# **TXU Electric TEEM C&I Standard Offer Pilot Program:** Lessons Learned through Design and Implementation

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#### ABSTRACT

In late 1999 / early 2000, TXU Electric launched its TEEM (Texas Energy Efficiency Markets) initiative that included two pilot programs: the Large Commercial and Industrial (C&I) Retrofit Standard Offer Program, and the Air Conditioner Distributor Program. These programs were launched in response to recently enacted state deregulation legislation (Senate Bill 7), and in preparation for the impending Public Utilities Commission of Texas Energy Efficiency Rule (§25.181) requiring investor-owned utilities to achieve a 10% reduction in system load growth through energy efficiency programs by January 1, 2004.

This paper focuses on the Large C&I Standard Offer Pilot Program. The program was intended to serve two key purposes: enable TXU Electric to learn about implementing a standard offer program in their service territory; and build market momentum before launching a full-scale program in 2002. The program, designed to minimize barriers to participation and simplify administration, was well received, with dozens of applications requesting more incentive funds than budgeted. TXU Electric refined the program to address the lessons learned during the pilot. The program eventually became the model for a Commission-approved program template, which today is the basis for a number of Texas investor-owned utility standard offer programs.

The paper discusses program design objectives and features; overall program results; the lessons learned through program implementation; the integration of those lessons into the design of TXU Electric's full-scale 2002 program; and the program's impact on statewide regulatory rulemaking, program design and implementation.

#### **Introduction and Overview**

In May 1999, the Texas Legislature passed Senate Bill 7 (SB7), the Texas Electric Choice Act, restructuring the Texas electric utility industry. SB7 also included provisions requiring each investor owned utility (IOU) to meet at least 10% of the electric utility's annual demand growth through energy efficiency by January 1, 2004. To accomplish this, the IOUs would offer selected "standard offer" and "market transformation" programs.

Prior to the passage of SB7, TXU Electric had planned to offer a standard offer-type program for their large commercial and industrial (C&I) customers patterned somewhat after successful programs offered in other states such as California and New Jersey. Following the passage of SB7, TXU Electric concluded that offering some pilot programs during the transition period before deregulation would be beneficial and necessary to help build market momentum toward meeting the demand and energy savings goals mandated by SB7.

Thus, the development of this program began in earnest in August 1999, concurrent with the beginning stages of the development of the Public Utilities Commission of Texas (PUCT) Substantive Rule §25.181 (the Energy Efficiency Rule). Many of the program design decisions were completed by October 1999. The launch of the program, initially scheduled for January 2000, was delayed until late March 2000 in order to incorporate as many elements of the final Energy Efficiency Rule as possible.

Because many key decisions were made before the final version of the Energy Efficiency Rule was adopted, there are certain areas in which the C&I Standard Offer Pilot Program differed from the parameters of the Energy Efficiency Rule. None of these differences represented significant departures. By the time the final decisions about the Energy Efficiency Rule were made, TXU Electric had already conducted several outreach sessions with potential program participants and had therefore raised market expectations for the program. Thus, TXU Electric elected to go forward with certain elements of the program design that were slightly different. TXU Electric would use the lessons learned through implementation of the Pilot Program and modify the program to comply with the Energy Efficiency Rule by January 1, 2002.

# **Program Objectives**

A key requirement of SB7 is that utilities meet 10% of annual system load growth cost-effectively through market-driven energy efficiency programs. Soon after the bill's passage, TXU Electric realized that they would need to build experience and momentum to achieve these mandated goals. Thus a primary objective in launching the Large C&I Standard Offer Pilot Program was to achieve cost-effective reduction in peak summer demand, a goal paralleled by the SB7 mandate and the developing Energy Efficiency Rule.

Nested within the overall demand reduction objective was a subset of skills and market awareness goals that would need to be developed for future program success. TXU Electric viewed the development of this supporting subset as the beginning of a transition toward the offering of full-scale standard offer programs beginning in 2002. This subset included the following:

- Encourage private sector delivery of energy efficiency products and services.
- Maximize C&I customer energy and bill savings.
- Stimulate investment in efficient technologies most likely to reduce TXU Electric's peak capacity requirements.
- Acquire cost-effective energy efficiency resources.
- Create a simple and streamlined program process, to stimulate strong program participation from energy efficiency service providers (EESPs).
- Minimize the burden of measurement and verification (M&V) requirements associated with standard offer programs by offering deemed or simple savings calculations, as well as M&V facilitation in cases where full M&V is required.
- Gain experience with the administration and implementation of standard offer programs, in preparation for a number of future program offerings.

A number of the subset goals were aimed at encouraging market momentum that could meet increasing demand reduction goals with minimal and possibly decreasing utility involvement. SB7 and the implementation procedures eventually adopted by the PUCT required a market-based solution for the delivery mechanism to install energy efficiency in TXU Electric's service territory. Accordingly, the energy services industry would need to ramp up its marketing efforts, utility customers would need to become aware of the opportunities for incentives and reduced energy bills, and demand for sophisticated energy efficiency technologies would have to be fostered.

Prior to the introduction of the C&I Standard Offer Pilot Program, TXU Electric was operating a demand-side management (DSM) bidding program and had experience with administering various incentive and rebate programs. However, the utility had never operated a standard offer program. TXU Electric viewed operating a pilot program as a way to gain this experience and thus increase the odds for success when the energy efficiency goals became mandatory in 2002.

TXU Electric also reasoned that simplifying all aspects of the participation process would reduce administrative costs for the utility and participants, and could increase the number of projects enrolled in the program. Creation of a streamlined process therefore became an objective of the Pilot Program resulting in standardized forms, simplified measurement and verification procedures, and a clearly written procedures manual.

TXU Electric sought to comply with the draft Energy Efficiency Rule in order to avoid major programmatic changes when a full-scale C&I Standard Offer Program was required in 2002. Since the development of the Pilot Program and finalization of the Energy Efficiency Rule occurred in separate but parallel efforts, the Pilot Program did not meet all of the Rule's requirements. Nonetheless, design of the Pilot Program strove to comply with the Rule as closely as possible.

# **Program Design Elements**

TXU Electric utilized several innovative features in the program design to help enhance and facilitate participation and reduce barriers to doing so. The program was also designed to help streamline the participation process and reduce administration costs.

## Program Web and Email Communications with Participants

TXU Electric developed and maintained an Internet website as the primary marketing and communications source for the program. The website contained general information about the program, specific program requirements, links to applications and submittal forms, and up-to-date details about the program process. The website was developed primarily for the use of potential and active Project Sponsors, though anyone could access the website to learn about the program. The following items were available on the website:

- Downloadable program application and submittal forms.
- Downloadable program procedures manual.
- A list of frequently asked questions (FAQs) about participating in the program.
- Status of program funding available and committed.
- Program contact information.
- All eligibility requirements for Project Sponsors.

TXU Electric also maintained an electronic mailing list and provided an automatic signup on the program website. Upon signing up for the mailing list, a potential participant would receive an email confirmation including a Provider identification number that would be used throughout the program to identify the Project Sponsor and their projects.

### **Electronic Forms and Submittals**

The C&I Standard Offer Pilot Program used electronic submittal forms for applications and reports that were submitted via an email address established specifically for Project Sponsors. Project Sponsors were encouraged to submit as much as possible electronically when preparing and sending program applications and reports. The submittal was considered received based on the time and date the email was received, so long as a hard copy of the submittal was also received within five business days.

## Simplified M&V Methods

Project Sponsors were responsible for conducting their own measurement and verification (M&V) activities to substantiate the project energy savings upon which final payment was based. TXU Electric would then evaluate the results of the M&V activities before releasing the final payment.

To facilitate this process, TXU Electric outlined three distinct M&V approaches, representing increasing levels of detail and rigor - deemed savings, simple M&V, and full M&V. Project Sponsors had to choose one of these approaches for all projects associated with the C&I Standard Offer Pilot Program. The most appropriate method depended upon the availability of evaluation data from previous programs for particular measures, the predictability of equipment operation, and the benefits of the method relative to the costs associated with the particular M&V method chosen.

**Deemed savings.** Deemed savings refer to a savings verification approach that does not require short-term testing or long-term metering. Instead, energy savings were stipulated based on evaluation data from past DSM programs or other publicly available industry data. The data were used to make assumptions about typical operating characteristics, manufacturer's nameplate energy efficiency data, and types of equipment likely to be installed. The deemed savings M&V approach was appropriate for energy efficiency measures for which savings are very predictable, such as lighting retrofits.

**Simple M&V.** Simple M&V may involve short-term testing or simple long-term metering but relies chiefly on manufacturer's efficiency data and pre-set savings calculation formulas. Simplified methods reduce the need for some field monitoring or performance testing. For example, chiller energy and demand savings can be determined using the simple approach by comparing rated efficiencies of high-efficiency equipment to standard equipment, and using post-installation kW spot-metering and long-term kWh metering. Project measures must meet certain criteria in order to determine their savings using a simplified M&V approach.

**Full M&V.** Full M&V approaches estimate demand and energy savings using a higher level of rigor than the deemed or simplified M&V approaches through the application of end-use

metering, billing regression analysis, or computer simulation. All measures that do not meet the criteria for a more simplified approach must follow full, industry-standard M&V procedures. All Full M&V methods were developed in accordance with the 1997 International Performance Measurement and Verification Protocol (IPMVP).

## **Truncated Performance Period**

The performance period for savings delivery and verification in the C&I Standard Offer Pilot Program was a maximum of one year. Payments were based on one year of verified savings established using one of the three possible M&V methods. This was possible through the establishment of incentive rates based on the present value of ten years of persistent savings, a requirement that all installed measures have a ten-year useful life, and, where applicable, normalization of savings to typical meteorological weather data.

## **Program Parameters**

## **Program Budget and Savings Goals**

**Budget.** TXU Electric had allocated approximately \$12 million to fund the program over a two-year period (2000 and 2001). This budget would cover all aspects of the program, including design, administration, evaluation and incentives. From the top down, the total budget was allocated as shown in Table 1.

Budget Element	% of overall	Amount
Total Two-Year Budget	100%	\$12,000,000
Program Design	1%	\$120,000
Program Administration	10%	\$1,200,000
Program Evaluation	2%	\$240,000
Incentive Budget	87%	\$10,440,000

 Table 1. C&I Standard Offer Pilot Program Budget Allocation

The program design budget (1%) represents activities related to developing the program M&V guidelines, developing the web site, conducting initial program outreach, as well as developing application forms and other submittal forms.

The administrative budget (approximately 10%) represents all TXU Electric activities associated with running the program, including application processing and review, contract administration, review and facilitation of M&V activities performed by Project Sponsors, payment of incentive invoices, regulatory reporting, and program tracking.<sup>1</sup>

The evaluation budget (2%) is intended to cover independent auditor or impact evaluator activities either during or after program completion. The program has not yet been formally evaluated by an independent evaluator.

The remaining budget, \$10.44 million, was set as the incentive budget available to fund retrofit projects brought into the program by Project Sponsors.

<sup>&</sup>lt;sup>1</sup> The actual final costs incurred for administration were not available at the time of this report.

**Incentive prices.** Development of incentive prices for the C&I Standard Offer Pilot Program had gone through several iterations as the Energy Efficiency Rule was being developed. Though not required, TXU Electric chose to offer incentives at a level permissible by the Energy Efficiency Rule. Thus, the cost-effective benchmark prices used as a starting point were \$78.50/kW of peak demand reduction and \$0.0268/kWh of annual energy savings. The net present value of the ten-year stream of payments, inflated at 3% per year, was calculated, and then multiplied by the 35% cost-effectiveness cap set forth in the Energy Efficiency Rule for large commercial and industrial customers. This calculation resulted in incentive prices of \$208/kW and \$0.071/kWh saved.

Finally, TXU Electric combined these separate energy and demand prices into a single incentive price expressed in \$/kWh. The combined incentive rate was derived assuming a 37% savings load factor to account for the likely mix of energy efficiency measures receiving incentives under the program. The resulting incentive price was \$0.14/kWh of verified annual energy savings, though expected demand savings are implied in this price. Combining the incentive prices for demand and energy into a single price per kWh of energy savings reduced the M&V burden of the Project Sponsors to measuring only energy savings. The incentive price was applied to annual energy savings achieved over a one-year period. Incentive payments were made in two installments: (1) 40% upon approval of the Installation Notice based on the contracted savings goal; and (2) the remainder upon approval of the Savings Report based on the verified energy savings.

**Savings targets.** Based on the available incentive budget of \$10.44 million, and the incentive rate of \$0.14/kWh, TXU Electric had set unofficial savings goals for the program. The goal for verified energy savings delivered was approximately 80,000 MWh. A demand savings goal, though not an official meter of the program, was set between 15 to 20 MW.

## Eligibility

**Project sponsor.** Any EESP meeting the application requirements was eligible to participate in the program as a Project Sponsor. Eligible Project Sponsors included national and local energy service companies (ESCOs) or contractors that provide energy-related services, and individual customers that install energy efficiency measures in their own facilities.

**Customer site.** An eligible host customer site must receive non-residential electricity distribution service provided by TXU Electric, and have a maximum demand greater than 100 kW. Customer sites could be aggregated to reach the 100 kW demand threshold.

**Measure.** Project Sponsors could propose any set of energy efficiency measures that were considered commercially available, provided verifiable energy savings achieved through an increase in efficiency, installed in a retrofit application, and had a minimum useful life of at least ten years. Measures involving self-generation, cogeneration, load management or plug loads were specifically excluded from eligibility.

### **Program Process**

To participate in the program, a Project Sponsor would be required to complete a two-part application process prior to installation of any measures, enter into a standard contractual agreement with TXU Electric, and perform a two-part reporting process following installation of the project.

**Initial application.** The Project Sponsor submits an Initial Application (IA) as a first step in program participation. The IA generally describes the proposed project and requests incentive funds to be reserved. A deposit equal to 5% of the requested incentive funds was required to reserve the funds. TXU Electric reviews the IA for program eligibility, and if accepted, reserves funds for the applicant.

**Final application.** After finalizing the equipment selection and contracting with the customer, the Project Sponsor submits a Final Application (FA). The FA requires a more detailed engineering study than the IA, including equipment inventories, savings calculations, installation schedule, and a proposed M&V plan. TXU Electric performs a due diligence review of the FA, including a site inspection to verify the baseline condition.

**Standard contract.** Once the FA is approved, the Project Sponsor enters into a Standard Contract with TXU Electric. The terms and conditions of the Standard Contract are standard for all participants. After a Standard Contract is executed, the Project Sponsor proceeds to install the project's energy-efficiency measures.

**Installation notice.** After installation, the Project Sponsor submits an Installation Notice (IN) that provides details about the as-built conditions at the project site(s). TXU Electric performs a due diligence review of the IN, including a site inspection to verify the as-built conditions. Upon acceptance of the IN, TXU Electric pays 40% of the contracted incentives.

**Savings report.** Following fulfillment of all M&V activities described in the approved M&V plan, the Project Sponsor submits the Savings Report (SR). The SR provides results of all M&V activities and presents the verified energy savings achieved. Once the SR is approved, TXU Electric pays the balance of the incentive based on actual savings achieved.

## Limitations

The C&I Standard Offer Pilot Program set certain limitations on project size and incentives. Some of the key limitations included the following:

- For cost-effectiveness purposes, a project had to have minimum estimated annual energy savings of 200,000 kWh to be considered for incentives.
- Project Sponsors were limited to receiving a maximum of 20% of the total incentive budget. This maximum applied to the aggregate total of all projects submitted by one Project Sponsor. This limitation was intended to assure participation by multiple parties.

• To receive the full incentive rate, projects including multiple measures could not receive more than 65% of their total incentive from savings derived from lighting measures. Likewise, projects involving only lighting measures were limited to receiving 65% of the total calculated incentive. This rule was implemented to encourage the submittal of comprehensive projects, and was adapted from the Energy Efficiency Rule.

# **Participation and Savings Delivery**

#### **Initial Subscription**

The program began accepting applications in March 2000. Response was moderate for the first few months that the program was open. However, response began to increase by the summer months as outreach was conducted and word of the program spread. As the IA deadline of September 1, 2000 drew closer, TXU Electric was overrun with applications. As the IA deadline passed, more than 80 IAs were submitted, totaling over \$16 million in requested funds, nearly 60% more than available.

IAs were considered on a first-come first-served basis. Projects not receiving reserved funding were placed on a "waitlist" in the order received. In the event that funds were freed due to project withdrawals or reductions, projects from the waitlist were considered.

A total of 45 projects were completed and received incentive funds. Throughout the course of the program, 11 projects had been withdrawn or rejected. Twenty-eight applications remained on the waitlist and did not receive funding. Figure 1 illustrates the distribution of funded projects by reserved incentive funds.





Source: TXU TEEM C&I SOP tracking database

The standard offer format was key to the high subscription rate. It created opportunities for more market players of various sizes and specialties, including customers, to propose projects that would not normally be submitted to traditional programs such as DSM bidding programs.

**Measures.** A variety of energy efficiency measures were proposed and implemented in the program. As shown in Figure 2, a majority of program energy savings, nearly 60%, is attributable to lighting efficiency measures. Chiller replacements and motor measures account for about 14% and 8% of program energy savings, respectively.



## Figure 2. Distribution of Savings by Measure Type

Source: TXU TEEM C&I SOP tracking database

**Participants.** A variety of different companies, 22 in all, participated in the program as Project Sponsors. Five customers sponsored their own projects or hired a third-party consultant to assist them while retaining the Project Sponsor role. Several national ESCOs and contractors participated in the program, and the remainder of participants consisted of mostly local contractors or EESPs.

#### **M&V Results and Savings Delivered**

Savings Reports were submitted throughout the program period as M&V activities were completed for individual projects. Savings Reports reporting the results of the M&V activities were due at the end of 2001 for all projects<sup>2</sup>. After all SRs were submitted, reviewed and approved, the verified energy savings realized were approximately 67,650

<sup>&</sup>lt;sup>2</sup> One project in the program was granted an extension of its performance period to June 2002 due to unforeseen circumstances. The savings for this project were estimated in the final total for the purpose of this report.

MWh with a corresponding estimated demand impact of 13.0 MW. Approximately \$7.7 million of total payments were distributed, representing 73% of the original \$10.44 million incentive budget allocated. The balance of the incentive budget was not spent. A majority of the unspent funds became available due to withdrawn projects or unrealized savings estimates near the program's end, too late to practically accept new projects into the program.

# Lessons Learned and Changes to Full-Scale Program for 2002

In the summer of 2001, TXU Electric and their consultants convened to discuss the issues that arose during implementation of the Pilot Program and what adjustments needed to be made to the program to address those issues as well as to comply with the final adopted Energy Efficiency Rule. These modifications would be made to the C&I Standard Offer Program for its full-scale implementation beginning in the Fall of 2001. Some of the major changes are described below.

**Payment for energy and demand savings.** The Pilot Program was designed as an energy savings only program. The 2002 program was modified to pay incentives for both demand and energy savings as mandated by the Energy Efficiency Rule. Several elements of the program were altered to implement this new incentive structure, including the following:

- The 2002 incentive structure now includes a \$/kW component for verified demand savings achieved during the summer peak period (May-September, Monday-Friday, 1 PM 7 PM), and a separate \$/kWh component for annual energy savings.
- Savings calculations are now required to show how the project will achieve demand savings during the peak period.
- The M&V guidelines were modified include metering requirements to capture the demand savings during the peak period. Deemed savings methods were amended to incorporate diversity factors and added equations to calculate deemed demand savings.

**Load factor cap.** Concern was raised about the possibility of paying for excessive off-peak energy savings for projects that have a high load factor. Paying for these off-peak energy savings could jeopardize the ability for TXU Electric to meet their demand savings goals with the allotted incentive budget in a given year. An 80% savings load factor cap was established for the 2002 program, limiting the amount of energy savings that can receive incentives for every kW of peak demand savings achieved.

Pragmatically, this limitation would assumingly affect only a handful of projects, as most mainstream eligible measures would have savings load factors below 80%. The intent of the cap was to discourage projects primarily aimed at saving off-peak energy use, and assure that projects would contribute to the primary demand savings goal.

**Time limit between submittals.** In the Pilot Program, some Project Sponsors reserved incentive funds at an early stage in the program, and did not submit a Final Application for several months after, and then withdrew from the program. This impeded the ability to accept new projects into the program if reserved funds were held late into the program process. For the 2002 program, TXU Electric imposed a 90-day limit for submittal of the FA following approval of the IA.

**Control and VFD measures.** To emphasize demand savings projects, stand alone controls and variable frequency drive (VFD) projects were made ineligible, since they do not impact peak demand in most cases. However, these measures were allowed as part of a comprehensive package of retrofits.

**IA agreement.** Due to the structure of the contractual agreements between TXU Electric and Project Sponsors, TXU Electric did not have legal authority to retain the application deposit in certain situations. TXU Electric decided to add a new agreement, the Initial Application Agreement. The main purpose of this new agreement was to give TXU legal authority and make explicit the conditions under which an application deposit could be retained.

# **Influence on Program Design and Implementation in Texas**

TXU Electric designed the C&I Standard Offer Pilot Program at the same time that the PUCT was developing the rules and procedures that would become the Energy Efficiency Rule. While TXU Electric sought to comply with the evolving Rule, in some instances the Rule was influenced by Pilot Program design decisions.

TXU Electric's energy efficiency team participated in the working group that provided input to the Rule while simultaneously designing the Pilot Program for the utility's internal purposes. The cross fertilization, coupled with the fact that the Pilot Program was the first large-scale C&I standard offer program to be offered in Texas under the new regulatory landscape of SB7, meant that many of the concepts incorporated in the Pilot Program were later found in the finalized Rule. Today, as Texas IOUs comply with the 10% demand reduction mandate of SB7, they do so in part by operating C&I standard offer programs that are very similar to TXU Electric's Pilot Program.

## Influence on PUCT Program Templates

One of the PUCT's activities in implementing the requirements of SB7 was to approve a series of eight statewide energy efficiency program templates or outlines, which are now the basis for utility-run programs across the State. The C&I Standard Offer Program template that was approved in May 2000, was developed during the winter of 1999-2000, after TXU Electric had largely completed their C&I Pilot Program design work. With a few exceptions, the template follows the lead taken by TXU Electric. Key design features of the C&I Pilot Program that are now found in the Commission approved template include:

- Participant eligibility requirements.
- Project and measure eligibility criteria.
- Program process and application procedures.
- Application of baseline standards such as ASHRAE Standard 90.1-1989.

## Influence on M&V Procedures

The TXU Electric C&I Pilot Program pioneered the use of streamlined M&V procedures. TXU Electric developed these procedures during the Fall of 1999. Similar M&V guidelines were subsequently adopted and approved by the PUCT in the summer of 2000 for use in programs across Texas. Some of these streamlined M&V guidelines include:

- Stipulated hours and standard fixture wattages to determine savings for lighting projects.
- Simplified metering and savings calculation for certain central plant retrofits.
- Simplified metering and savings calculation for constant-load motor retrofits.
- Stipulated values and simplified methods for window film installation projects.

### Impact on Statewide Market Momentum

TXU Electric's early introduction of the C&I Pilot Program helped to motivate the energy services company community to develop projects for 2002 both within TXU Electric's own service territory and beyond. For example, as Reliant Energy HL&P introduced a similar C&I standard offer pilot program in the fall of 2001 in their Houston/Galveston service territory, the incentive funds were fully subscribed within minutes of opening the program. Many of the same companies that had been installing projects in TXU Electric's service area were among those competing for funds in Reliant Energy HL&P's pilot program.

# Conclusion

The TXU Electric Large C&I Standard Offer Pilot Program was designed and implemented with the main objectives of learning as much as possible about implementation of standard offer programs and to excite the market and build momentum. This was in preparation for mandated standard offer programs to meet the energy efficiency goals set forth by Senate Bill 7.

The Pilot Program was successful as it achieved its main objectives, received overwhelming response and participation and realized approximately 85% of its savings targets. The Pilot Program also resulted in several lessons learned, resulting in refinements before the full-scale implementation of the C&I Standard Offer Program in 2002.

The Pilot Program also influenced standard offer program design and implementation throughout the state, as elements of the program were integrated into the PUCT Energy Efficiency Rule and subsequent other Commission-approved design standards such as deemed savings. The Pilot Program also helped to motivate the market beyond the boundaries of TXU Electric's service territory to the rest of Texas.

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