a thorough description of existing facilities and energy use and expenses along with analysis of recommended ECMs. The report also will include one or more recommended "packages" of improvements, based on Customer priorities and the potential savings. Preliminary cash flow projections will capture the overall financial performance of the project.

Calculating Energy Savings

Energy savings is measured in units of energy, such as kilowatt hours (kWh) of electricity, mcf of natural gas, etc. It is determined by comparing the amount of energy used before and after implementation of a project, with adjustments for changes in conditions such as weather, occupancy, hours of operation, etc. The financial savings associated with the energy savings is determined by multiplying the units of energy saved times the cost per unit.

For example, if replacing fluorescent lighting in a building with LED lighting reduced electricity use by 100,000 kWh per year, and the cost of electricity was $0.13 per kWh, the value of the energy savings in the first year would be $13,000.

The energy savings continue year after year, and actually increase in value as utility rates rise. Using the example above and assuming an annual increase of 2% in utility rates, after five years the cost of electricity would be approximately $0.14 per kWh and the 100,000 kWh saved would be a $14,000 savings.

The report will be reviewed by both the Customer and by FCIP. FCIP's responsibility is to ensure that the ESCO has addressed all the requirements spelled out in the Investment Grade Audit Agreement, that calculations of savings are accurate and not based on unreasonable assumptions, and that the report contains the data needed to make an informed decision about whether to proceed with an Energy Performance Contract (EPC). The statute governing performance contracting, KSA 75-37,125, requires that a project be able to generate sufficient savings to pay back the cost of the project in no more than 30 years, regardless of whether FCIP is involved. Projects within FCIP must meet two additional requirements: the project must be revenue neutral annually, that is, the savings in each year must be sufficient to cover that year's debt service payment; and the project must be able to pay for itself within the length of time it is financed. In its review, FCIP will advise whether these mandatory criteria are met, and will identify issues of concern and areas of particular risk.

Review comments from the Customer and from FCIP will be provided to the ESCO in writing. The ESCO's response to each comment and any resulting changes will be contained in a Supplement to the IGA appended to the report.

Energy Performance Contract (EPC). A Customer who decides to proceed with energy improvements works with the ESCO to select the improvements that best meet the Customer's needs and budget, resulting in an EPC that reflects the final agreement between the parties. The EPC is a standardized contract developed by FCIP, but it contains a series of Schedules that are customized for the specific project. In addition to other things, the Schedules will:

- Spell out in detail the nature of the project selected after consideration of the various options outlined in the IGA. (For example, replace 4,150 existing fluorescent light bulbs, in identified locations, with LED bulbs and fixtures that meet particular specifications; replace three rooftop chiller units on buildings X, Y and Z; install automatic thermostats with agreed-upon temperature ranges for occupied and unoccupied time periods; etc.);

- Include an agreed-upon schedule for the project;

- Present a financial analysis for the project, including a cash flow analysis that reflects the likely interest rate associated with financing for the project, as well as any buy-down or other contribution that will reduce the amount of project cost that must be financed;

- Set out a plan for startup and testing of newly installed equipment (commissioning);

- Identify the training to be provided by the ESCO, including maintenance and operational training for new or modified equipment and systems;

- Clearly define responsibility for equipment maintenance and the nature of that maintenance;

- Include a Measurement and Verification (M&V) Plan which details how the ESCO will scientifically measure reductions in energy usage for a minimum of three years; and

- Detail the nature of the guarantee, including how the guarantee will be satisfied if projected savings are not achieved.

FCIP will thoroughly review the EPC to ensure that it is complete, that it reflects the Customer's decisions, and that calculations and computations are accurate and based on reasonable assumptions. Before FCIP can recommend approval of the contract, it must ensure the project as planned will meet payback requirements and is budget neutral annually. FCIP staff also will highlight any elements of the contract that do not appear to be in the Customer's best interest. FCIP typically does not attend routine construction meetings, but will be available upon request.

Commissioning. Historically, many building energy systems have not performed to their full potential. Poorly designed systems, improper equipment selection, inferior equipment installation, insufficient maintenance, and improper system operation have all reduced energy cost savings. Over the years, building equipment has become more technically sophisticated, and major systems often have specialized and packaged controls. Building automation systems require effective calibration and programing. Heating and cooling systems are designed with less excess capacity than in the past, which means they must perform as designed.

FCIP addresses these issues by requiring a commissioning plan for all projects. Commissioning is a quality-oriented process that ensures systems are designed, installed, functionally tested in all modes of operation, and capable of being operated and maintained in conformity with the design intent. A commissioning plan is required in Schedule I of the EPC. The commissioning process begins at project conception and continues until the project is accepted.

Benefits of commissioning include increased building comfort, reduced operational problems, lower installation costs, fewer contractor call-backs, and improved energy performance.

Measurement and Verification (M&V). M&V is the formal process of determining and documenting whether the project is consistently achieving the savings on which funding for the project is based. It serves as the basis for illustrating how savings have been achieved and enforcing energy savings guarantees.

In addition, a strong M&V effort can:

- Increase energy savings. Accurate information on energy usage allows adjustments to the design or operation of systems to improve savings, extend savings over time, and lower variations in savings, and

- Improve facility operation and maintenance. M&V data helps identify and reduce maintenance and operating problems, so facilities can run more effectively.

In general, M&V activities include site surveys, metering of energy and independent variables, engineering calculations, and reporting. Which methods, and how they are applied, depends on the characteristics of the energy conservation measures (ECMs) being

implemented, and should balance accuracy in energy savings estimates with the cost of conducting M&V.

FCIP requires the development of an M&V Plan consistent with the International Performance Measurement and Verification Protocol (IPMVP), which sets out four measurement options. Options A and B are considered retrofit-isolation methods of measuring performance, because they consider only the affected equipment or system, independent of the rest of the facility. Options C and D are whole-facility methods that consider total energy use in the facility.

Overview of Measurement and Verification Options A, B, C, and D		
	Description	**Example**
Option A - Retrofit Isolation, Measure Key Parameters		
	Field measurements are taken for the key performance parameter(s) which defines the energy use of the ECM-affected systems. Parameters not selected for field measurement are estimated, based on historical data, manufacturer's specifications, or engineering judgment.	A lighting retrofit, where the power drawn can be monitored and hours of operation can be estimated. Energy savings are calculated as the difference in power draw multiplied by the operating hours.
Option B – Retrofit Isolation, Measure All Parameters		
	Field measurements are taken for all key performance parameters which define the energy use of the ECM-affected system.	Installation of a variable-speed drive and associated controls on an electric motor. Electric power is measured over time with a meter installed on the electrical supply to the motor. Energy savings are calculated as the pre-retrofit energy use minus the measured energy use during the reporting period (adjusted for length of reporting period).
Option C – Whole Facility Measurement		
	Energy use at the whole facility or sub-facility level is measured, often relying on utility billing data. This approach is likely to require a regression analysis to account for independent variables such as outdoor air temperature or occupancy.	Typically used at a facility where several ECMs have been implemented, or where the ECM is expected to affect all equipment in a facility. In the example of replacement of a gas boiler, regression models are developed for gas use in the 12 months preceding the retrofit, and for each 12-month period after. The models are normalized for factors such as weather conditions, production, etc. Energy savings is defined as baseline gas use minus reporting-period gas use.
Option D – Calibrated Computer Simulation		
	Computer simulation software is used to model energy performance of a whole facility, or sub-facility. Models must be calibrated with actual hourly or monthly billing data from the facility. Requires considerable skill in calibrated simulation.	A comprehensive retrofit involving multiple interactive ECMs in a large building. A simulation model with baseline equipment is developed and calibrated to a minimum of 12 months of utility billing data. After retrofit, the model is run to estimate post-retrofit energy use in a typical year. Energy savings are calculated as baseline energy use minus reporting-period energy use. After installation, equipment is spot checked to calibrate the simulation and ensure its performance conforms to the parameters used in the model.

FCIP requires M&V for a minimum of three consecutive years of meeting or exceeding guaranteed savings, which is built into the price quoted by the ESCO. Customers may choose to extend the M&V period, at an additional cost which must be paid from project savings.

In some cases, the nature of the project will determine the M&V approach proposed by the ESCO. However, there are several overarching factors to consider in finalizing the plan:

- *Value of the ECM in terms of projected savings and project cost*. The overall M&V effort should be scaled to the value of the project; the value of the information provided by the M&V activity should be appropriate to the value of the project itself. The value placed on individual ECMs within a project may be affected by such factors as the extent of the project, energy rates, terms of the contract, comprehensiveness of ECMs, and magnitude of savings.

- *Complexity of the ECM or system.* An ECM that is more complex may require more expensive M&V methods to isolate the savings. For example, an ECM with a constant load and constant operating hours is the most straightforward to assess; an ECM with a variable load and variable operating hours is the most complex.

- *Number of interrelated ECMs at a single facility.* If there are multiple interrelated ECMs in a facility (e.g., lights and HVAC, or building envelope improvements and chiller replacement), it may not be possible to isolate the savings for a single ECM. Options C or D, which measure energy use for the whole facility, may be the most appropriate.

- *Risk of achieving savings.* ECMs that use predictable technology have a lower risk of failing to achieve the projected savings; conversely, ECMs that use unproven or less predictable technology present a higher risk of failing to achieve savings. Consider devoting more M&V effort to the more risky ECMs, particularly if they account for a significant portion of the planned savings.

- *Other uses for M&V data and systems.* The instrumentation installed and data collected for M&V may be able to be used for commissioning, optimization of the system, or periodic recommissioning.

Approximate Timeframes. The length of the energy performance contracting process will vary depending on the size and complexity of both the facility and the ECMs being installed. A typical project might last 12 – 18 months, from the preliminary audit to installation and commissioning of ECMs. All projects in FCIP will have a minimum of three years M&V to assess whether guaranteed savings are being achieved. Sec. 2.2 of the Energy Performance Contract requires the ESCO to conduct and bear the cost of M&V until the guaranteed savings have been met or exceeded for three consecutive years.

Specific guidance to ESCOs and Customers

This section addresses some of the most commonly raised topics in energy performance contracting in Kansas. They are arranged in alphabetical order.

Allowances and Contingencies – Energy Performance Contract Schedule E (Compensation to ESCO) allows the ESCO to budget funding for allowances and for contingencies. *Allowances* refers to money set aside to address known challenges of unknown quantity in a project that could not reasonably be fully evaluated in an Investment Grade Audit, e.g., a known brittle steam pipe buried behind walls. *Contingencies* refers to money set aside for unforeseen costs that could not be envisioned as part of a competent IGA. ESCO mistakes, oversights, and missed audit issues that reasonably could have been part of the IGA are NOT "unforeseen costs". They are the ESCO's responsibility. Allowance and contingency expense categories are the Customer's money; any expenditures from those funds must be approved by the Customer, and any funds unused at the end of construction must be returned to the Customer.

Avoided Capital Costs – Counting the cost of new equipment as a savings (referred to as "avoided capital cost") is not allowed in FCIP. Replacing a major piece of equipment now as part of a performance contract, rather than some years later, simply moves the expense forward in time. The capital cost is not "avoided" or "saved".

Change in Scope – FCIP projects are intended to be comprehensive in nature and scope and should therefore not be subject to significant scope change. Section 30 of the Energy Performance Contract details requirements related to amendments in project scope, which must be approved by the KCC. A scope amendment must be based on elements or concepts considered in the Investment Grade Audit. A change in scope must be accomplished within the original project cost, and must not cause the project to fall outside payback compliance requirements.

Change Orders – An FCIP project is a fixed-maximum price project. Section 8 of the EPC describes the conditions under which the ESCO can upgrade or alter equipment previously agreed to, and requires the ESCO to assume responsibility for any additional cost incurred relative to those changes. All proposed ESCO-initiated changes in equipment require the Customer's written approval, but the Customer is not responsible for any increases in cost associated with those changes. A Customer-initiated change order must

be able to be accomplished within the original project cost, and must not cause the project to fall outside payback compliance requirements.

Escalation Rates – FCIP recognizes that energy and maintenance costs typically increase over time, so the program allows a reasonable escalation rate to be built into cash flow projections, subject to the requirements of IGAA Section 5.1.3.1. An escalation rate increases the dollar savings associated with a fixed amount of energy saved. For example, an ECM that reduces electricity use by 1,000 kWh would result in a $120 utility bill savings, assuming a cost of electricity at $0.12 per kWh in the first year of the project. Applying an escalation rate of 2% per year in electricity rates, the value of those 1,000 kWh "saved" (or not used) would be $130 in year 5 of the project.

Expected Equipment Life Reflected in Cash Flow Analysis – Energy savings used for the FCIP cash flow analysis must reflect the expected service life of each type of equipment. Some equipment installed as part of a project may reach the end of its useful life before the project has been fully repaid, while other equipment (e.g., a boiler) may still be operating many, many years after the project financing has been repaid. If a project is financed for 15 years but some of the equipment has a service life of 12 years, for example, savings associated with that equipment must not be included in the cash flow analysis for years 13 – 15. Savings that accrue after the end of the financing period are not reflected in the cash flow, but are received by the Customer nonetheless.

Financing – FCIP does not finance projects; that is the Customer's responsibility. Many projects are set up as lease-purchase agreements. Some are funded by bond proceeds or bank loans, with the money placed into an escrow account from which progress payments are made to the ESCO during construction, in accordance with Sections 2.4 and 2.5 of the Energy Performance Contract. Some ESCOs may have financing divisions. Accumulated capital outlay monies or other savings can be used to reduce the amount that must be financed, up to 49% of the project cost. Cash contributions do NOT reduce the total cost of the project for purposes of determining whether payback requirements are met, except to the extent that decreased financing costs will lower the total project cost. Total project cost for determining payback compliance reflects the total amount the Customer will spend, regardless of the source of the funding.

Operations and Maintenance (O&M) Savings – This refers to a measurable decrease in operational or maintenance costs that is a <u>direct result</u> of implementing one or more energy cost savings measures. Most savings in this area are related to lower costs of maintenance contracts or parts associated with new equipment, rather than with staffing.

Although maintenance staff can be expected to spend less time changing light bulbs once fluorescent tubes are replaced with LED fixtures, for example, experience has shown that unless sufficient time is freed up to completely eliminate one or more positions, there is no staff savings. In most cases, staff use the extra time to address other maintenance projects that have been deferred. To be eligible, O&M savings must be measurable and documented in comparison with an established baseline of such costs. As with all savings in FCIP, O&M savings must be guaranteed in order to be used in calculating the payback period of the project.

Project Payback Requirements – The number of years it will take a project to pay for itself with energy and operational savings is calculated as total project cost (including financing costs, but excluding the FCIP fee) regardless of funding source divided by the guaranteed savings in the first year of the project. A project must pay for itself within the number of years it is financed, up to a maximum of 30 years. In addition, it must be budget neutral in each year.

Revenue Enhancements – Revenue enhancement occurs in cases where the Customer's replacement or installation of equipment leads to increased revenue. An example might be a city's replacement of old water meters, under the assumption that new meters would show more water being used, leading to increased revenue for the city's water utility. States that allow inclusion of revenue enhancements in energy performance contracting might also allow the additional revenue to count as "savings". However, in Kansas, the statute governing energy performance contracting authorizes only measures designed to provide "energy and operational cost savings". It makes no mention of increased revenues. In addition, the 2010 Legislature declined to take action on a bill (HB 2488) that would have amended the statute to include increased revenues. A measure that reduces energy use while also enhancing revenues might be included in an FCIP project, however the enhanced revenues would not be counted as "savings" in determining compliance with project payback requirements.

Savings Guarantee – Savings guarantees are based on energy units (number of kWh, therms, Btus) saved, not dollars saved. If the combined energy cost savings achieved (calculated using energy units saved multiplied by the utility rate) and O&M savings achieved are less than the guaranteed savings, the ESCO pays the difference to the Customer. Because the guarantee transfers the risk of project performance to the ESCO (subject to the Customer maintaining agreed-upon conditions), the ESCO has a strong

incentive for accurate savings estimations, high quality design and construction, preventive maintenance, and ongoing monitoring for the duration of the contract.

The cash flow projections in the IGA Report and the EPC will show both the savings the ESCO predicts the Customer will achieve, and the portion of those predicted savings the ESCO guarantees will be achieved (subject to the Customer maintaining agreed-upon thermostat settings, building occupancy rates, day-to-day maintenance, and the like). Only guaranteed savings are used in determining whether a project meets payback requirements, since one of the hallmarks of energy performance contracting is that a project pay for itself out of savings.

Water - Reductions in water use are not eligible savings in Kansas energy performance contracting. As noted earlier, the governing statute authorizes measures designed to provide "energy and operational cost savings". Using less water due to the installation of low-flow fixtures, for example, is a laudable goal, but water saved is not energy saved.

Lessons Learned

The energy performance contracting process is new to most customers. The IGAA and the EPC spell out roles and processes in detail, but not everything can be anticipated or covered. The following Lessons Learned are drawn from the experiences of customers in Kansas and other states. Not all will be applicable to every Customer.

- Do not expect the performance contract will produce substantial money above and beyond the project cost. The focus should be on achieving the best and most complete upgrades with the savings achieved.

- All parties need to be "on board" for a performance contract to be successful. This includes managers/superintendents/presidents, finance officers, purchasing, facilities directors, public works and public utility directors, the attorneys, and the council/commissioners/board/trustees.

- The performance contracting approval process can be lengthy. The more officials are educated and informed about the process, the faster it can progress.

- Fear of debt can cause some organizations to opt for shorter financing periods, which decreases the projects that can be incorporated into a performance contract.

- Organizations should have a utilities cost management process in place that will span personnel changes, since performance contracts typically last 12 – 20 years. There should be a utility tracking system in place that reviews both utility consumption and costs. In addition, a knowledgeable person should be tasked with review of ESCO M&V data and Guaranteed Savings Reconciliation Reports.

- Building operating schedules must be defined in detail for normal operation and holidays, as must the setback conditions for temperatures for both winter and summer set points of offices, classrooms, zones, and central computer rooms. Energy consumption is temperature driven and these set points are key for baseline and post construction measurements. The set points must be calibrated to ensure planned and appropriate space conditions are maintained. They must be agreed upon prior to award of the contract.

- Disposal of hazardous materials should be addressed in the project scope of work in the investment grade audit. Magnetic ballasts used in fluorescent fixtures manufactured before 1979 have PCBs that require special disposal requirements. Some older buildings may have asbestos still in place which requires remediation.

- A designated individual should be in charge of project management, with a replacement for turnover identified.

- M&V processes should focus on the risks that affect the determination of savings.

- Carefully track changes in schedules, occupancy, and operating conditions of buildings that could affect energy use for M&V adjustments.

- Watch for compatibility with existing systems and standard interface protocols when installing an energy management system that will be retrofitted to multiple buildings with multiple control features.

- Require the work be done at a convenient time, e.g., during summer vacation for schools. If a project schedule starts to slip, require the ESCO to explain why and to provide a plan for getting back on schedule.

- Don’t agree to thermostat settings you can’t live with, just to appear to save more energy in initial projections. If the comfort level does not feel right, people will adjust the thermostats, a potential violation of the conditions on which the savings guarantee is based.

- Technology improvements can be complicated. Make sure the ESCO provides sufficient on-site training and follow-up to ensure maintenance staff know how to operate new systems and how to get the most from them.

- Be prepared to manage the ESCO throughout the project to the same degree you would manage the general contractor on any building project. During construction, monitor the day-to-day performance of the ESCO. Weekly (and sometimes daily) project meetings should be held for the ESCO to make status reports. The ESCO should issue meeting minutes within three business days of the meetings for review and approval by the Customer.

- The Customer's project manager should work closely with their facilities and administration staff to ensure occupant issues or questions around the project can be directed to a single point of contact.