

Best Practice: Energy Savings
Performance Contracting to
Improve City Facilities



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Description of Best Practice:

Many building owners and operators struggle to manage necessary capital improvement and operations and maintenance (O&M) expenses. Energy savings performance contracts (ESPCs) are one of the mechanisms by which municipalities, universities, schools, and hospitals (MUSH) address this common challenge. Over the past 30-years, ESPCs have increasingly been accepted as a best management practice to improve facility lighting, air-conditioning and control systems, especially within this MUSH market. As highlighted below, over the past 10-years the city of Fort Worth (City) has had great success in implementing a multi-phased ESPC.

Motivation for Implementing an ESPC:

***ESPC – Energy Savings
Performance Contracting***

ESPC is a form of contracting with an energy service company (ESCO) for energy efficiency services. The ESCo provides turnkey services including the design development, construction, and measurement and verification of an energy efficiency project. A great benefit of this process is that projects are developed in a manner whereby the savings that accrue due to the upgrades are used to cover project cost, including debt service. By law, the ESCo guarantees performance savings; any savings shortfall is paid by the ESCo. [Local Government Code Chapter 302](#) provides the framework for the implementation of ESPCs in Texas.

A significant driver was [Senate Bill 5](#) in 2001, a.k.a. the Texas Emissions Reduction Plan (TERP), which required cities to reduce emissions from 5% starting in 2002, and later [Senate Bill 12](#) in 2007 requiring cities to reduce annual electricity consumption by 5% each year from 2007 to 2012. The senate bill required cities such as Fort Worth to implement energy saving measures, establish a goal to reduce electricity consumption and report this progress annually to the State Energy Conservation Office (SECO).

These earlier laws were again updated by [SB 898](#), in 2011 which required jurisdictions in NAAQS¹ non-attainment areas or those located in counties proximate to non-attainment areas to establish a goal to reduce electricity consumption by five percent each year for a 10 year period.

¹[National Ambient Air Quality Standards](#) – the EPA sets standards for pollutants considered harmful to the public health and environment.



The motivation provided by this legislation worked nicely with two of the city’s strategic goals that guide its policies and planning, which are; *to improve mobility and air quality;* and *to promote orderly and sustainable development.* One way to assist in the successful outcome of these goals is to adopt best management practices, which target capital expenditures and operational expenditures that include utility costs and facility support. For the City, one such practice is again, utilization of an ESPC.

Benefits of Utilizing an ESPC:

Through 2014, the city has implemented nine phases to its ESPC that was competitively solicited in 2001. This ESPC has grown to include over 200-buildings that the city both owns and operates – a total area of nearly 6-million square feet. The approximate value of these projects is \$67M, whose construction avoids O&M costs of \$5.9M annually; the result is a simple payback of 11-years. ESPC phases have been implemented by City Departments of Transportation & Public Works (T/PW) and Water for their respective facilities.

Fort Worth benefits result from, not only from active pursuit of TERP goals, but also from best management practices in CapEx & OpEx budgeting. Significantly, the ESPC has allowed improvements to facility processes and building systems that optimize city operations through a systems approach to necessary equipment replacements, before the ends of their useful life. Following is a table regarding the city’s ESPC and its performance through its fiscal year 2013.

City of Fort Worth		Initial Contract and Amendments				Performance Reporting thru Sept. 2013		
ESPC Program		City Approval	Construction Cost	First-Year Savings	Simple Payback	Guaranteed Savings	Actual Savings	Variance
Dept	ESPC Phases	Year(s)	(\$)	(\$/Year)	(Years)	(\$)	(\$)	(\$)
T/PW	6 Phases (1-4, 6b, 7)	2003-13	\$34,265,286	\$3,135,300	11	\$12,981,833	\$16,356,680	\$3,374,847
Water	3 - Phases 5/1&2, 6a	2010	\$33,282,273	\$2,803,883	12	\$1,006,952	\$3,955,852	\$2,948,900
Contracts and Performance		2003-2013	\$67,547,559	\$5,939,183	11	13,988,785	\$20,312,532	\$6,323,747

Challenges Faced and Addressed:

The first challenge was one of education about the ESPC model and how it would work within existing policies and procedures; this includes not only the model’s construction portion but also its funding portion. The city overcame this challenge through the assistance of SECO, and their specific offerings of [Preliminary Energy Assessment](#) (PEA) Services and LoanSTAR funding. SECO further assisted the city in its consideration of a Request for Qualification (RFQ) to select an Energy Services Company (ESCO) for ESPC implementation.



Once Fort Worth had implemented \$10M in improvements over three phases of its ESPC, a related challenge arose in 2007. In consideration of a Phase 4, the City had to find another funding source as a LoanSTAR constraint limited the city's ability to qualify for another loan while still paying on its two \$5M loans². This challenge was met again with SECO's assistance, by their introducing the city to other common ESPC financing mechanism, the Municipal Equipment Lease-Purchase Agreement.

Departmental silos and related staff assignments presented another challenge. It was important to break through these silos because a successful ESPC requires the active involvement of City staff from all Sections of the T/PW's Facility Management Division: Resource Conservation's *Conservation Specialist*; Architectural Services' *Construction Inspectors*; Facilities Maintenance's *Superintendent*. This staff must work together to coordinates its actions during all parts of an ESPC: *Development, Construction, and Performance*.

The ESPC model's associated funding challenge requires the active involvement of several city departments starting with the Legal Department, which also advises on the construction aspects. The Financial Management Services Department plays the biggest role in determining least-cost, best-value funding. All of this department's divisions are considered: Administration; Accounting; Financial Systems; Budget; Purchasing; Risk Management; Treasury. It is especially necessary for Facilities to coordinate their actions with this staff during ESPC development.

Description of ESPC Model Process:

In 2001, the City was motivated to consider how to best improve community air quality through the reduction of electricity consumption, while also better-managing utility budgets and improving facility infrastructure. The City's Environmental staff worked with SECO in the submission of Informal Reports to City Council regarding the ESPC model. With Council's concurrence, Facilities staff then developed and issued RFQ to select an ESCo and begin development of an ESPC in 2002.

ESPC Support References

- [SECO ESPC Guidelines](#)
- [SECO LoneSTAR Financing](#)
- [DOE State and Local Solutions Center ESPC](#)
- [EPA ENERGY STAR Performance Contracting Best Practices](#)

In 2003, following ESCo selection, the City contracted an initial pilot project, Phase 1, after ensuring that its ESPC's *Terms & Conditions* would allow for future projects by amendment. Financing of Phase 1 (as well as that of Phases 2 & 3) involved negotiation between SECO's LoanSTAR staff and the City's Facilities, Finance, and

² Since this time SECO has changed the way it administers the LoanStar program allowing for more projects to be financed under the program for any specific public agency.



Legal Department staff. Ultimately, all ESPC phases have followed the same basic process from *development*, to *construction*, and through *performance*.

Development

An ESPC should be considered within the context of some form of energy conservation or resource efficiency plan. Such plans typically include specific goals, strategies, and desired outcomes that help to guide consideration of an ESPC as a potential best-value approach to implementing facility improvements. To develop its ESPC project the City used its Energy Efficiency & Conservation Strategy.

For this ESPC project, development first involved some form of no-obligation high-level scoping audit in order to create a list of facility and project opportunities for consideration – an example would be SECO's PEA. In parallel to this work, various staff participated on ESPC team. For the City, this included staff within its departments of T/PW, Finance, and Legal, these being the key departments responsible for an ESPC's approval, construction, and performance, including on-going facility O&M.

With the initial audit completed, and assuming the proposal's technical and economic viability, an investment grade audit (IGA) is performed, referred to by SECO as a Utility Assessment Report (UAR). This audit built on the PEA, to include specifics of individual energy conservation measures. These measures are developed and packaged into the UAR to the extent that the ESCo is willing to guarantee savings that would result from this construction under an ESPC.

Two aspects to design development were especially critical – project funding and 3rd-party review. PEA costs and benefit estimates were used to determine how to best fund the developing ESPC. Financial advisors may be engaged by the ESPC team to help make this determination. Finally, Texas' governing [Local Government Code 302](#) requires entities to contract 3rd-party review of the IGA/UAR. As due diligence, the importance of this part of the process cannot be over-emphasized.

Construction

ESCo submission of the IGA/UAR, having been contracted for an authorized fee, then required ESPC team consideration prior to construction. Typically, if the proposed project does not meet the necessary criteria for approval or there is no interest in proceeding with a project, the ESCo is then compensated for the contracted development. If the team recommends a corresponding ESPC, the development fees may be paid-back as part of that contract, however funded or financed.

Mobilization began with the approval of both the construction contract (ESPC) and the project funding or finance agreement (e.g. LoanSTAR or MELP). Construction was managed by an owners-agent, in the city's case, its construction staff, based on typical



procedures of work submittals and approvals and regular project meetings. Construction payments are typically scheduled and either directly paid and submitted for reimbursement (LoanSTAR), or directly paid from an escrow account (MELP.)

Construction is accepted as complete only after its respective parties have signed off on individual measure punch-lists. Substantial completion is then issued, triggering the start of the performance period. It is important to note that system and equipment training needs to take place prior to substantial completion, and that a warranty period commences with the transition to performance. Fort Worth's ESPC's have typically taken a year or two to complete with only a few reasonably-negotiated change orders.

Performance

Construction services have been paid either through available funds or through some form of financed construction reimbursement or escrowed funds. The heart of the model is that, during construction, savings accrue to utility accounts as improvements have been installed. These accrued savings are used to repay financial obligations of the ESPC.

The real proof of ESPC success is in its actual performance of the measures. The performance is determined through a measurement and verification (M&V) plan. The M&V plan is established in the development phase, approved as part of the 3rd-party review, and contracted within the ESPC. This M&V is a post-construction annual service contract that reports actual savings against a savings guarantee. If actual savings fall short of the guarantee, the ESCo will pay the city for the shortfall. The city receives all surplus benefits that exceed the guaranteed savings.

Finally, the city chose to add services to its T/PW ESPC's that provide for both equipment preventative maintenance and a control systems specialist. These contracts help the city provide O&M assistance and ensure its projected savings are met. These services are paid with savings accrued from the project. Given due notice, the city may amend or cancel these annual contracts.

Continuing Efforts:

Fort Worth recognizes that the ESPC model may be applied to improving the performance of newly purchased buildings as well as existing buildings; new building design and construction may even be considered for an ESPC. They may also help the city further improve its water utility's production and reclamation processes, even its water meters. While traffic signal lighting improvements are complete, street lighting may be improved following the ESPC model. While not necessarily best-value in all these instances, ESPC's can and will be considered.



ESPC -Texas Cities

- Austin
- Cedar Park
- Cleburne
- Dallas
- DeSoto
- El Paso
- Fort Worth
- Galveston
- Houston
- Mesquite
- Rio Hondo
- San Marcos
- Temple

In 2012, the city became a Community Partner in the DOE's Better Buildings Challenge, expanding its efforts from municipal facilities to the private sector – encouraging other local building owners to implement facility improvements that will result in a 20-percent reduction in energy use by the year 2020. Fort Worth's local public-private partnership is growing with nearly 20M-square feet of buildings committed through its Partner-Ally Network. The city also connects with DOE's *Accelerators* for ESPC, Energy Data, and Outdoor Lighting.

The city of Fort Worth encourages others to contact its staff about its experience with ESPC's. Its staff enjoys sharing with others not only its experience, but also learning from others their successes in consideration of new and better ways to improve its facilities.

