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 practice to improve facility lighting, air-conditioning and control systems. 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***
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> 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 energy consumption by 5% starting in 2002, and later Senate Bill 12 in 2007 extending the requirement for cities to reduce electricity consumption by 5% each year for another six years. This mandate requires cities such as Fort Worth to establish a goal to reduce electricity consumption, implement measures to reduce consumption, and report their progress annually to the State Energy Conservation Office (SECO).

These earlier laws were again updated by Senate Bill 898, in 2011 which extended the requirement for each political subdivision, institution of higher education, or state agency in NAAQS[1] non-attainment areas and near non-attainment areas to establish a goal to reduce electricity consumption by 5% each

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

year, for 10 years.

The motivation provided by this legislation reinforced 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*. To reach these goals a best practice includes tracking and managing capital expenditures and operational expenditures that include utility costs and facility support. Fort Worth decided to utilize a Performance Contract which requires guaranteed energy savings.

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 in contributing to the Texas emission reduction goals, but also in savings by the City. Significantly, the ESPC has provided improvements to facility processes and building systems that optimize city operations. Through a "systems approach" which provides a plan for equipment replacements before the end of their useful life, minimizing operational failures and downtime. 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	2003-13	$34,265,286	$3,135,300	11	$12,981,833	$16,356,680	$3,374,847
Water	3 Phases	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 to educate city leadership 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 through the assistance of SECO, and their specific offerings of Preliminary Energy Assessment (PEA) Services and the availability of state backed LoanSTAR funding. SECO further assisted the City to draft a Request for Qualification (RFQ) to select an Energy Services Company (ESCo) for project implementation.

Once Fort Worth had implemented $10M in improvements in 2007, the City had to find another funding source as LoanSTAR funding was limited to two $5M loans[2]. SECO again provided assistance, by introducing the city to another common ESPC financing mechanism, the Municipal Equipment Lease-Purchase Agreement.

Departmental silos are a challenge, as an ESPC required the involvement of city staff from segments of the Transportation, Public Works, Facility Management Division, Architectural Services, Legal Department, and Facilities Maintenance. This staff must work together to coordinate its actions during the stages of an ESPC: *Development*, *Construction*, and *Performance*.

Description of 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 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.

ESPC Support References

- SECO ESPC Guidelines
- SECO LoanSTAR Financing
- DOE State and Local Solutions Center ESPC
- EPA ENERGY STAR Performance Contracting Best Practices

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

In 2003, the City contract with the ESCo allowed for a phased 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 Department, Finance Department, and Legal Department.

Development

SECO provided a preliminary engineering assessment (PEA) to create a list of facility and project opportunities for consideration. Information was contributed from staff from several departments, to develop a plan which selected the priorities for the ESPC. Once the priorities were set, a Utility Assessment Report (UAR) audit and an investment grade audit (IGA) were done to select the specific energy conservation measures that the ESCo recommended and would be able to guarantee the energy savings.

[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.

Two important aspects to project development were project funding and 3rd-party review. Project cost and benefit estimates from the PEA were used to determine the funding needs and options for financing. Texas' Local Government Code 302 requires a 3rd-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 the 3rd-party review. If the project fails this review, or is unable to obtain financing, 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). Construction was managed by an owners-agent, or its construction staff. Construction payments are typically scheduled as work progresses and either directly paid by the city to submit for reimbursement (LoanSTAR), or directly paid by the city from an escrow account (MELP).

Construction is accepted as complete only after its respective parties have been satisfied. Commissioning of systems and equipment training takes place prior to substantial completion of the project. Fort Worth's ESPC's have typically taken a year or two to complete only a few reasonably-negotiated change orders. Substantial completion triggers the start of the performance period. During construction, savings accrue to utility accounts as improvements have been installed, so contribute to the payment of the ESPC.

Performance

The real proof of ESPC success is in the actual performance of the measures. The performance is determined through the approved measurement and verification (M&V) plan. 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. It is a bonus to the city if the actual savings exceed the guaranteed savings.

Finally, the City chose to add services to its ESPC contracts to provide for both equipment preventative 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. Traffic signal lighting improvements, street lighting projects and other city services may be considered following the ESPC model.

ESPC -Texas 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 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 participates in 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.