



ENERGY SAVINGS PERFORMANCE CONTRACTING TO IMPROVE CITY FACILITIES

Texas City Efficiency Leadership Council Best Practice

Fort Worth: 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 expenses for capital improvements and operations and maintenance (O&M). Energy savings performance contracts (ESPCs) are one of the mechanisms by which municipalities, universities, schools and hospitals meet this common challenge. During the past 30 years, ESPCs have grown in acceptance as a best practice to improve facility lighting, air conditioning and control systems. As highlighted below, the City of Fort Worth has had great success in implementing multi-phased ESPCs during the past 10 years.

Motivation and Stakeholders for Benchmarking

In 2001, the Texas Legislature passed **Senate Bill 5** creating the Texas Emissions Reduction Plan. TERP required cities to reduce energy consumption by 5 percent starting in 2002. In 2007, **Senate Bill 12** extended the requirement for cities to reduce electricity consumption by 5 percent annually for another six years. These mandates required cities such as Fort Worth to establish goals to reduce electricity consumption, implement measures to reduce consumption and report their progress annually to the State Energy Conservation Office (SECO).

These laws were updated again in 2011 by **Senate Bill 898**, which extended the requirement for each political subdivision, institution of higher education or state agency located in or near a federal non-attainment area¹ to establish goals to reduce electricity consumption by 5 percent a year for 10 years.

The legislative impetus reinforced two of the city's strategic goals that guide its planning and policies: to improve mobility and air quality and promote orderly and sustainable development. To reach these goals, best practices involve tracking and managing both capital and operational expenditures that include utility costs and facility support. Fort Worth decided to utilize a performance contract requiring guaranteed energy savings.

¹ The U.S. Environmental Protection Agency sets **national ambient air quality standards** for pollutants considered harmful to the environment and public health.

ESPCS IN A NUTSHELL

This is a form of contracting with an energy services company (ESCO) to improve facilities' energy efficiency. The ESCO provides turnkey services including the design development, construction and measurement and verification of an energy efficiency project. One great benefit of this process is that projects are developed in a manner whereby the savings realized from any upgrades are applied to project costs including debt service. By law, the ESCO guarantees performance savings and is liable for any savings shortfall.

Local Government Code Chapter 302 provides the framework for the implementation of ESPCs in Texas.

Benefits of Utilizing an ESPC

Bids for Fort Worth's ESPC were competitively solicited in 2001. Through 2014, the city has implemented nine phases through its Water and Transportation and Public Works (T/PW) departments for their respective facilities. The initiative has grown to include more than 200 city-owned-and-operated buildings occupying almost six million square feet, valued at approximately \$67 million. Construction precluded \$5.9 million in annual O&M costs, resulting in a simple 11-year payback.

Significantly, the ESPC also has improved facility processes and building systems, which helps optimize city operations. Using a systems approach the city anticipates replacing equipment before its useful life ends, thereby minimizing operational failures and downtime. Benefits include contributing to state emission reduction goals as well as saving the city money.

The following table describes the city's ESPC outlays and its performance from inception through September 2013.

CITY OF FORT WORTH ESPC PROGRAM & PERFORMANCE (FY 2003-2013)

PROGRAM OVERVIEW		INITIAL CONTRACT & AMENDMENTS				PERFORMANCE REPORTING		
Elements		Council Approval	Construction Costs	Energy Savings	Simple Payback	Savings		
Department	Phases	Year(s)	Overall	First Year	Years	Guaranteed	Actual	Difference
Trn/Pub Wks	6	2003-13	\$34,265,286	\$3,135,300	11	\$12,981,833	\$16,356,680	\$3,374,847
Water	3	2010	\$33,282,273	\$2,803,883	12	\$1,006,952	\$3,955,852	\$2,948,900
Contracts & Performance Combined Totals		2003-13	\$67,547,559	\$5,939,183	11	\$13,988,785	\$20,312,532	\$6,323,747

Challenges Met and Overcome

The first challenge was to educate city leaders and finance personnel about the ESPC model and how it would work within existing policies and purchasing procedures, including the model's construction project management and budget planning. The city overcame this challenge with the assistance of SECO; specifically, its **Preliminary Energy Assessment (PEA)** services and the availability of state-backed **LoanSTAR funding**. SECO also helped the city draft a request for qualifications (RFQ) to select an energy services company (ESCO) for project implementation.

By 2007, Fort Worth had implemented \$10 million in improvements, so the city had to find another funding source because LoanSTAR funding was limited to two \$5 million loans.² SECO then introduced city officials to another common ESPC financing mechanism, the **municipal equipment lease-purchase agreement (MELP)**.

Departmental silos were a challenge, as the ESPC required the involvement of city staff from segments of Transportation and Public Works, the Facility Management Division, Architectural Services, Legal Department and Facilities Maintenance. Their staffs must work together to coordinate actions during an ESPC's three stages: development, construction and performance.

Description of the ESPC Model Process

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 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 and Conservation Strategy.

Beginning in 2001, using some of SECO's materials, city environmental staff began to inform the City Council regarding the ESPC model. With the Council's concurrence, facilities staff then developed and issued an RFQ to select an ESCO for the first project.

In 2003, the city's contract with the ESCO allowed for an incremental approach so that additional projects or phases could be added by amendment. Financing of Phase 1 involved negotiation between staff representing SECO's LoanSTAR program and the city's Facilities, Finance and Legal departments.

ESPC SUPPORT RESOURCES

[SECO ESPC Guidelines](#)

[SECO LoanSTAR Financing](#)

[DOE State and Local Solution Center/ESPC](#)

[EPA ENERGY STAR Performance Contracting Best Practices](#)

Development

SECO provided a preliminary engineering assessment (PEA) that created a list of facility and project opportunities for consideration. Staff from several departments contributed information to develop a plan that identified the priorities for the ESPC. Once the priorities were set, a utility assessment report (UAR) audit and an investment grade audit (IGA) were performed to select specific energy conservation measures recommended by the ESCO and guaranteed to save energy and reduce costs.

Two important aspects of the project's development were funding and third-party review. Cost-benefit estimates from the PEA were used to determine funding needs and financing options. **Local Government Code Chapter 302** requires a third-party review of the audits prior to financing to ensure savings by the municipality. The third party establishes a measurement and verification (M&V) plan during the development phase as part of its review. If the project fails the review or is not financed, the ESCO is generally compensated for this development work.

Construction

Mobilization began with the approval of both the construction contract (ESPC) and the project funding or finance agreement (e.g., LoanSTAR or MELP). An owner's agent or its construction staff managed construction. Construction payments were typically scheduled as work progressed and either paid by the city and submitted for reimbursement (LoanSTAR) or directly paid by the city from an escrow account (MELP).

² Since then, SECO has changed the way it administers LoneStar, allowing more projects to be financed through the program for any specific public agency.

Construction is accepted as complete only after the respective parties have been satisfied. Commissioning of systems and equipment training occurs prior to substantial completion of the project. Fort Worth's ESPCs have typically taken a year or two to complete with only a few reasonably negotiated change orders. The performance period commences upon substantial completion. During construction, savings accrue to utility accounts as improvements are installed so as to contribute to the payment of the ESPC.

Performance

The real proof of ESPC success is in the actual performance of the measures. Performance is determined through an approved measurement and verification plan. This is a post-construction annual service contract that reports actual savings against savings guarantees. If actual savings fall short of the guarantees, the ESCo pays the city the difference; if actual savings exceed guaranteed levels, the city derives a bonus.

Finally, the city may choose to add services to its ESPCs to provide for both preventive equipment maintenance and a control systems specialist. These services are paid with savings accrued from the project, but the city may amend or cancel these annual contracts depending on the project.

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. A performance contract may also help the city further improve its water utility's production and reclamation processes. Going forward, the ESPC model may be considered for traffic signal lighting improvements, street lighting projects and other city services.

TEXAS ESPC CITIES

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

In 2012, Fort Worth became a community partner in the U.S. Department of Energy's (DOE's) **Better Buildings Challenge**, expanding its efforts from municipal facilities to the private sector. The city is encouraging other local building owners to implement facility improvements that will result in a 20 percent reduction in energy usage by the year 2020. Fort Worth's local public-private partnership is growing with nearly 20 million square feet of building space committed through its Partner-Ally Network. The city also participates in DOE's **Accelerators** demonstration project for ESPC, energy data and outdoor lighting.

The City of Fort Worth encourages others to contact its staff about its experiences with ESPCs. Its employees enjoy sharing with others not only what they have learned but also hearing about others' successes in pursuing new and better ways to improve facilities' energy efficiency.