AEP Texas Central Company

2012 Energy Efficiency Plan and Report

Substantive Rules § 25.181 and § 25.183

March 30, 2012

Project No. 40194

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Introduction

AEP Texas Central Company (TCC or Company) presents this Energy Efficiency Plan and Report (EEPR) to comply with Public Utility Commission of Texas (PUCT or Commission) Substantive Rules 25.181 and 25.183 (EE Rule), which implement Public Utility Regulatory Act (PURA) § 39.905. As mandated by this section of PURA, the EE Rule requires that each investor owned electric transmission and distribution utility (TDU) achieve the following demand reduction goals through market-based standard offer programs (SOPs) and limited, targeted, market transformation programs (MTPs):

- at least 20% of the electric utility's annual growth in demand of residential and commercial customers by December 31, 2011;
- at least 25% of the electric utility's annual growth in demand of residential and commercial customers by December 31, 2012;
- at least 30% of the electric utility's annual growth in demand of residential and commercial customers by December 31, 2013.

The EE Rule includes specific requirements related to the implementation of SOPs and MTPs that control the manner in which TDUs must administer their portfolio of energy efficiency programs in order to achieve their mandated annual demand reduction goals. TCC's plan enables it to meet its statutory goals through implementation of energy efficiency programs in a manner that complies with PURA § 39.905 and the EE Rule. This EEPR covers the periods of time as required in Substantive Rule 25.181. The following section describes the information that is contained in each of the subsequent sections and appendices.

EEPR Organization

This EEPR consists of an Executive Summary, fourteen sections, a list of acronyms, a glossary and four appendices.

- Executive Summary summarizes TCC's plans for achieving its goals and projected energy efficiency savings for program years 2012 and 2013 and highlights TCC's achievements for program year 2011.

Energy Efficiency Plan

- Section I describes TCC's program portfolio. It details how each program will be implemented, presents related informational and outreach activities, and provides an introduction to any programs not included in TCC's 2011 EEPR.
- Section II explains TCC's targeted customer classes, describes the estimated size of each class and the method of determining those class sizes.

- Section III presents TCC's projected energy and demand goals and savings for the prescribed planning period detailed by program for each customer class.
- Section IV describes TCC's proposed energy efficiency budgets for the prescribed planning period detailed by program for each customer class.

Energy Efficiency Report

- Section V documents TCC's demand reduction goal for each of the previous five years (2007-2011) based on its weather-adjusted peak demand and actual savings achieved for those years.
- Section VI compares TCC's projected energy and demand savings to its reported and verified savings by program for calendar years 2010 and 2011.
- Section VII details TCC's incentive and administration expenditures for each of the previous five years (2007-2011) detailed by program for each customer class.
- Section VIII compares TCC's actual 2011 expenditures with its 2011 budget by program for each customer class. It identifies funds committed but not expended and funds remaining and not committed. It also explains any cost deviations of more than 10% from TCC's overall program budget.
- Section IX describes the results from TCC's MTPs. It compares existing baselines and milestones with actual results, and details updates to those baselines and milestones.
- Section X describes Research and Development activities.
- Section XI documents TCC's most recent Energy Efficiency Cost Recovery Factor (EECRF).
- Section XII documents TCC's Underserved Counties.
- Section XIII describes TCC's Performance Bonus calculation for program year 2011.

Potential Impact of Project No. 39674

- Section XIV describes the potential impacts of Project No. 39674, rulemaking proceeding to amend energy efficiency rules.

Acronyms

- A list of abbreviations for common terms used within this document.

Glossary

- A list of definitions for common terms used within this document.

Appendices

- Appendix A – Reported and Verified Demand and Energy Reductions by County for each program.
- Appendix B – Program Templates for any new or modified programs and programs not included in TCC's previous EEPR.
- Appendix C – Existing Energy Efficiency contracts and obligations.
- Appendix D – Data, explanations, or documents supporting other sections of the EEPR.

Executive Summary – Energy Efficiency Plan (Plan)

TCC plans to achieve at least a 25% reduction in its annual growth in demand of residential and commercial customers by December 31, 2012, and at least a 30% reduction in its annual growth in demand of residential and commercial customers by December 31, 2013. TCC's Plan addresses

achieving the corresponding calculated energy savings goal, which is derived from its demand savings goal each year using a 20% capacity factor [Substantive Rule 25.181(e)(4)]. The goals, budgets and implementation procedures that are included in this Plan are in concert with requirements of the EE Rule, using lessons learned from past experience and customer participation in the various historical energy efficiency programs. A summary of TCC's projected annual goals and budgets is presented in Table 1.

Table 1: Summary of Goals, Projected Savings (at the Meter),[1] and Budgets

Calendar Year	Average Growth in Demand (MW)	Growth In Demand Reduction	Demand Goal (MW)*	Energy Goal [2] (MWh)	Projected Savings [3] (MW)	Projected Savings [2 3] (MWh)	Projected Budget (000's)
2012	32.74	25 %	12.93	22,657	48.09	61,719	$14,120
2013	32.74	30 %	12.93	22,657	31.41	61,943	$14,082[4]

* Substantive Rule 25.181(e)(3)(B) - Beginning in 2009 a utility's demand reduction goal in megawatts for any year shall not be less than the previous year's goal.

Executive Summary – Energy Efficiency Report (Report)

This Report demonstrates that in 2011, TCC cost-effectively implemented SOPs and MTPs as required by PURA § 39.905. TCC exceeded its demand reduction goal to be achieved by December 31, 2011 by procuring 27,496 kW of peak demand savings at a total cost of $13,173,634. 2011 programs included the AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies SOP, Commercial Solutions Pilot MTP, Commercial SOP, CoolSaver© A/C Tune-Up Pilot MTP, ENERGY STAR® New Homes MTP, Hard-to-Reach SOP, Load Management SOP, Residential SOP, SCORE/CitySmart MTP, SMART Source℠ Solar Photovoltaic (PV) Pilot MTP and the Targeted Low-Income Energy Efficiency Program.

TCC continues its best efforts to encourage and facilitate the involvement of Retail Electric Providers (REPs) and Energy Efficiency Service Providers (EESPs) in the delivery of its programs to customers. TCC utilizes local, regional and national conferences, trade shows and other events for outreach and information exchange with participating REPs and EESPs. TCC again presented

[1] Average Growth in Demand figures are from Table 4; Projected Savings from Table 5; Projected Budgets from Table 6. All kW/MW and kWh/MWh figures in this Table and throughout this EEPR are given "at the Meter."
[2] Calculated using a 20% capacity factor.
[3] Projected savings are based upon the portfolio of programs and budgets identified in Tables 5 and 6.
[4] Additional costs may be incurred and reported in TCC's EECRF filing pending Commission action in Project No. 39674 as discussed in Section XIV.

detailed program information at its annual AEP Texas Competitive REP workshop in November 2011. TCC also provides new and existing energy efficiency program information to the REPs and EESPs throughout the year on a timely basis via electronic mail (e-mail) distribution and the www.AEPefficiency.com web site.

ENERGY EFFICIENCY PLAN

I. 2012 Programs

A. 2012 Program Portfolio

TCC has implemented a variety of programs in 2012 to enable it to meet its goals in a manner that complies with PURA § 39.905 and the EE Rule. These programs target broad market segments and specific market sub-segments with significant opportunities for cost-effective energy savings.

Table 2 summarizes TCC's programs and targeted customer class markets for 2012. The programs listed in Table 2 are described in further detail in Subsections B and C. TCC maintains a web site containing all of the requirements for EESP participation, forms required for project submission, and currently available funding at www.AEPefficiency.com. This site is the primary method of communication used to provide program updates and information to potential REPs, EESPs and other interested parties.

Table 2: 2012 Energy Efficiency Program Portfolio

Program	Target Market	Application
AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies Standard Offer Program	Commercial	Retrofit
Commercial Solutions Market Transformation Program	Commercial	Retrofit & New Construction
Commercial Standard Offer Program	Commercial	Retrofit & New Construction
CoolSaver© A/C Tune-Up Pilot Market Transformation Program	Commercial; Residential	Retrofit
ENERGY STAR® New Homes Market Transformation Program	Residential	New Construction
Hard-to-Reach Standard Offer Program	Residential Hard-to-Reach	Retrofit
Load Management Standard Offer Program	Commercial	Retrofit
Residential Standard Offer Program	Residential	Retrofit
SCORE/CitySmart Market Transformation Program	Commercial	Retrofit & New Construction
SMART Source℠ Solar PV Pilot Market Transformation Program	Commercial; Residential	Retrofit & New Construction
Targeted Low-Income Energy Efficiency Program	Low-Income Residential	Retrofit
New Programs for 2012		
A/C Distributor Pilot Market Transformation Program	Commercial; Residential	Retrofit & New Construction

B. Existing Programs

AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies Standard Offer Program (CARE$ SOP)

Program design

This program targets commercial Not-for-Profit (NFP) agencies organized exclusively for religious, scientific, or other charitable purposes. Incentives are paid to participating agencies for certain eligible energy efficiency improvements made to their administrative facilities that result in verified demand and energy savings. These improvements reduce the agencies' operating costs by making their administration facilities more energy efficient. With lower electric bills, a larger share of the agencies' operating funds will be available for client assistance.

Implementation process

The CARE$ SOP is implemented by annually issuing notice of the program rollout date and incentive budget to a wide range of NFP agencies. Project proposals must be submitted on-line and must include information about the agency, planned energy efficiency improvements and specific installation costs. Proposals are reviewed and evaluated on the amount of verified demand and energy savings that a project will achieve.

Outreach activities

TCC markets the CARE$ SOP in the following manner:

- Conducts direct mail campaign targeting possible qualifying agencies;
- Utilizes mass e-mail notifications to enroll and keep potential applicants interested and informed;
- Maintains internet web site with detailed project eligibility, end-use measures, incentives, procedures, forms, and tools; and
- Presents program information at agency functions and meetings as available.

Commercial Solutions Market Transformation Program (CS MTP)

Program design

TCC began implementing the CS MTP in the fourth quarter of 2008 as a pilot program. TCC issued a Request for Proposals (RFP) in 2011 to select an implementer to begin fully implementing the program in 2012.

TCC's CS MTP targets commercial customers (other than governmental and educational entities) that do not have the in-house capacity or expertise to: 1) identify, evaluate, and undertake

efficiency improvements; 2) properly evaluate energy efficiency proposals from vendors; and/or 3) understand how to leverage their energy savings to finance projects. Incentives are paid to customers served by TCC for certain eligible energy efficiency measures that are installed in new or retrofit applications that result in verifiable demand and energy savings.

Implementation process

Under this program, TCC targets commercial customers meeting the program participation parameters. The CS MTP facilitates the identification of demand and energy savings opportunities, general operating characteristics, long-range energy efficiency planning and overall measure and program acceptance by the targeted customer participants.

Outreach activities

TCC markets the CS MTP in the following manner:

- Contracts with a third-party implementer to conduct outreach and planning activities;
- Targets a number of customer participants during the program year;
- Conducts workshops as necessary to explain elements of the program, such as responsibilities of the participants, project requirements, incentive information, and the application and reporting process;
- Participates in regional outreach activities as may be necessary; and
- Participates in appropriate industry-related meetings to generate awareness and interest.

Commercial Standard Offer Program (CSOP)

Program design

The program targets commercial customers of all sizes. Incentives are paid to project sponsors for certain eligible measures installed in new or retrofit applications based upon verified demand and energy savings.

Implementation process

Any eligible project sponsor may submit an application for a project that meets minimum requirements. The program information on TCC's web site is updated frequently to reflect participating project sponsors and the remaining available incentive budget.

Outreach activities

TCC markets the CSOP in the following manner:

- Utilizes mass e-mail notifications to keep potential project sponsors interested and informed;
- Maintains internet web site with detailed project eligibility, end-use measures, incentives, procedures and application forms;
- Participates in appropriate industry-related meetings to generate awareness and interest;
- Participates in state-wide outreach activities as may be available; and
- Conducts workshops as necessary to explain elements such as responsibilities of the project sponsor, project requirements, incentive information, and the application and reporting process.

CoolSaver© A/C Tune-Up Pilot Market Transformation Program (CoolSaver© MTP)

Program design

TCC began implementing the CoolSaver© MTP in 2010 as a pilot program. This program is designed to overcome market barriers that prevent residential and small business customers from receiving high performance air conditioning (A/C) system tune-ups. The program works through local air conditioning distributor networks to offer key program components, including:

- Training and certifying A/C technicians on the tune-up and air flow correction services and protocols;
- Paying incentives to A/C contactors for the successful implementation of air conditioning tune-up and air flow correction services; and
- Paying incentives to the customers in the form of coupons to be applied towards the completion of recommended work leading to optimum unit efficiency.

TCC will continue to implement this pilot program in 2012. After review of the program findings, TCC may transition this program to a full program for the 2013 implementation year, or consider other approaches to promote A/C tune-ups in its service territory.

Implementation process

A third-party implementer is contracted to design, implement, and market the CoolSaver© MTP as well as provide specialized training to the A/C technicians. The implementer seeks interested A/C contractors that will enter into a contractor partnering agreement that specifies the program requirements. Contractors are trained on the A/C tune-up process and provided incentives and discounts on the cost of field equipment designed to diagnose and quantify energy savings opportunities. Participating customers receive coupons for use towards efficiency services performed as a result of the program's tune-up analysis. Energy savings are captured through the correction of A/C system inefficiencies identified during the tune-up activities.

Outreach activities

TCC markets the CoolSaver© MTP in the following manner:

- Contracts with a third-party implementer to conduct outreach and planning activities;
- Targets residential and commercial A/C contractors that service customers served by TCC in the Corpus Christi area;
- Conducts training workshops with contractor staff on the specific tune-up and airflow correction services promoted by the program, as well as the measurement and verification process to document savings;
- Conducts workshops as necessary to explain elements of the program, such as responsibilities of the contractors, project requirements, incentive information, and the application and reporting process; and
- Participates in appropriate industry-related meetings to generate awareness and interest.

ENERGY STAR® New Homes Market Transformation Program (ES MTP)

Program design

The ES MTP targets several groups, primarily homebuilders and consumers. The program's goal is to create conditions in which consumers demand energy-efficient ENERGY STAR®-qualified homes, and homebuilders to supply them. Incentives are paid to homebuilders who construct energy-efficient ENERGY STAR®-qualified homes in the TCC service territory, and to independent home energy raters who verify that energy efficiency features are provided in the homes. Each home results in verifiable demand and energy savings. In addition to homebuilder and consumer outreach, the ES MTP targets key allies in the homebuilding production and sales cycle: home energy raters, homebuilder sales agents, real estate agents, HVAC contractors, mortgage lenders, product manufacturers, homebuilder associations and media outlets.

Implementation process

A third-party implementer is contracted to implement and market the ES MTP as well as to provide specialized training to the builders and raters. Any homebuilder constructing energy-efficient ENERGY STAR®-qualified homes in the TCC service territory may apply for incentives. The information on TCC's web site is updated regularly to reflect the most current program information and incentives that are available.

Outreach activities

TCC markets the ES MTP in the following manner:

- Contracts with a third-party implementer to conduct outreach and planning activities;
- E-mail and phone notification of informational meetings to homebuilders, home energy raters, HVAC contractors, real estate agents, homebuilder sales agents, mortgage lenders and other allies;
- Maintains internet web site with detailed project eligibility, incentives, procedures and application forms;

- Direct outreach to consumers at home and garden shows and through a multi-city advertising campaign (target areas are: Corpus Christi, Rio Grande Valley, and Laredo);
- Participates in appropriate industry-related meetings to generate awareness and interest;
- Conducts training workshops as necessary to explain elements such as responsibilities of and benefits to each party or ally, project requirements, incentive information, and the application and reporting process;
- Supports homebuilder sales efforts by providing sales training, marketing materials, and inclusion in print advertisements and the program's web site; and
- Supports the homebuilding process by providing technical training, home plan analysis and answers to questions as needed.

Hard-to-Reach Standard Offer Program (HTR SOP)

Program design

The HTR SOP targets the retrofit residential market of customers with total annual household incomes at or below 200% of current federal poverty guidelines. Incentives are paid to project sponsors for a variety of eligible measures installed in retrofit applications that result in verifiable demand and energy savings. Program incentives are higher for work performed in certain historically underserved counties. Project comprehensiveness is encouraged and customer education regarding energy conservation behavior is administered by materials distributed by project sponsors. Commission-approved Deemed Savings values are accepted as measured and verified savings for projects submitted for approval in this program.

Implementation process

Any eligible project sponsor may submit an application for a project meeting the minimum requirements. The program information on TCC's web site is updated frequently to reflect participating project sponsors and available incentive budgets.

Outreach activities

TCC markets the HTR SOP in the following manner:

- Utilizes mass e-mail notifications to enroll and keep potential project sponsors interested and informed;
- Maintains internet web site with detailed project eligibility, end-use measures, incentives, procedures and application forms;
- Participates in appropriate industry-related meetings to generate awareness and interest;
- Conducts workshops as necessary to explain elements such as responsibilities of the project sponsor, project requirements, incentive information, and the application and reporting process.

Load Management Standard Offer Program (LM SOP)

Program design

The LM SOP targets commercial customers with a peak electric demand of 500 kW or more. Incentives are paid to project sponsors to reduce peak electric load on 1-hour-ahead notice for load reduction periods of two to four hours duration. Incentive payments are based upon the metered peak demand reduction as called for by TCC.

In light of adequacy concerns for the summer of 2012 by the Electric Reliability Council of Texas (ERCOT), the PUCT has encouraged utilities to explore avenues for significantly increasing commercial load management in 2012. As a result, TCC has increased the scope (expected savings and incentives) of its commercial load management program as can be found in the applicable 2012 Tables (Load Management SOP – Expanded) of this EEPR [Tables 5 & 6]. Please see Appendix D for the letter of agreement among the parties to Docket No. 39360.

Implementation process

TCC implements the LM SOP whereby any eligible project sponsor may submit an application for a project in the area identified by TCC meeting the minimum requirements. The program information on TCC's web site is updated frequently to reflect remaining available budget amounts. TCC closely coordinates with ERCOT to avoid duplicative load participation in the LM SOP and ERCOT's Emergency Response Service (ERS) program.

Outreach activities

TCC markets the LM SOP in the following manner:

- Utilizes mass e-mail notifications to enroll and keep potential project sponsors interested and informed;
- Maintains internet web site with detailed project eligibility, end-use measures, incentives, procedures and application forms;
- Participates in appropriate industry-related meetings to generate awareness and interest;
- Participates in state-wide outreach activities as may be available; and
- Conducts workshops as necessary to explain elements such as responsibilities of the project sponsor, project requirements, incentive information, and the application and reporting process.

Residential Standard Offer Program (RSOP)

Program design

The RSOP targets residential customers in existing homes. Incentives are paid to project sponsors for certain eligible measures installed in retrofit applications that result in verified demand and energy savings. Program incentives are higher for work performed in certain historically underserved counties to encourage activity in these areas. Higher program incentives are also paid for certain measures that have been installed less frequently than other measures. Project comprehensiveness is encouraged. Commission-approved Deemed Savings values are accepted as measured and verified savings for projects submitted for approval.

Implementation process

Eligible project sponsors may submit applications for projects meeting the minimum requirements. The program information on TCC's web site is updated frequently to reflect participating project sponsors and remaining available incentive amounts.

Outreach activities

TCC markets the RSOP in the following manner:

- Utilizes mass e-mail notifications to inform and update potential project sponsors such as REPs, EESPs, national and local companies that provide energy-related services;
- Provides additional outreach using direct mail as necessary to attract more participants;
- Maintains internet web site with detailed project eligibility, end-use measures, incentives, procedures and application forms;
- Participates in appropriate industry-related meetings to generate awareness and interest;
- Participates in state-wide outreach activities as may be available; and
- Conducts workshops as necessary to explain elements such as responsibilities of the project sponsor, project requirements, incentive information, and the application and reporting process.

SCORE/CitySmart Market Transformation Program (SCORE/CS MTP)

Program design

TCC implemented this energy-smart schools/cities MTP in pilot form in 2006. TCC issued a competitive solicitation RFP in 2008 to select an implementer to begin fully implementing the program in 2009, and continued the program in 2010. TCC again issued an RFP in 2011 to select an implementer to continue full implementation of the program in 2012. The program implementer facilitates customer participation in order to effectively provide the program support services. The SCORE/CS MTP provides energy efficiency and demand reduction solutions for educational facilities, including public and private K-12 schools, higher education, and local

government customers. This program is designed to help educate and assist these customers in lowering their energy use by facilitating the integration of energy efficiency into their short- and long-term planning, budgeting, and operational practices. Incentives are paid to participating customers for eligible energy efficiency measures that are installed in new or retrofit applications that result in verifiable demand and energy savings.

Implementation process

Within this program, TCC offers participation to educational and governmental entities in its service territory. The program facilitates the identification of potential demand and energy savings opportunities, general electric energy operating characteristics, long-range energy efficiency planning, and overall measure and program acceptance by the targeted customer participants.

Outreach activities

TCC markets the SCORE/CS MTP in the following manner:

- Contracts with a third-party implementer to conduct outreach and planning activities;
- Targets customer participants;
- Conducts workshops as necessary to explain elements of the program, such as responsibilities of the participants, project requirements, incentive information, and the application and reporting process;
- Participates in regional outreach activities as may be necessary; and
- Participates in appropriate industry-related meetings to generate awareness and interest.

SMART Source℠ Solar PV Pilot Market Transformation Program (PV Pilot MTP)

Program design

The PV Pilot MTP was implemented by TCC in late 2009. This pilot program was designed to be a two-year program during 2010 and 2011; however, due to the interest and success of this pilot program, TCC will continue the program as a pilot for another year with slight modifications. This additional time will allow TCC to fully evaluate the program's results, and consider converting the pilot to full program status. In addition to demand and energy savings achieved from the installations, the program aims to transform the market by increasing the number of qualified companies offering installation services and by decreasing the average installed cost of PV systems, creating greater market economies of scale.

Implementation Process

The program primarily targets solar PV installation companies in TCC's service territory, and also promotes program awareness to solar PV manufacturers and TCC customers. Solar PV installers

who complete the program certification process to participate in the program submit completed project applications to be eligible to receive incentive amounts based on program guidelines.

Outreach Activities

TCC markets the PV Pilot MTP in the following manner:

- Contracts with a third-party implementer to conduct outreach and planning activities;
- Makes clear and concise material available that describes the program incentive offer;
- Maintains internet web site and program guidebook to be used as referral tools;
- Conducts workshops and certification training for installers and local code enforcement officials to explain project requirements and incentive information; and
- Facilitates earned media opportunities, spotlighting successful projects and interesting stories when possible.

Targeted Low-Income Energy Efficiency Program (TLIP)

Program design

TCC's TLIP is designed to cost-effectively reduce the energy consumption and energy costs for TCC's low-income residential customers. Weatherization service providers install eligible weatherization and energy efficiency measures in the homes of qualified residential customers who meet the current Department of Energy (DOE) income eligibility guidelines. This Senate Bill 712 Weatherization Program also provides targeted eligible residential customers with basic on-site energy education to satisfy the requirements of Substantive Rule 25.181(p).

Target market

An eligible customer is a person residing in the TCC service area who: (1) receives electric power service through the TCC distribution system; (2) meets the current DOE income-eligibility guidelines; and (3) has electric air conditioning.

Implementation and outreach activities

TCC contracts with a program implementer who conducts outreach targeting existing weatherization service providers in TCC's service territory. These weatherization service providers verify customer eligibility and conduct an energy use assessment of eligible customers' homes. The agencies install measures based on the savings-to-investment ratio, which evaluates cost effectiveness using the present value of the measure's lifetime energy savings divided by the installation costs. Energy savings are based on Commission-approved Deemed Savings values.

C. New Programs for 2012

A/C Distributor Pilot Market Transformation Program (ACD MTP)

Program design

The ACD MTP will target a select number of air conditioning equipment distributors in one or more cities served by TCC. The objective of the program will be to increase the market penetration of high-efficiency air conditioning equipment for residential and commercial customers served by TCC. Incentives will be paid to the distributor for the installation of high-efficiency air conditioning equipment of up to 20 tons in cooling capacity.

Implementation process

The program implementer will be responsible for implementing the program.

Outreach activities

TCC and the selected program implementer will provide complete program information and application materials to the established A/C equipment distributors in the cities selected for the pilot phase of the program. A packet with informational materials that explains the value of high-efficiency air conditioning equipment will be provided either individually or at a program outreach meeting. This packet will identify the importance of proper unit sizing, improved duct efficiency, proper refrigerant charge and proper air flow over the coil and will apply to both the installers and the customers.

D. Existing DSM Contracts or Obligations

TCC has no existing DSM contracts or obligations.

II. Customer Classes

TCC's energy efficiency programs target its residential and commercial customer classes. TCC's energy efficiency programs also target certain customer subclasses, such as Residential Hard-to-Reach and Low-Income; and Commercial Public Schools, Not-for-Profit Agencies and Local Governments.

The annual projected savings targets are allocated among these various customer classes and subclasses by examining historical program results and evaluating certain economic trends, in compliance with Substantive Rule 25.181(e)(3)(A).

Table 3 summarizes the numbers of customers in each targeted customer class at TCC. The numbers of customers listed are the actual numbers of active accounts by class that TCC served for the month of January 2012. These numbers were used to determine goal and budget allocations for each customer class and each program. It should be noted, however, that the actual distribution of the annual goal to be achieved and budget required to achieve the goal

must remain flexible based upon the conditions of the marketplace, the potential interest a customer class may have in a specific program and the overriding objective of meeting TCC's mandated demand and energy reduction goals in total. TCC offers a varied portfolio of SOPs and MTPs such that all eligible customer classes have access to energy efficiency alternatives.

Table 3: Summary of Customer Classes

Customer Class	Number of Customers
Commercial	125,294
Residential	691,977
Hard-to-Reach [5]	228,352*

* Hard-to-Reach customer count is a subset of the Residential total

III. Energy Efficiency Goals and Projected Savings

As prescribed by Substantive Rule 25.181, TCC's annual demand reduction goal is specified as a percent of its historical, weather-normalized five-year average growth in demand. TCC's 2012 goal is based on the average annual growth in peak demand for the years 2007 through 2011, inclusive (the most recent historical load growth data available). The 2012 Program Year demand reduction goal to be achieved is at least 25% of this calculated average annual growth in demand of residential and commercial customers by December 31, 2012. The 2013 Program Year demand reduction goal to be achieved is at least 30% of this calculated average annual growth in demand of residential and commercial customers by December 31, 2013. The corresponding annual energy savings goals are determined by applying a 20% capacity factor to the applicable demand reduction goal for each of these Program Years (2012 and 2013).

[5] According to the U.S. Census Bureau's 2009 Current Population Survey, 33.0% of Texas families fall below 200% of the poverty threshold. Applying that percentage to TCC's residential customer base of 691,977, the number of HTR customers is estimated to be 228,352.

Table 4 presents historical annual growth in demand data for the previous five years that was used to calculate TCC's goals. Table 5 presents the projected demand and energy savings by program for each customer class for each of the years 2012 and 2013. Projected savings reflect the estimated demand and energy savings TCC's programs are expected to achieve.

Table 4: Annual Growth in Demand and Energy Consumption (at the Meter)

Calendar Year	Peak Demand (MW)				Energy Consumption (GWh)				Growth (MW)	Average Growth (MW) [6]
	Total System		Residential & Commercial		Total System		Residential & Commercial			
	Actual	Actual Weather Adjusted	Actual	Actual Weather Adjusted	Actual	Actual Weather Adjusted	Actual	Actual Weather Adjusted	Actual Weather Adjusted	Actual Weather Adjusted
2006	4,132	4,109	3,846	3,822	21,811	21,533	18,141	17,863	NAP	NAP
2007	3,972	3,971	3,634	3,634	22,166	22,191	18,265	18,289	-189	NAP
2008	4,300	4,321	3,854	3,876	22,371	22,513	18,571	18,713	243	NAP
2009	4,175	4,012	3,799	3,637	22,729	22,071	19,138	18,479	-239	NAP
2010	4,242	4,205	3,828	3,791	22,305	22,242	18,199	18,135	153	NAP
2011	4,307	4,393	3,905	3,986	23,983	23,064	19,592	18,673	195	NAP
2012	NAP	NAP	NAP	NAP	NAP	NAP	NAP	NAP	NAP	32.74
2013	NAP	NAP	NAP	NAP	NAP	NAP	NAP	NAP	NAP	32.74

[6] Average historical growth in demand over the prior five years for residential and commercial customers adjusted for weather fluctuations.

Table 5: Projected Demand and Energy Savings by Program for Each Customer Class for 2012 and 2013 (at the Meter)

2012	Projected Savings	
Customer Class and Program	**kW**	**kWh**
Commercial		
AC Distributor Pilot MTP	**260**	**828,570**
AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies SOP	**30**	**91,000**
Commercial Solutions MTP	**770**	**3,091,000**
Commercial SOP	**4,880**	**22,917,000**
CoolSaver© A/C Tune-Up Pilot MTP	**248**	**346,912**
Load Management SOP	**9,760**	**27,000**
Load Management SOP - Expanded	**19,600**	**54,000**
SCORE/CitySmart MTP	**1,515**	**3,600,000**
SMART Source℠ Solar PV Pilot MTP	**90**	**178,000**
Residential		
AC Distributor Pilot MTP	**300**	**948,000**
CoolSaver© A/C Tune-Up Pilot MTP	**468**	**1,466,400**
ENERGY STAR® New Homes MTP	**300**	**550,000**
Residential SOP	**7,820**	**21,467,000**
SMART Source℠ Solar PV Pilot MTP	**90**	**178,000**
Hard-to-Reach		
Hard-to-Reach SOP	**1,690**	**4,943,000**
Targeted Low-Income Energy Efficiency Program	**270**	**1,033,000**
Total Annual Projected Savings	**48,091**	**61,718,882**

Table 5: Continued

2013	Projected Savings	
Customer Class and Program	**kW**	**kWh**
Commercial		
AC Distributor Pilot MTP	**283**	**1,022,204**
AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies SOP	**30**	**91,000**
Commercial Solutions MTP	**806**	**3,887,682**
Commercial SOP	**4,880**	**22,917,000**
CoolSaver© A/C Tune-Up MTP	**824**	**1,552,500**
Irrigation Load Management MTP	**4,000**	**256,000**
Load Management SOP	**9,760**	**27,000**
SCORE/CitySmart MTP	**1,591**	**5,749,624**
SMART Source℠ Solar PV MTP	**110**	**211,000**
Targeted Small Business MTP	**530**	**1,987,000**
Residential		
AC Distributor Pilot MTP	**248**	**893,014**
CoolSaver© A/C Tune-Up MTP	**608**	**1,955,200**
ENERGY STAR® New Homes MTP	**300**	**550,000**
Residential SOP	**5,690**	**15,604,000**
SMART Source℠ Solar PV MTP	**110**	**211,000**
Hard-to-Reach		
Hard-to-Reach SOP	**1,370**	**3,999,000**
Targeted Low-Income Energy Efficiency Program	**270**	**1,030,000**
Total Annual Projected Savings	**31,410**	**61,943,224**

IV. Program Budgets

Table 6 presents total projected budget allocations required to meet TCC's projected demand and energy savings to be achieved for the years 2012 and 2013. The budget allocations are defined by the overall projected demand and energy savings, the avoided costs of capacity and energy specified in Substantive Rule 25.181, allocation of demand goals and the incentive levels by customer class. The Table 6 budget allocations are detailed by customer class, by program, and by budget categories: incentives, administration, and research and development (R&D).

Table 6: Projected Annual Budget by Program for Each Customer Class for 2012 and 2013

2012	Incentives	Admin	R&D	Total Budget
Commercial				
AC Distributor Pilot MTP	**$300,000**	**$33,333**		**$333,333**
AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies SOP	**$150,000**	**$16,667**		**$166,667**
Commercial Solutions MTP	**$375,000**	**$41,667**		**$416,667**
Commercial SOP	**$1,689,000**	**$187,667**		**$1,876,667**
CoolSaver© A/C Tune-Up Pilot MTP	**$175,000**	**$19,444**		**$194,444**
Load Management SOP	**$300,000**	**$33,333**		**$333,333**
Load Management SOP - Expanded	**$600,000**	**$66,666**		**$666,666**
SCORE/CitySmart MTP	**$750,270**	**$83,363**		**$833,633**
SMART Source℠ Solar PV Pilot MTP	**$200,000**	**$22,222**		**$222,222**
Residential				
AC Distributor Pilot MTP	**$300,000**	**$33,333**		**$333,333**
CoolSaver© A/C Tune-Up Pilot MTP	**$360,000**	**$40,000**		**$400,000**
ENERGY STAR® New Homes MTP	**$765,000**	**$85,000**		**$850,000**
Residential SOP	**$3,661,115**	**$406,791**		**$4,067,906**
SMART Source℠ Solar PV Pilot MTP	**$200,000**	**$22,222**		**$222,222**
Hard-to-Reach				
Hard-to-Reach SOP	**$1,178,349**	**$130,928**		**$1,309,277**
Targeted Low-Income Energy Efficiency Program	**$1,270,837**	**$141,204**		**$1,412,041**
Research and Development (R&D)				
CCET	**NAP**	**NAP**	**$32,000**	**$32,000**
CCET Future Community PEV	**NAP**	**NAP**	**$50,000**	**$50,000**
SMART View℠ In-Home Device R&D Project	**NAP**	**NAP**	**$400,000**	**$400,000**
Total Budgets	**$12,274,571**	**$1,363,840**	**$482,000**	**$14,120,411**

Table 6: Continued

2013	Incentives	Admin	R&D	Total Budget
Commercial				
AC Distributor Pilot MTP	**$300,000**	**$33,333**		**$333,333**
AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies SOP	**$150,000**	**$16,667**		**$166,667**
Commercial Solutions MTP	**$412,156**	**$45,795**		**$457,951**
Commercial SOP	**$1,689,000**	**$187,667**		**$1,876,667**
CoolSaver© A/C Tune-Up MTP	**$595,950**	**$66,217**		**$662,167**
Irrigation Load Management MTP	**$450,000**	**$50,000**		**$500,000**
Load Management SOP	**$300,000**	**$33,333**		**$333,333**
SCORE/CitySmart MTP	**$827,304**	**$91,923**		**$919,227**
SMART Source℠ Solar PV MTP	**$200,000**	**$22,222**		**$222,222**
Targeted Small Business MTP	**$693,546**	**$77,061**		**$770,607**
Residential				
AC Distributor Pilot MTP	**$300,000**	**$33,333**		**$333,333**
CoolSaver© A/C Tune-Up MTP	**$525,000**	**$58,333**		**$583,333**
ENERGY STAR® New Homes MTP	**$765,000**	**$85,000**		**$850,000**
Residential SOP	**$2,661,115**	**$295,679**		**$2,956,794**
SMART Source℠ Solar PV MTP	**$200,000**	**$22,222**		**$222,222**
Hard-to-Reach				
Hard-to-Reach SOP	**$953,417**	**$105,935**		**$1,059,352**
Targeted Low-Income Energy Efficiency Program	**$1,267,421**	**$140,825**		**$1,408,246**
Research and Development (R&D)				
CCET	**NAP**	**NAP**	**$32,000**	**$32,000**
SMART View℠ In-Home Device R&D Project	**NAP**	**NAP**	**$235,000**	**$235,000**
R&D - Programs	**NAP**	**NAP**	**$160,000**	**$160,000**
Total Budgets	**$11,289,909**	**$1,365,545**	**$427,000**	**$14,082,454**[7]

[7] Additional costs may be incurred and reported in TCC's EECRF filing pending Commission action in Project No. 39674 as discussed in Section XIV.

ENERGY EFFICIENCY REPORT

V. Historical Demand and Energy Savings Goals for the Previous Five Years

Table 7 documents TCC's demand and energy reduction goals for the previous five years (2007-2011) calculated in accordance with Substantive Rule 25.181 and actual savings achieved.

Table 7: Historical Demand and Energy Savings Goals (at the Meter)

Calendar Year	Actual Weather Adjusted Demand Goal (MW)	Actual Weather Adjusted Energy Goal (MWh)	Actual Savings (MW)	Actual Savings (MWh)
2011 [8]	12.93	22,657	27.50	69,158
2010 [9]	12.93	22,657	26.96	57,665
2009 [10]	12.93	22,657	26.07	63,256
2008 [11]	10.63	NAP	13.07	36,118
2007 [12]	8.71	NAP	9.50	25,491

[8] Actual weather-adjusted MW and MWh Goals as reported in TCC's EEPR filed April 2011 under Project No. 39105.
[9] Actual weather-adjusted numbers from EEPR, Project No. 37982.
[10] Actual weather-adjusted numbers from EEPR, Project No. 36689.
[11] Actual weather-adjusted numbers from EER, Project No. 35440.
[12] Actual weather-adjusted numbers from EER, Project No. 33884.

VI. Projected, Reported and Verified Demand and Energy Savings

Table 8: Projected versus Reported and Verified Savings for 2011 and 2010 (at the Meter)

2011	Projected Savings [13]		Reported and Verified Savings	
Customer Class and Program	**kW**	**kWh**	**kW**	**kWh**
Commercial				
AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies SOP	**20**	**84,000**	**28**	**87,973**
Commercial Solutions Pilot MTP	**950**	**3,820,000**	**966**	**3,682,071**
Commercial SOP	**9,330**	**43,050,000**	**5,404**	**25,369,627**
CoolSaver© A/C Tune-Up Pilot MTP	**150**	**402,000**	**283**	**603,546**
Load Management SOP	**9,760**	**27,000**	**6,996**	**177,831**
SCORE/CitySmart MTP	**1,500**	**3,978,000**	**1,520**	**4,321,420**
SMART Source℠ Solar PV Pilot MTP	**80**	**154,000**	**379**	**731,072**
Residential				
CoolSaver© A/C Tune-Up Pilot MTP	**170**	**304,000**	**287**	**828,370**
ENERGY STAR® New Homes MTP	**300**	**550,000**	**387**	**1,247,209**
Residential SOP	**8,100**	**23,359,000**	**7,933**	**21,767,921**
SMART Source℠ Solar PV Pilot MTP	**80**	**154,000**	**81**	**156,168**
Hard-to-Reach				
Hard-to-Reach SOP	**3,050**	**9,757,000**	**2,985**	**9,250,662**
Targeted Low-Income Energy Efficiency Program	**180**	**649,000**	**247**	**933,912**
Total Annual Savings	**33,670**	**86,288,000**	**27,496**	**69,157,782**

[13] Projected savings from EEPR filed April 2011, Project No. 39105.

Table 8: Continued

2010 [14]	Projected Savings		Reported and Verified Savings	
Customer Class and Program	**kW**	**kWh**	**kW**	**kWh**
Commercial				
AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies SOP	**20**	**84,000**	**49**	**181,250**
Commercial Solutions Pilot MTP	**950**	**3,820,000**	**1,167**	**4,967,964**
Commercial SOP	**6,570**	**30,338,000**	**2,510**	**10,956,115**
CoolSaver© A/C Tune-Up Pilot MTP	**150**	**402,000**	**3**	**9,446**
Load Management SOP	**9,760**	**27,000**	**9,452**	**22,253**
SCORE/CitySmart MTP	**1,650**	**3,978,000**	**1,816**	**4,859,023**
SMART Source℠ Solar PV Pilot MTP	**60**	**81,000**	**32**	**61,488**
Residential				
CoolSaver© A/C Tune-Up Pilot MTP	**170**	**304,000**	**11**	**30,627**
ENERGY STAR® New Homes MTP	**300**	**550,000**	**344**	**618,375**
Residential Energy Efficiency Pilot MTP	**430**	**1,164,000**	**39**	**109,744**
Residential SOP	**6,790**	**19,582,000**	**7,473**	**22,230,458**
SMART Source℠ Solar PV Pilot MTP	**60**	**88,000**	**69**	**132,867**
Hard-to-Reach				
Hard-to-Reach SOP	**3,700**	**11,840,000**	**3,618**	**12,054,889**
Targeted Low-Income Energy Efficiency Program	**500**	**1,774,000**	**379**	**1,430,525**
Total Annual Savings	**31,110**	**74,032,000**	**26,962**	**57,665,024**

[14] Projected and Reported/Verified Savings from EEPR filed April 2011, Project No. 39105.

VII. Historical Program Expenditures

This section documents TCC's incentive and administration expenditures for the previous five years (2007-2011) detailed by program for each customer class.

Table 9: Historical Program Incentive and Administrative Expenditures for 2007 through 2011 (000's)[15]

	2011		2010		2009		2008		2007	
	Incent.	Admin	Incent.	Admin	Incent.	Admin	Incent.	Admin	Incent.	Admin
Commercial										
AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies SOP	$145.00	$18.36	$149.53	$25.08	$166.00	$15.60	$149.50	$21.40	$99.50	$5.70
Commercial & Industrial Solicitation Program	NAP	NAP	NAP	NAP	NAP	NAP	NAP	$0.20	$285.00	$13.00
Commercial Solutions Pilot MTP	$467.23	$56.35	$419.25	$43.47	$219.80	$26.80	$137.50	$6.50	NAP	NAP
Commercial SOP	$1,871.56	$194.04	$834.29	$132.69	$1,259.80	$121.10	$644.40	$81.90	$450.40	$42.50
CoolSaver© A/C Tune-Up Pilot MTP	$159.00	$13.15	$19.48	$1.86	NAP	NAP	NAP	NAP	NAP	NAP
Load Management SOP	$225.98	$24.33	$299.62	$29.15	$229.40	$11.20	$50.90	$6.30	$25.70	$4.90
SCORE/CitySmart MTP	$610.43	$38.88	$626.24	$39.96	$594.40	$47.50	$574.00	$47.40	$656.80	$13.40
SMART Source℠ Solar PV Pilot MTP	$344.97	$21.61	$42.80	$2.20	$180.00	$4.20	NAP	NAP	NAP	NAP
Residential & Small Commercial SOP	NAP	NAP	NAP	NAP	NAP	NAP	NAP	NAP	NAP	NAP
Residential										
Appliance Recycling Pilot MTP	NAP	NAP	NAP	NAP	$42.00	$14.20	$0.00	$0	NAP	NAP
CoolSaver© A/C Tune-Up Pilot MTP	$178.91	$14.80	$103.89	$9.94	NAP	NAP	NAP	NAP	NAP	NAP
ENERGY STAR® New Homes MTP	$671.60	$72.96	$704.16	$80.62	$659.40	$64.50	$474.10	$54.80	$20.20	$4.80
Residential Energy Efficiency Pilot MTP	NAP	NAP	$27.12	$6.82	$40.50	$10.60	NAP	NAP	NAP	NAP
Residential & Small Commercial SOP	$3,712.17	$374.40	$3,641.54	$307.38	$3,366.70	$231.90	$2,330.70	$195.80	$2,937.10	$64.90
SMART Source℠ Solar PV Pilot MTP	$184.89	$12.35	$278.48	$14.29	$13.00	$4.20	NAP	NAP	NAP	NAP

[15] 2011 expenditures taken from Table 10 in the current EEPR; 2010 expenditures from EEPR, Project No. 39105; 2009 expenditures from EEPR, Project No. 37982; 2008 expenditures from EER, Project No. 36689; 2007 expenditures from EER, Project No. 35440.

	2011		2010		2009		2008		2007	
	Incent.	**Admin**	**Incent.**	**Admin**	**Incent.**	**Admin**	**Incent.**	**Admin**	**Incent.**	**Admin**
Texas Statewide ENERGY STAR® Residential Compact Fluorescent Lighting MTP	**NAP**	**NAP**	**NAP**	**NAP**	**$213.50**	**$11.80**	**$205.00**	**$37.90**	**NAP**	**NAP**
Hard-to-Reach										
Hard-to-Reach SOP	**$2,024.93**	**$183.03**	**$2,615.63**	**$216.18**	**$3,090.60**	**$204.60**	**$980.40**	**$102.30**	**$377.60**	**$40.70**
Targeted Low-Income Energy Efficiency Program	**$1,149.19**	**$89.43**	**$1,749.76**	**$125.80**	**$1,217.20**	**$64.20**	**$236.70**	**$60.30**	**$0**	**$2.60**
Research and Development (R&D)	**NAP**	**$314.08**	**NAP**	**$351.05**	**NAP**	**$460.40**	**NAP**	**$250.90**	**NAP**	**$158.30**
Total Expenditures	**$11,745.86**	**$1,427.77**	**$11,511.79**	**$1,386.49**	**11,292.30**	**$1,292.80**	**$5,783.20**	**$865.70**	**$4,852.30**	**$350.80**

VIII. Program Funding for Calendar Year 2011

As shown in Table 10, the total projected budget in 2011 was $15,155,964. Actual total funds expended in 2011 were $13,173,634, an overall total program expenditure difference of more than 10% from the amount budgeted. The reason for this variation was lower than expected participation in several programs, most notably the Commercial SOP, the Load Management SOP, the ENERGY STAR® New Homes MTP, and the residential component of the PV Pilot MTP The commercial component of the CoolSaver© MTP experienced larger than expected participation and exceeded its proposed budget.

The Commercial SOP did not fully utilize its budget due to lower than anticipated program participation and the timing of when some projects were to be completed. During outreach efforts, the management of many potential program participants indicated their primary job consumed their time and they were left with little or no time to evaluate participation in the CSOP process.

The Load Management SOP was slightly under budget due to program participants providing less than the amount of demand (kW) reduction estimated in their program application.

The ENERGY STAR® New Homes MTP was under budget due to lower than expected participation of builders installing higher incentive measures such as heat pump water heaters.

The residential component of the PV Pilot MTP was under budget because several projects withdrew from the program toward the end of the program year. The commercial component of the PV Pilot MTP was over budget due primarily to the timing of completed projects. Construction on several projects that began in 2010 was completed in 2011, so the incentives associated with those projects were paid and savings counted in 2011.

Funding in the Targeted Low-income Energy Efficiency Program was increased to satisfy the requirements of Senate Bill 1434 and to comply with the changes to PURA §39.905.

Table 10: Program Funding for Calendar Year 2011 (Dollar amounts in 000's)

	Total Projected Budget [16]	Numbers of Customers Participating	Actual Funds Expended (Incentives)	Actual Funds Expended (Admin)	Research and Development (R&D)	Total Funds Expended	Funds Committed (Not Expended)	Funds Remaining (Not Committed)
Commercial								
AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies SOP	**$166.67**	**14**	**$145.00**	**$18.36**		**$163.36**	**$0**	**$3.31**
Commercial Solutions Pilot MTP	**$514.93**	**73**	**$467.23**	**$56.35**		**$523.58**	**$0**	**$0**
Commercial SOP	**$3,652.52**	**129**	**$1,871.56**	**$194.04**		**$2,065.60**	**$0**	**$1,586.92**
CoolSaver© A/C Tune-Up Pilot MTP	**$126.23**	**219**	**$159.00**	**$13.15**		**$172.15**	**$0**	**$0**
Load Management SOP	**$333.33**	**76**	**$225.98**	**$24.33**		**$250.31**	**$0**	**$83.02**
SCORE/CitySmart MTP	**$667.45**	**89**	**$610.43**	**$38.88**		**$649.31**	**$0**	**$18.14**
SMART Source℠ Solar PV Pilot MTP	**$222.22**	**4**	**$344.97**	**$21.61**		**$366.58**	**$0**	**$0**
Residential								
CoolSaver© A/C Tune-Up Pilot MTP	**$189.34**	**638**	**$178.91**	**$14.80**		**$193.71**	**$0**	**$0**
ENERGY STAR® New Homes MTP	**$850.00**	**383**	**$671.60**	**$72.96**		**$744.56**	**$0**	**$105.44**
Residential SOP	**$4,295.36**	**9,548**	**$3,712.17**	**$374.40**		**$4,086.57**	**$0**	**$208.79**
SMART Source℠ Solar PV Pilot MTP	**$222.22**	**11**	**$184.89**	**$12.35**		**$197.24**	**$0**	**$24.98**
Hard-to-Reach								
Hard-to-Reach SOP	**$2,448.79**	**4,242**	**$2,024.93**	**$183.03**		**$2,207.96**	**$0**	**$240.83**
Targeted Low-Income Energy Efficiency SOP	**$936.30**	**269**	**$1,149.19**	**$89.43**		**$1,238.62**	**NAP**	**NAP**
Research and Development	**$530.60**	**NAP**	**NAP**	**NAP**	**$314.08**	**$314.08**	**NAP**	**NAP**
Total Expenditures	**$15,155.96**	**NAP**	**$11,745.86**	**$1,113.69**	**$314.08**	**$13,173.63**	**NAP**	**NAP**

[16] Projected Budget from the EEPR filed April 2011, Project No. 37982.

IX. Market Transformation Program Results

Commercial Solutions Pilot MTP

TCC began implementing the CS MTP as a pilot program in the fourth quarter of 2008 by targeting customers in the TCC service territory that met the program participation parameters. The program provided non-cash incentives such as technical assistance and communication support provided by the program implementer, as well as cash incentives for the installation of documented energy efficiency measures that reduce peak demand and energy use. In 2011, TCC issued an RFP through a competitive solicitation process to select an implementer to fully implement a Commercial Facilities Program in 2012. TCC contracted with a third-party program implementer to provide services, education, and support to assist commercial facilities in identifying energy efficiency opportunities and promoting best practices.

Pursuant to Substantive Rule 25.181, as part of the 2011 Commercial Solutions Pilot MTP, TCC completed a baseline study of the commercial market. The primary objective of this study was to document the current status of customer awareness, attitudes, and knowledge regarding energy efficiency within commercial facilities in TCC's service territory. The study showed that most businesses are encountering financial constraints and lack of energy efficiency education and technical assistance.

In 2011, TCC projected to achieve 950 kW of demand savings from this program. TCC's verified and reported results are 966 kW. This included participation by seventy-three (73) customers in fifteen (15) different counties.

CoolSaver© Pilot MTP

TCC implemented the CoolSaver© MTP in 2010 as a pilot program. This program is designed to overcome market barriers that prevent residential and business customers from receiving high performance air conditioning system tune-ups. The program provides participating A/C contractors with technical training on diagnostic equipment and techniques, sales training on lead generation and sales force management, discounts on field equipment, and an incentive per documented and verified A/C tune-up performed. The program provides TCC residential and commercial customers with a discount coupon toward A/C system tune-up and airflow correction services from participating A/C contractors.

TCC contracted with a third-party program implementer to provide services, education, and support to assist A/C contractors in selling and performing A/C tune-up services. In 2011, TCC projected to acquire 320 kW demand savings from this program. TCC verified and is reporting 570 kW. This included participation by seven contractors at 857 different residential and commercial locations in seven different counties. The program implementer provided extensive classroom and field training for 22 technicians.

ENERGY STAR® MTP

The objective of this program is to achieve peak demand reductions and energy savings through increased sales of energy efficient ENERGY STAR® homes and products. Additionally, the program is designed to condition the market so that consumers understand benefits of and demand energy efficient ENERGY STAR® homes and products. The program also seeks to equip builders with the technical capacity to supply ENERGY STAR® homes. A baseline study was conducted in 2007 to determine the existing level of efficiency typical of new home construction in TCC's service territory.

In 2011, TCC certified 383 energy efficient ENERGY STAR® homes with savings of 387 kW. TCC provided continuing education courses and other training opportunities for contractors, homebuilders, home energy raters, and HVAC contractors on the advantages of energy efficient ENERGY STAR® homes and building practices. The training included various aspects of the ENERGY STAR® home, from construction and measure installation, to the importance of whole-house energy efficiency. Due to efforts in supporting, communicating, and implementing the ENERGY STAR® homes program, TCC received a 2011 ENERGY STAR® Partner of the Year – Energy Efficiency Program Delivery for New Homes award from the U.S. Environmental Protection Agency (EPA).

SCORE/CitySmart MTP

TCC initially implemented this program as the CitySmart Pilot MTP in 2006. The program targeted several cities and schools in the TCC service area. TCC issued a competitive solicitation RFP in 2008 to select an implementer to fully implement the program in 2009, and continued the program in 2010 and 2011. In 2011, TCC decided to issue a competitive solicitation RFP for an Educational and Governmental Facilities Program in order to ensure that the program was being operated in the most cost-effective manner possible. The program was designed to overcome obstacles to energy efficiency projects such as the institutional disconnect between finance and facilities departments, the lack of first-hand experience with efficiency measures, limited budgets, and the lack of management decision-making processes necessary for identifying, prioritizing, and completing projects that will improve energy performance and reduce operating costs for educational and governmental facilities.

For 2011, SCORE/CS MTP provided non-cash incentives such as building energy analysis (benchmarking), energy master-planning seminars, technical assistance, communications support, and monetary incentives for the installation of documented energy efficiency measures that reduce peak demand and energy use.

In 2011, TCC projected to acquire 1,500 kW demand savings from this program. TCC verified and reported 1,520 kW. This included participation by 89 customers in four counties.

SMART Source^{SM} Solar PV Pilot MTP

The solar PV program experienced significant participation in 2011, with the majority of program activity in the commercial sector. TCC's commercial incentive funds were 64.96% over budget due primarily to the timing of completed projects. Construction on several projects that began in 2010 was completed in 2011, so the reserved incentives associated with those projects were paid and savings counted in 2011. The residential component of this program was 11.24% under budget by the end of the program year.

During 2011, 15 residential and commercial solar PV projects were completed within the program, resulting in a peak demand reduction of 460 kW and 887,240 kWh of savings. TCC plans to continue this pilot program in 2012.

X. Research and Development

In 2011, R&D activities and projects accounted for 2% of TCC's total program expenses. R&D activities are intended to help TCC meet future energy efficiency goals by researching new technologies and program options and developing better, more efficient ways to administer current programs. The following is a summary of TCC's R&D efforts for 2011:

Center for Commercialization of Electric Technologies (CCET)

TCC is a member of CCET, whose purpose is to enhance the safety, reliability, security, and efficiency of the Texas electric transmission and distribution system through research, development and commercialization of emerging technologies. Activities undertaken in 2011 included participation in a project promoting infrastructure enhancement for Plug-in Electric Vehicles (PEV) in the Texas Triangle corridor of DFW-Houston-San Antonio and a DOE American Reinvestment and Recovery Act (ARRA) Smart Grid Demonstration project supporting wind integration in ERCOT.

SMART View℠ In-Home Device R&D Project

TCC implemented the AEP Texas SMART View℠ In-home Device R&D Project in 2011 with the following objectives:

1. To enable a sampling of AEP Texas' residential customers to receive energy use data from their dwelling premises, and to use that data to make informed decisions regarding timing and magnitude of electric energy use.

2. To enable AEP Texas' Energy Efficiency/Demand Response (EE/DR) function to capture, measure, and verify energy and demand savings, and to determine if the in-home monitors could be a measure that produces savings that could be used toward our energy efficiency goal requirements.

3. To present positive customer information regarding the value and benefits available through the use of AEP Texas' Advanced Meter System, Smart Meter Texas web portal, and in-home monitors available in the market.

4. To enlist REP engagement in providing additional customer energy efficiency education, time-of-use pricing programs, and other retail activities to encourage customer energy efficiency.

5. To test in-home monitors from various technology vendors and manufacturers, and evaluate their ease of use and acceptability by customers.

TCC initially selected a sampling of devices which were compatible with its smart meters and initiated testing to identify technical and support issues prior to implementing the study in 2012.

In 2012, TCC plans to recruit participants and provide in-home displays free of charge to participating TCC residential customers. The study will then monitor the energy consumption of participants as well as a control group over a period of approximately 14-16 months. Energy

consumption patterns will be analyzed to assess the impact of the displays. The study will assess both immediate and sustained impact of the displays with and without supplemental energy efficiency communications.

Program Research and Development

In 2011, TCC researched and reviewed new programs, resulting in the implementation of the SMART View℠ In-home Device R&D Project in 2011 and the A/C Distributor Pilot MTP that will be introduced in 2012. TCC also dedicated resources to further develop and enhance its electronic data collection and management systems for current programs. In addition, TCC participated with Electric Utility Marketing Managers of Texas (EUMMOT) in research activities including a commercial HVAC baseline study and lighting and HVAC studies that supported the revision of the Commission-approved Deemed Savings for those measures. A baseline study was also completed for the Commercial Solutions MTP.

XI. Current Energy Efficiency Cost Recovery Factor (EECRF)

On December 15, 2011, in Docket No. 39360, the Commission approved TCC's 2012 EECRF to recover a total of $7,290,536. This 2012 EECRF amount recovers the portion ($7,118,795) of TCC's energy efficiency program costs projected to be incurred during 2012 to meet its energy efficiency objectives under PURA §39.905 that exceeds the $6,334,949 expressly included in TCC's base rates for energy efficiency; TCC's Performance Bonus of $2,579,631 earned for 2010 results; and a credit of the 2010 over-recovery amount of $2,407,891 to be returned to customers. The approved 2012 EECRF was made effective on December 30, 2011, the beginning of TCC's January 2012 billing month.

Table 11: 2012 EECRF

Customer Class	EECRF
Residential Service	$0.000732 per kWh
Secondary Service (less than or equal to 10 kW)	($0.000022) per kWh
Secondary Service (greater than 10 kW)	$0.000101 per kWh
Primary Service	($0.000013) per kWh

2011 Collections

TCC collected $6,334,949 through its 2011 base rates and $9,835,299 through its 2011 EECRF for energy efficiency for a total of $16,170,248. The 2011 EECRF includes $2,768,731, which is the amount approved as TCC's Performance Bonus for exceeding its 2009 energy efficiency goals.

Program Costs Expended

TCC expended a total of $13,173,634 for its 2011 energy efficiency programs. This is $1,982,330 less than TCC's 2011 projected budget of $15,155,964.

Over- or Under-recovery

The final order in Docket No. 38208 authorized TCC to recover $8,821,015 in energy efficiency program costs through its 2011 EECRF. TCC collected $9,627,151 of its program costs through its 2011 EECRF. TCC's 2011 program costs were $1,982,330 less than its projected 2011 budget. This resulted in an over-recovery of $2,788,466 which will be requested to be returned to customers within its 2013 EECRF.

XII. Underserved Counties

TCC has defined Underserved Counties as any county in the TCC service territory for which TCC did not report demand or energy savings through any of its 2011 SOPs or MTPs. Per Substantive Rule 25.181, a list of the Underserved Counties is as follows:

Caldwell	Guadalupe	McMullen
DeWitt	Kinney	Wilson
Edwards	La Salle	
Gonzales	Medina	

XIII. Performance Bonus

TCC achieved a 27,496 kW reduction in peak demand from its energy efficiency programs offered in 2011. TCC's demand reduction goal for 2011 was 12,930 kW. This achievement represents 213% of its 2011 goal, qualifying it for a Performance Bonus. Per Substantive Rule 25.181(h), TCC is eligible for a Performance Bonus of $2,634,727, which it will request within its May 1, 2012 EECRF Filing for cost recovery in 2013.

Table 12: Energy Efficiency Performance Bonus Calculation for 2011

	kW	kWh	As Found In Table
2011 Goals	12,930	22,657,000	7
2011 Savings			
Reported/Verified Total (including HTR and measures with <10yr EUL)	27,496	69,157,782	8
Reported/Verified Hard-to-Reach	3,232		8
2011 Program Costs	$13,173,634		10
2011 Performance Bonus	$2,634,727		

Performance Bonus Calculation

213%	Percentage of Demand Reduction Goal Met (Reported kW/Goal kW)
305%	Percentage of Energy Reduction Goal Met (Reported kWh/Goal kWh)
TRUE	Met Requirements for Performance Bonus?
$47,018,287	Total Avoided Cost (Reported kW * PV(Avoided Capacity Cost) + Reported kWh * PV(Avoided Energy Cost))
$13,173,634	Total Program Costs
$33,844,653	Net Benefits (Total Avoided Cost - Total Expenses)

Bonus Calculation

$19,063,125	Calculated Bonus ((Achieved Demand Reduction/Demand Goal - 100%) / 2) * Net Benefits
$2,634,727	Maximum Bonus Allowed (20% of Program Costs)
$2,634,727	Bonus (Minimum of Calculated Bonus and Bonus Limit)

XIV. Potential Financial Impacts of Project No. 39674, Rulemaking Proceeding to Amend Energy Efficiency Rules

Under the current PUCT rulemaking Project No. 39674, several proposed changes to Substantive Rule § 25.181 will likely increase the current proposed budget estimate outlined in this report and are referenced below:

- Evaluation, Measurement and Verification costs;
- Rate case expenses;
- Reimbursement for governing body of a municipality pursuant to PURA § 33.023 (b); and
- Other potential items ultimately adopted in the final rulemaking.

While these costs have not been calculated due to the ongoing rulemaking proceeding, a forecast of the cost breakdown of the above-referenced services or expenses will be incorporated into the EECRF filing in 2012 or when the new rule is adopted.

Acronyms

ACD MTP	AC Distributor Pilot Market Transformation Program
ARRA	American Reinvestment and Recovery Act
CARE$ SOP	AEP Texas CARE$ Energy Efficiency for Not-for-Profit Agencies Standard Offer Program
CCET	Center for the Commercialization of Electric Technologies
CoolSaver© MTP	CoolSaver© A/C Tune-Up Market Transformation Program
CSOP	Commercial Standard Offer Program
CS MTP	Commercial Solutions Market Transformation Program
DR	Demand Response
DSM	Demand Side Management
EECRF	Energy Efficiency Cost Recovery Factor
EEP	Energy Efficiency Plan, which was filed as a separate document prior to April 2008
EEPR	Energy Efficiency Plan and Report
EER	Energy Efficiency Report, which was filed as a separate document prior to April 2008
EE Rule	Energy Efficiency Rule, PUCT Substantive Rules 25.181 and 25.183
EESP	Energy Efficiency Service Providers
ERCOT	Electric Reliability Council of Texas
EUMMOT	Electric Utility Marketing Managers of Texas
EPA	Environmental Protection Agency
ES MTP	ENERGY STAR® New Homes Market Transformation Program
HTR	Hard-To-Reach
HTR SOP	Hard-to-Reach Standard Offer Program
LM SOP	Load Management Standard Offer Program
MTP	Market Transformation Program
NAP	Not Applicable
NFP	Not-for-Profit
PEV	Plug-in Electric Vehicle
PUCT	Public Utility Commission of Texas

Acronyms (Continued)

PURA	Public Utility Regulatory Act
PV	Photovoltaic
PV Pilot MTP	SMART Source[SM] Solar PV Pilot Market Transformation Program
R&D	Research and Development
REP	Retail Electric Provider
RES	Residential
RSOP	Residential Standard Offer Program
SCORE	Schools Conserving Resources
SCORE/CS MTP	SCORE/CitySmart Market Transformation Program
SOP	Standard Offer Program
TCC	AEP Texas Central Company
TDU	Transmission and Distribution Utility
TLIP	Target Low-Income Energy Efficiency Program

Glossary

Actual Weather Adjusted -- Actual Weather Adjusted peak demand and energy consumption is the historical peak demand and energy consumption adjusted for weather fluctuations using weather data for the most recent ten years.

At Meter – Demand (kW/MW) and energy (kWh/MWh) figures reported throughout the EEPR are reflective of impacts at the customer meter. This is the original format of the measured and deemed impacts, which the utilities collect for their energy efficiency programs. Goals are necessarily calculated "at source" (generator) using utility system peak data at the transmission level. In order to accurately compare program impacts, goals and projected savings have been adjusted for the line losses (7%) that one would expect going from the source to the meter.

Average Growth -- Average historical growth in demand (kW) over the prior five years for residential and commercial customers adjusted for weather fluctuations.

Capacity Factor – The ratio of the annual energy savings goal, in kWh, to the peak demand goal for the year, measured in kW, multiplied by the number of hours in the year; or the ratio of the actual annual energy savings, in kWh, to the actual peak demand reduction for the year, measured in kW, multiplied by the number of hours in the year.

Commercial customer -- A non-residential customer taking service at a metered point of delivery at a distribution voltage under an electric utility's tariff during the prior calendar year and a non-profit customer or government entity, including an educational institution. Each metered point of delivery shall be considered a separate customer.

Deemed Savings -- A pre-determined, validated estimate of energy and peak demand savings attributable to an energy efficiency measure in a particular type of application that an electric utility may use instead of energy and peak demand savings determined through measurement and verification activities.

Demand -- The rate at which electric energy is used at a given instant, or averaged over a designated period, usually expressed in kilowatts (kW) or megawatts (MW).

Demand savings -- A quantifiable reduction in demand.

Energy efficiency -- Improvements in the use of electricity that are achieved through facility or equipment improvements, devices, or processes that produce reductions in demand or energy consumption with the same or higher level of end-use service and that do not materially degrade existing levels of comfort, convenience, and productivity.

Energy efficiency measures -- Equipment, materials, and practices at a customer's site that result in a reduction in electric energy consumption, measured in kilowatt-hours (kWh), or peak demand, measured in kilowatts (kW), or both. These measures may include thermal energy storage and removal of an inefficient appliance so long as the customer need satisfied by the appliance is still met.

Glossary (Continued)

Energy efficiency program -- The aggregate of the energy efficiency activities carried out by an electric utility or a set of energy efficiency projects carried out by an electric utility under the same name and operating rules.

Energy Efficiency Rule (EE Rule) – Public Utility Commission of Texas Substantive Rules 25.181 and 25.183, which implement Public Utility Regulatory Act (PURA) § 39.905.

Energy savings -- A quantifiable reduction in a customer's consumption of energy that is attributable to energy efficiency measures.

Growth in demand -- The annual increase in demand in the Texas portion of an electric utility's service area at time of peak demand, as measured in accordance with the Energy Efficiency Rule.

Hard-to-reach (HTR) customers -- Residential customers with an annual household income at or below 200% of the federal poverty guidelines.

Incentive payment -- Payment made by a utility to an energy efficiency service provider under an energy efficiency program.

Inspection -- Examination of a project to verify that an energy efficiency measure has been installed, is capable of performing its intended function, and is producing energy savings or demand reduction.

Load control -- Activities that place the operation of electricity-consuming equipment under the control or dispatch of an energy efficiency service provider, an independent system operator or other transmission organization or that are controlled by the customer, with the objective of producing energy or demand savings.

Load management -- Load control activities that result in a reduction in peak demand on an electric utility system or a shifting of energy usage from a peak to an off-peak period or from high-price periods to lower-price periods.

Market transformation program (MTP) -- Strategic programs to induce lasting structural or behavioral changes in the market that result in increased adoption of energy-efficient technologies, services, and practices.

Measurement and verification (M&V) -- Activities intended to determine the actual energy and demand savings resulting from energy efficiency projects.

Peak demand -- Electrical demand at the times of highest annual demand on the utility's system.

Peak demand reduction -- Reduction in demand on the utility system throughout the utility system's peak period.

Glossary (Continued)

Peak period -- The hours from one p.m. to seven p.m., during the months of June, July, August, and September, excluding weekends and federal holidays.

Program Year – A year in which an energy efficiency incentive program is implemented, beginning January 1 and ending December 31.

Projected Demand and Energy Savings – Peak demand reduction and energy savings the Company projects to achieve by implementing the portfolio of programs outlined in this EEPR. These projected savings reflect the Company's goals required by the Energy Efficiency Rule .

Project sponsor -- An energy efficiency service provider or customer who installs energy efficiency measures or performs other energy efficiency services under the Energy Efficiency Rule. An energy efficiency service provider may be a retail electric provider or commercial customer, provided that the commercial customer has a peak load equal to or greater than 50 kW.

Renewable demand side management (DSM) technologies -- Equipment that uses a renewable energy resource (renewable resource), as defined in Public Utility Commission of Texas Substantive Rule 25.173(c) (relating to Goal for Renewable Energy) that, when installed at a customer site, reduces the customer's net purchases of energy, demand, or both.

Standard offer program (SOP) -- A program under which a utility administers standard offer contracts between the utility and energy efficiency service providers.

Underserved County – A county that did not have reported demand or energy savings through a prior year's SOP or MTP.

APPENDIX A:

REPORTED AND VERIFIED DEMAND AND ENERGY REDUCTION BY COUNTY

CALENDAR YEAR 2011

AEP TEXAS CARE$ ENERGY EFFICIENCY FOR NOT-FOR-PROFIT AGENCIES SOP

County	Reported and Verified Savings	
	kW	kWh
Bee	5.80	16,509
Nueces	21.66	70,374
Victoria	0.69	1,090
Total	**28**	**87,973**

COMMERCIAL SOLUTIONS PILOT MTP

County	Reported and Verified Savings	
	kW	kWh
Bee	3.51	11,016
Cameron	84.84	373,722
Colorado	0.32	1,421
Hidalgo	276.31	1,216,625
Jim Wells	0.77	3,447
Kleberg	7.21	37,350
Maverick	16.29	77,429
Nueces	474.68	1,473,160
Refugio	5.07	34,411
San Patricio	10.37	64,992
Starr	27.24	139,345
Val Verde	1.04	3,092
Victoria	16.64	64,577
Webb	26.71	100,938
Zapata	14.80	80,546
Total	**966**	**3,682,071**

COMMERCIAL SOP

County	Reported and Verified Savings	
	kW	kWh
Atascosa	61.51	342,504
Bee	12.00	29,571
Brooks	1.68	7,180
Calhoun	0.68	2,887
Cameron	458.59	1,696,828
Frio	100.88	519,834
Hidalgo	1,182.44	4,739,303
Jackson	44.25	248,992
Kenedy	5.32	24,434
Live Oak	45.69	280,698
Maverick	13.25	316,597
Nueces	1,306.12	6,790,397
San Patricio	73.09	322,525
Starr	31.05	170,014
Val Verde	15.71	73,230
Victoria	1,385.56	6,180,411
Webb	666.00	3,624,222
Total	**5,404**	**25,369,627**

COOLSAVER© AC TUNE-UP PILOT MTP

County	Reported and Verified Savings	
	kW	kWh
Aransas	234.47	589,701
Bee	0.40	1,077
Jim Wells	1.88	6,308
Kleberg	4.65	14,804
Nueces	260.75	650,762
Refugio	0.45	1,214
San Patricio	67.48	168,050
Total	**570**	**1,431,916**

ENERGY STAR® MTP

County	Reported and Verified Savings	
	kW	kWh
Aransas	7.93	27,720
Bee	0.57	1,454
Cameron	15.62	39,948
Hidalgo	121.48	399,844
Jim Wells	1.88	5,431
Maverick	1.02	3,771
Nueces	152.88	496,388
Refugio	1.38	4,582
San Patricio	48.62	157,511
Victoria	9.58	28,046
Webb	26.49	82,514
Total	**387**	**1,247,209**

HARD-TO-REACH SOP

County	Reported and Verified Savings	
	kW	kWh
Aransas	3.46	10,009
Bee	14.13	54,507
Calhoun	21.59	49,833
Cameron	135.44	454,983
Colorado	17.37	47,392
Duval	102.54	395,490
Hidalgo	973.68	3,240,578
Jackson	11.66	20,843
Jim Wells	18.72	59,470
Kleberg	49.81	162,414
Live Oak	1.08	4,842
Matagorda	57.58	173,338
Nueces	800.00	2,123,398
San Patricio	34.37	81,841
Starr	111.81	363,730
Val Verde	73.86	213,208
Victoria	293.61	924,846
Webb	221.26	747,664
Wharton	16.36	43,560
Willacy	15.05	44,120
Zapata	11.24	34,596
Total	**2,985**	**9,250,662**

LOAD MANAGEMENT SOP

County	Reported and Verified Savings	
	kW	**kWh**
Aransas	49.17	1,524
Bee	7.41	230
Calhoun	52.77	1,636
Cameron	671.48	12,314
Hidalgo	2,339.95	65,204
Jim Wells	50.56	1,567
Kleberg	23.51	729
Matagorda	9.86	306
Maverick	71.75	2,224
Nueces	2,045.85	40,231
San Patricio	89.33	2,769
Starr	131.74	4,084
Uvalde	858.65	26,618
Val Verde	11.17	346
Victoria	189.51	5,875
Webb	282.32	8,734
Wharton	88.45	2,742
Willacy	22.52	698
Total	**6,996**	**177,831**

RESIDENTIAL SOP

County	Reported and Verified Savings	
	kW	kWh
Aransas	46.59	122,562
Atascosa	38.69	107,675
Bee	29.44	90,749
Brooks	44.82	92,857
Calhoun	107.51	246,250
Cameron	561.48	1,558,865
Colorado	35.32	77,379
Duval	63.47	199,688
Goliad	3.14	12,595
Hidalgo	2,594.65	7,995,523
Jackson	19.72	44,250
Jim Hogg	13.07	43,269
Jim Wells	82.98	243,875
Karnes	1.92	2,455
Kenedy	0.74	1,230
Kleberg	106.77	290,568
Live Oak	3.38	15,107
Matagorda	108.34	198,025
Nueces	2,264.98	5,436,242
Refugio	13.43	37,482
San Patricio	277.98	673,132
Starr	331.69	962,263
Val Verde	8.03	27,849
Victoria	602.42	1,397,326
Webb	465.41	1,552,606
Wharton	16.87	21,867
Willacy	16.03	52,210
Zapata	74.13	264,022
Total	**7,933**	**21,767,921**

SCORE/CITYSMART MTP

County	Reported and Verified Savings	
	kW	**kWh**
Cameron	11.43	7,271
Hidalgo	873.39	2,957,088
Nueces	395.37	802,186
Webb	240.25	554,875
Total	**1,520**	**4,321,420**

SMART SOURCE[SM] SOLAR PV PILOT MTP

County	Reported and Verified Savings	
	kW	**kWh**
Aransas	4.08	7,872
Cameron	350.19	675,072
Colorado	5.35	10,304
Hidalgo	38.41	74,040
Jim Wells	16.81	32,400
Real	7.97	15,360
Webb	37.45	72,192
Total	**460**	**887,240**

TARGETED LOW-INCOME ENERGY EFFICIENCY PROGRAM

County	Reported and Verified Savings	
	kW	**kWh**
Cameron	104.52	352,238
Dimmit	15.20	58,023
Hidalgo	70.44	268,350
Karnes	21.77	115,357
Kleberg	1.41	3,202
Nueces	22.86	98,445
San Patricio	3.44	11,322
Victoria	3.08	9,123
Wharton	0.14	1,329
Zavala	3.86	16,523
Total	**247**	**933,912**

APPENDIX B:

PROGRAM TEMPLATES

TCC does not have any program templates to report this year.

APPENDIX C:

EXISTING CONTRACTS OR OBLIGATIONS

TCC does not have any Existing Contracts or Obligation documentation to provide.

APPENDIX D:

OPTIONAL SUPPORT DOCUMENTATION

TEXAS®
A unit of American Electric Power

AEP Texas
AEP Texas Central Company
400 West 15th Street, Suite 1520
Austin, TX 78701
AEPTexas.com

1st February, 2012

Via e-mail

Adrian Eissler
Public Utility Commission of Texas
1701 N. Congress Avenue
Austin, TX 78711-3326

Annette Lown Mass
Assistant Public Counsel
Office of Public Utility Counsel
1701 North Congress Ave., Suite No. 9-180
Austin, Texas 78711-2397

Ms. Katherine Coleman
Andrews Kurth LLP
111 Congress Avenue, Suite 1700
Austin, Texas 78701

Re: Docket No. 39360, *Application of AEP Texas Central Company to Adjust Energy Efficiency Cost Recovery Factor and Related Relief*

Dear Counsel:

In light of resource adequacy concerns for the summer of 2012, the Commission has encouraged utilities to explore avenues for increasing commercial load management. This writing is intended to memorialize the agreement of the Commission Staff, the Office of Public Utility Counsel and AEP Texas Central Company, which is unopposed by Texas Industrial Energy Consumers, that AEP Texas Central Company's 2012 load management program should be increased by $666,666 from the commercial load management program budget proposed in its application in Docket No. 39360, for a total of $999,999. The new total reflects an estimated $900,000 of incentives and $99,999 of estimated administrative costs. AEP Texas Central Company will coordinate with ERCOT to (1) maximize the use of the additional commercial load management for grid reliability purposes and (2) ensure the program is operated in a manner consistent with Commission policy deliberations in Project No. 37897, *P.U.C. Proceeding Relating to Resource and Reserve Adequacy and Storage Pricing,* to the extent the existing commercial load management program design permits.

Commission Staff, the Office of Public Utility Counsel and AEP Texas Central Company agree that AEP Texas Central Company may request recovery of the full $999,999 commercial load management program expenditure as part of its energy efficiency cost recovery factor application filed in 2013, that the additional $666,666 program expenditure is being implemented under Substantive Rule 25.181, and, to the extent that the additional expenditure does not cause AEP Texas Central Company to exceed the cost caps expressed in the rule, the additional expenditure

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may be included in the calculation of AEP Texas Central Company's performance bonus, if it qualifies for such bonus as expressed in the rule. All program costs and any shareholder bonus resulting from the additional $666,666 commercial load management program expenditure shall be borne by the AEP Texas Central Company customer classes participating in the expanded program.

Texas Industrial Energy Consumers is unopposed to the agreements set forth above.

If this accurately reflects our agreement, please sign in the space below and return your signed copy to me so I can file the agreement in Docket No. 39360.

Regards,

Rhonda Colbert Ryan
Attorney for AEP Texas Central Company

AGREED:

_____
Adrian Eissler
PUCT Staff Attorney

_____
Annette Lown Mass
OPUC Staff Attorney

UNOPPOSED:

_____
Katherine Coleman
Attorney for TIEC

1st February, 2012

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Attorney for AEP Texas Central Company

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Adrian Eissler
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OPUC Staff Attorney

UNOPPOSED:

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Attorney for TIEC

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Attorney for AEP Texas Central Company

AGREED:

Adrian Eissler
PUCT Staff Attorney

Annette Lown Mass
OPUC Staff Attorney

UNOPPOSED:

Katherine Coleman
Attorney for TIEC

An incentive check was awarded to the City of Harlingen for participating in the 2011 SMART Source^{SM} Solar PV program. The City of Harlingen installed a 72 kW solar PV system on one of their buildings.

AEP Texas Central Company provided $182,000 in incentives to the Kenedy Housing Authority in 2011 through its Targeted Low Income Energy Efficiency Program for energy efficiency improvements made to the residential units. The improvements to the units included compact fluorescent lamps, ENERGY STAR® central air conditioners and refrigerators.

TCC received a 2011 ENERGY STAR® Partner of the Year – Energy Efficiency Program Delivery for New Homes award from the U.S. Environmental Protection Agency (EPA).

In 2011, 10 kW solar photovoltaic systems were installed at 3 AEP Texas locations. These systems will help reduce AEP Texas' electrical demand by approximately 24 kW, and reduce energy consumption by approximately 48,000 kWh per year. All 3 systems were installed and producing energy by the end of December, 2011.

COMMERCIAL SOLUTIONS BASELINE STUDY
FINAL

Prepared for:

AEP TX CENTRAL, AEP TX NORTH, AEP SWEPCO,

EL PASO ELECTRIC, TX-NM POWER, ENTERGY-TX

Prepared by:

OPINION DYNAMICS CORPORATION
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Tom Fisher
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September, 2011

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report presents the findings from Opinion Dynamics' study of Texas commercial customers in six commercial sectors (July to August 2011). The research was conducted to serve as a baseline for the Commercial Solutions program. The purpose of this report is to enable the six utilities to assess changes in the market over time as a result of the Commercial Solutions program, while also providing insights to help future program efforts. Our study focused on the following six sectors: offices, health care facilities, warehouses and distributors, manufacturers, small retailers, and churches and religious organizations.

Energy savings opportunities exist in the two major equipment types; lighting and HVAC. Some of our key findings across multiple sectors include the following:

- Nearly half of all customers (49%) reported that they still have T-12 linear fluorescent lighting at their facility, while just over a quarter (27%) have T-8 lighting and less than one in ten (8%) have T-5 lighting at their facility.
- Energy saving opportunities exist in five out of six sectors (with the exception of warehouses) with HVAC. Nearly one-third (32%) of their HVAC equipment is over 7 years in age; prime candidates for early retirement.

Regarding attitudes and awareness our results show:

- Respondents recognize there is room for energy efficiency improvements at their facilities as they rated the energy efficiency of their facility a mean of 5.9 (on a scale of 1 to 10).
- The six sectors cited cost as the main reason, and often the only reason, that they would not purchase energy efficient equipment. This demonstrates the need for utility incentives or access to financing as an option to encourage customers to take action.
- Additionally, many organizations are unable to recognize energy saving opportunities on their own; 29% believe they are very knowledgeable about energy saving opportunities in HVAC, 40% with lighting and 33% with other equipment opportunities.
- As such, a large percentage of customers in most sectors expressed a need for technical assistance. With the exception of the manufacturing sector, approximately 70% expressed at least some interest (and approximately 40% are very interested) in receiving technical assistance to help choose the right energy efficiency improvements.

The marketplace demonstrates a need for technical training, and education in the commercial trades (architects, contractors, interior designers, etc.), regarding how they specify equipment and assist customers in making energy efficient decisions.

Our research shows a need for utility incentives and financing to encourage energy efficient equipment replacement, but that incentives alone are not likely to transform the market. Technical assistance and other program elements can help move over 70% of the market.

This study presents detailed findings and opportunities by sector (with comparisons between sectors) as well as data on the presence of energy efficient and non-efficient equipment.

2. INTRODUCTION AND METHODOLOGY

This report presents the findings from Opinion Dynamics' study of Texas commercial customers. This study was designed to provide a baseline for the Commercial Solutions program. The Commercial Solutions program includes outreach and technical assistance to help commercial customers install and pay for measures (through utility incentives and assistance in finding additional funding assistance), as well as to identify opportunities for savings of which they might not be aware. CLEAResult is implementing the program on behalf of six Texas utilities: AEP Texas Central, AEP Texas North, AEP SWEPCO, Entergy Texas, Texas-New Mexico Power, and El Paso Electric.

The primary objective of this research effort is to measure customer awareness, attitudes, and knowledge regarding energy efficiency. This report also provides baseline metrics for major equipment types in use at commercial facilities in these six territories. Our baseline study targeted six sectors: offices, health care facilities, warehouses, manufacturers, small retailers, and churches and religious organizations. We selected these sectors based on two factors: (1) the potential for growth in participation in the Commercial Solutions program, and (2) the potential for energy savings through the program. Appendix A presents our detailed rationale for choosing each of the sectors studied.

We conducted our baseline study in four phases: a program database review; a technical review of key equipment (lighting, HVAC, and roofing) in place nationwide for the studied sectors; phone interviews with lighting, HVAC, and roofing contractors to explore the installation activity of energy consuming equipment in the six utilities marketplace; and a telephone survey of commercial customers to learn about the specific equipment in place as well as the potential for energy efficiency upgrades. This report primarily presents the findings from the commercial customer phone survey and contractor interviews, supplementing these results with key findings from the database review and technical review, where relevant.

2.1 Customer Survey Methodology

Opinion Dynamics made nearly 22,000 telephone calls to complete 364 total interviews with randomly selected customers in the six studied commercial sectors. We classified interviewed customers into the six sectors in the sample based on their primary Standard Industrial Classification (SIC) code from public records, and confirmed their sectors in the survey based on their self-identification.

Table A-2 in Appendix A presents the SIC codes used to identify each sector. Note that these six sectors are not intended to be representative of the entire commercial populations in these utility territories.

Opinion Dynamics conducted the customer phone interviews from July 6 to August 4, 2011, with an initial goal to complete up to 70 interviews per sector. We completed 364 interviews,

with an overall response rate of 7%[1] , and an average interview length of just over 20 minutes.

Across all sectors, Opinion Dynamics also designed a proportional sample by utility. We used these proportions only in creating the sample, and not in weighting the final results. Table 1 lists the proportions of the population and final completed interviews.

Table 1. Distribution of Population and Interview Sample by Utility

Utility	% of total population	% of interviews (n=364)	Number of completed interviews
AEP Texas Central	34%	26%	97
El Paso Electric	19%	14%	52
Entergy Texas	13%	23%	82
TNMP	12%	9%	34
AEP Texas North	11%	10%	36
SWEPCO Texas	10%	17%	63

Our survey instrument had two overarching modules: the equipment module and the non-equipment module. The equipment module asked respondents to describe the current lighting, cooling equipment, roofing, and refrigeration equipment in their businesses. The non-equipment module included questions on the business's awareness, knowledge, and attitudes concerning energy efficiency, as well as planned energy efficiency purchases and overall equipment decision-making processes.

We present the equipment findings across all sectors to highlight each sector's individual equipment differences.

We present the non-equipment findings separately by sector, with arrows indicating areas where the sector is significantly different from all other sectors with a margin of error of +/- 10% at the 90% confidence level. A green arrow pointing "up" means that figure is significantly higher than some of the other sectors, a red arrow pointing "down" means it is significantly lower.

Sections with asterisks next to the heading (Knowledge and Attitudes, Program Awareness, Energy Efficiency Barriers and Importance in Equipment Purchases), are areas with baseline metrics developed through this research, that over time can be influenced by the commercial program and should be measured again in the future to determine if any change has occurred.

2.2 Contractor Interview Methodology

Opinion Dynamics conducted in-depth interviews with fourteen trade allies with specialties in lighting, HVAC systems, and/or roofing technology in June and July 2011. These trade allies included both rebate administrators and local contractors. Of these third parties, eleven perform lighting work, three perform HVAC work, and three perform roofing work. Six of the

[1] AAPOR Response Rate 4.

interviewed trade allies were rebate agents[2] while eight were local contractors who carry out lighting, HVAC, or roofing work.

The trade allies interviewed cover the territories of all six utilities that participated in the baseline study. The lighting and HVAC contractors provide service to all six building sectors, but the roofing contractors we interviewed only served five building types, with no work done by roofing contractors on health care facilities.

The purpose of these interviews was to investigate the presence of energy efficiency in the three key equipment types in the six utility territories, as well as to explore barriers to adoption of energy efficient technology in the Texas marketplace. These interviews mostly asked about equipment practices overall but went into detail on differences between sectors when possible. Because these findings mostly relate to equipment in place, we present them in the Findings by Equipment Type section.

2.3 Study Limitations

While the primary purpose of this research effort was to measure customer awareness, attitudes, and knowledge regarding energy efficiency, we also obtained data regarding the energy consuming equipment that currently exists in the six commercial sectors. However, because we obtained this equipment data through customer telephone interviews rather than through on site visits, our equipment analysis relies on customer self-report rather than onsite verification. We found in our interviews that customers were able to identify the presence of equipment in their facilities more easily than they could describe the amount of equipment in use. Therefore, our study focuses on the penetration (presence) of equipment, rather than saturation. We did not conduct site visits due to budget limitations. In addition, because data are self reported they may not be fully representative of actual field conditions or of future actions that will be taken by customers.

[2] Rebate agents are energy consultants who provide a variety of activities for their clients including utility rebate administration.

3. KEY FINDINGS

We present our key findings from the customer phone baseline study below, supplemented with our findings from our database review, technical review, and contractor interviews where relevant. We first present our findings by sector for our non-equipment module.

3.1 Findings by Sector

Here we present portraits of the six sectors studied in our baseline research: offices, health care facilities, warehouses and distributors, manufacturers, small retailers, and churches. The portraits list key findings from our research; we also present dashboards which graphically summarize detailed findings from our phone survey to highlight both baseline measurements and program opportunities. These dashboards also call out any areas where each sector differs significantly from the other five (e.g., offices compared with non-offices, retailers compared with non-retailers) at the 90% confidence level.

3.1.1 Offices

The office sector includes a broad spectrum of business types, including most service industries such as law offices, banks, real estate offices, and nonprofit organizations. Because offices cover such a broad range of business types, office buildings also represent the largest percentage of the commercial population in the six utility territories (34%).

Based on our review of the Standard Offer and Commercial Solutions program databases,[3] we found that offices encompass approximately 20% of the Commercial Solutions program participants and 3% of the Standard Offer program. Savings from offices are among the highest of the Commercial Solutions program by sector, with offices comprising 16% of reported program kW savings and 20% of reported kWh savings. Top Commercial Solutions projects in the office sector were lighting (60%), roofing (24%), and HVAC (16%). Our key findings from our customer phone survey include the following:

- Our survey found that many offices still have T-12s installed (42%), though the percentage is not significantly higher than non-offices. Our technical review found that lighting accounts for the largest percentage of office energy usage (29%), indicating that offices provide a significant potential for savings in lighting programs, especially through replacing inefficient T-12 lighting.
  - Offices may need some outreach in improving their awareness of the lighting in use at their facility: A moderately high percentage of offices (31%) said that they do not know whether they have T-12s installed at their businesses at all.
  - Our technical review[4] found that 0.2% of offices used lighting controls; respondents from our telephone study reported a much higher presence of

[3] See our "Baseline Segment Proposal and Database Review Results" memo, dated June 3, 2011.

[4] Note, however, that our technical review was based on the Energy Information Administration (EIA) Commercial Building Energy Consumption Survey (CBECS), which was most recently conducted in 2003 and thus is likely to be out of date on newer technological developments such as lighting controls.

lighting controls overall (39% have any lighting controls).[5] Offices' usage of lighting controls is moderate compared to the other sectors, but they still have a low percentage of indoor occupancy sensors (13%) and a significantly lower percentage of daylighting sensors (1%) compared to other sectors. A moderate percentage of offices (22%) use lighting timers compared with non-offices.

- HVAC is also a particular need for the office sector: 82% of offices have conditioned space on average, which is significantly higher than the remaining sectors. Offices have a relatively high presence of rooftop packaged AC units: 43%, which is significantly higher than the other sectors. Two-thirds of offices have programmable thermostats.
  - Offices also have a lower percentage of new HVAC units compared with other sectors, with 26% having HVAC equipment less than four years old, a significantly lower percentage than non-offices.

Barriers in Offices

- Key barriers in the office sector include less involvement with or knowledge of their energy usage: 8% of offices say they do not pay their own utility bills, which is significantly higher than in the other sectors. Furthermore, 15% say that they rent their facility and cannot make changes to its equipment.
  - Participants in the office sector state that they are the least likely to buy any energy efficient equipment in the next two years (14%). Office sector participants are also significantly less likely than other sectors to give the highest rating (10 out of 10) to the importance of energy efficiency in their most recent equipment purchase (17%).
  - Offices also report a moderately high number or participants who felt that they did not have enough information about energy efficiency (49%) compared with other sectors. Furthermore, about one in four offices (25%) said that they did not know what information they would need before buying energy efficient equipment, indicating that the owners and managers of offices may need to learn more about the energy efficient technologies that are available.

Opportunities in Offices

- One of the key opportunities in the office sector is that offices have few decision-makers: 70% of offices said that only one person is responsible for decisions on capital investments, which is a significantly higher percentage than found in non-offices. The mean number of decision makers is 1.7, which is significantly lower than in the other sectors we studied. This indicates that the program should encounter less bureaucracy in the decision-making process to move the business toward energy efficiency improvements.

[5] "Lighting controls" are defined as indoor occupancy sensors, indoor day lighting sensors, outdoor motion sensors, outdoor photocells, and lighting timers. See Table 5.

- Furthermore, offices were moderately aware of energy efficiency incentive programs (28%), but were significantly more likely than non-offices to be aware of tax breaks for efficiency upgrades (8%). This may present an opportunity for the program to help offices leverage tax incentives when finding opportunities most relevant to them.

Offices

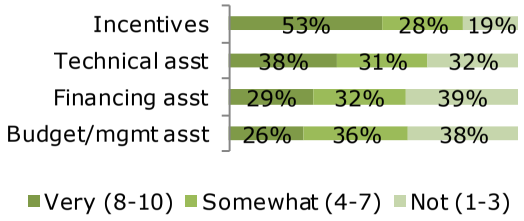
Company Size
85% Small
13% Medium
3% Large

- 3,611 Avg. Sq. Ft.
- 92% Pay Util. Bills
- 61% Own Building
- 34 yr. Avg. Bldg Age
- 94% <50 Employees
- 53 Avg. Hours/Wk
- 82% Avg. Cond. Sq.
- 10% >1 TX Facility

Needs in Marketplace

New EE equip in last 2 years	26%
Received any incentives	1%
Buying EE equip in next 2 years	14% ↓
% with T-12s installed	42%
% w/programmable thermostats	67%
% with AC units < 4 years old	26% ↓

Interest in Program Offerings



*Knowledge & Attitudes (Mean, 0-10)

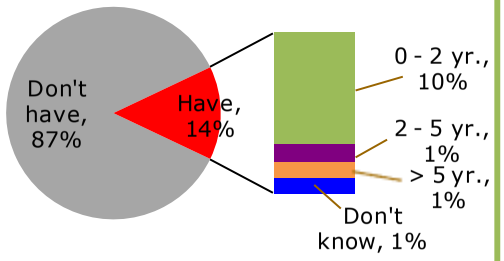
Buys most EE equip possible	7.4
Knowledge of lighting savings	6.3
Efficiency of facility	5.9
Knowledge of HVAC savings	5.8
Knowledge of other savings	5.8

Top measure mentioned: building envelope

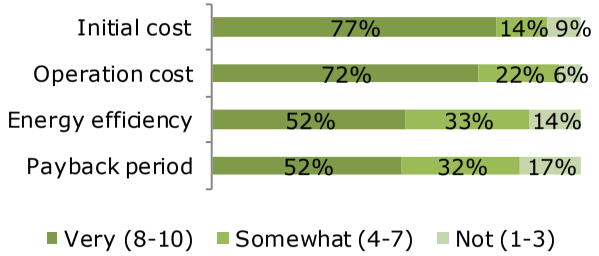
*Program Awareness

Any non-federal programs (unaided)	18%
Incentives (aided)	28%
Technical assistance (aided)	18%
Financing assistance (aided)	11%
Budget/mgmt assistance (aided)	10%
Federal programs	18%

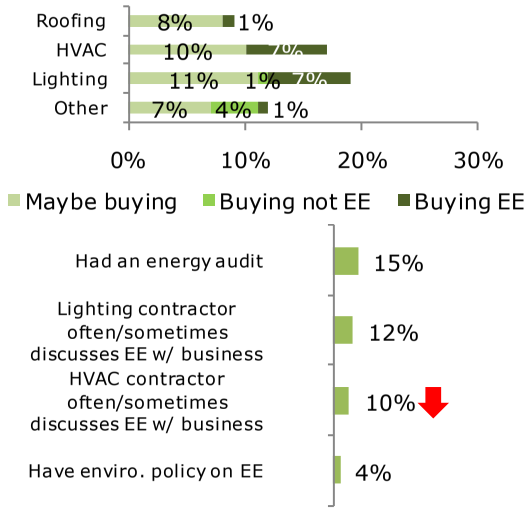
Payback Period



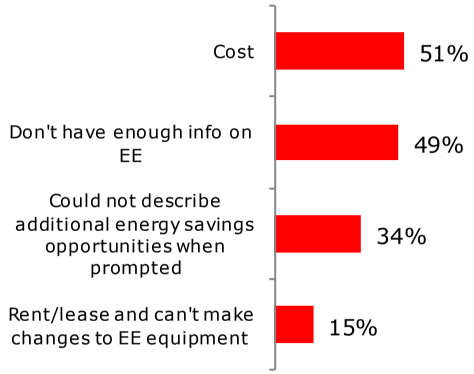
*Importance in Equipment Purchases



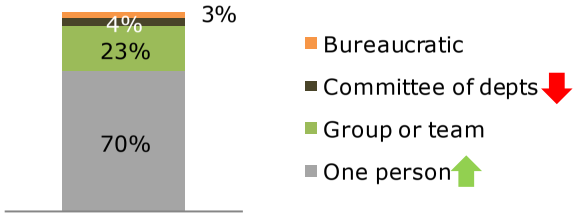
Opportunities



*Energy Efficiency Barriers



Decision-Making Process



Mean # involved in equip. decisions: 1.7 ↓

↑↓ indicate significant differences between offices and non-offices at 90% confidence. Note that some percentages may not add up to 100% due to rounding.
*Indicates baseline data.

3.1.2 Health Care Facilities

The health care sector includes businesses that conduct medical care, including hospitals, doctors' offices, dentists' offices, and outpatient facilities (including nursing homes and long-term care facilities). Health care facilities comprise 9% of the commercial facilities in the population of the six utility territories.

Based on our previous database review, we found that health care facilities comprised approximately 7% of the Commercial Solutions program participants. Savings through the health care sector are moderate (ranked fourth out of the twelve sectors provided in the program database we initially evaluated by savings per project), with health care facilities comprising 10% of reported program kW savings and 9% of reported kWh savings. Top Commercial Solutions projects in the health care sector were lighting (69%), HVAC (21%), and roofing (10%). Our key findings from our customer phone survey include the following:

- Nearly all health care facilities (98%) report having linear fluorescent lighting – a significantly higher percentage than non-health care facilities.
  - Our survey found that close to half (47%) of health care facilities have T-12s, which is similar to the other sectors studied. There are multiple types of bulbs in many healthcare facilities as 38% have T-8s, the highest penetration of all the studied sectors.
  - Health care facilities reported a significantly higher penetration of indoor LED lighting (11%) than offices, warehouses, and small retailers.
- Our technical review found that HVAC equipment accounts for 23% of energy usage in the health care sector[6]. HVAC is a particular need for the health care sector: health care facilities have a mean of 97% air-conditioned space, which is significantly higher than non-health care facilities.
  - Penetration of programmable thermostats (not including EMS) is high (83%) compared to other sectors included in this study - significantly higher than non-health care facilities.
  - Health care facilities have a high presence of rooftop packaged AC units: 46%, which is significantly higher than non-health care facilities overall. Health care facilities also reported a relatively high presence of chillers (10%, significantly higher than non-health care facilities).
  - HVAC units in health care facilities are beginning to age, with significantly more units in health care facilities (25%) than non-health care facilities that are seven to twelve years old. Furthermore, health care facilities were more likely than all other sectors to say that they did not know how old their HVAC equipment was (15%).

[6] 2003 CBECS database.

Barriers in Health Care

- One key barrier to program participation in the health care sector is the lack of awareness about their equipment.
  - Forty percent of participants from health care facilities reported that they did not have enough information about energy efficiency.
  - Health care facilities generally rated their knowledge about equipment low for equipment other than lighting, with a significantly lower mean knowledge rating about HVAC (4.8 mean using a 1 to 10 scale) than found in non-health care facilities.
  - Health care facilities are particularly unlikely to be familiar with their roofing needs: health care facilities are more likely than non-health care facilities to say they do not know their roofing type (35%), its color (30%), or when they had their most recent roofing upgrade (25%). Our technical review found that health care roofing was metal surfaced 59% of the time, and built-up roofing (BUR) or asphalt shingle roofing 21% of the time. We found that 17% of buildings have multiple, unspecified types of roofing.
- Another possible barrier for health care facilities is that some do not have the authority to make changes at their facilities. Slightly more than half of health care facilities (55%) said that they rent their facilities, which is significantly higher than non-health care facilities. Furthermore, health care facilities who gave low ratings to their interest in one or more Commercial Solutions program offerings, did so primarily because they do not have the authority to decide to participate (38%), which is higher than the other sectors we studied.

Opportunities in Health Care

- While personnel in health care facilities report more efficient lighting than other sectors, they also lack the knowledge to identify potential additional energy savings, with 54% unable to describe energy savings opportunities other than lighting and HVAC when asked. Additionally, only 17% have received an energy audit.
  - It is important to note that of all the equipment this sector is likely to purchase in the next two years, HVAC equipment was most likely, with 18% of health care organizations planning to purchase it.
  - Based on previous studies, we have found that health care facilities can present opportunities for refrigeration upgrades due to use of refrigeration for both food service and laboratories. Our phone survey found that 11% of the health care sector had walk-in coolers and freezers, which is significantly higher than in the other sectors.
- While opportunities exist in health care, there needs to be additional outreach for this sector, as their unaided awareness of energy efficiency programs (6%) was significantly lower than discovered in the other sectors. However, the equipment that health care facilities report having is often more efficient than that of other sectors. For example, health care facilities have significantly higher penetration of T-8 lighting

than non-health care facilities. This indicates that health care facilities may be performing more efficient upgrades than other sectors that are not already part of the program. Health care facilities have started taking first steps on their own but, as indicated by the high percentage of health care facilities unable to name additional savings opportunities at their facilities (54%), may be most in need of program assistance to encourage additional energy saving actions.

Health Care

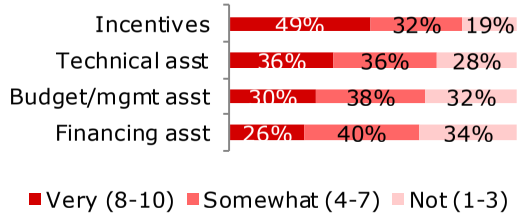
Company Size
71% Small
16% Medium
13% Large ↑

23,014 Avg. Sq. Ft. ↓ 71% <50 Employees
94% Pay Util. Bills ↑ 76 Avg. Hours/Wk
↓ 45% Own Building ↑ 97% Avg. Cond. Sq.
↓ 27 yr. Avg. Bldg Age 15% >1 TX Facility

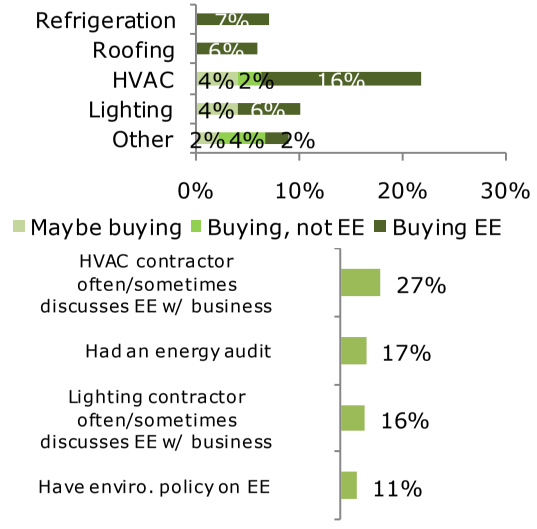
Needs in Marketplace

New EE equip in last 2 years	15% ↓
Received any incentives	0%
Buying EE equip in next 2 years	19%
% with T-12s installed	47%
% with occupancy sensors	6%
% with AC units 7+ years old	33%

Interest in Program Offerings



Opportunities



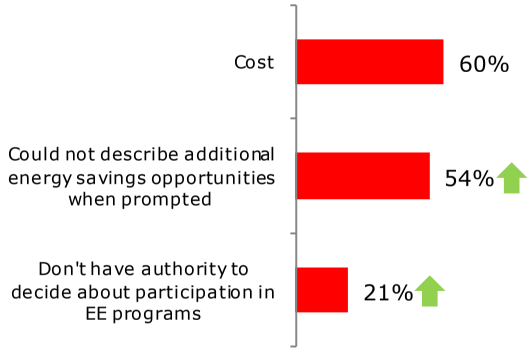
*Knowledge & Attitudes (Mean, 0-10)

Buys most EE equip possible	7.3
Knowledge of lighting savings	5.7
Efficiency of facility	5.6
Knowledge of other savings	5.4
Knowledge of HVAC savings	4.8 ↓

*Program Awareness

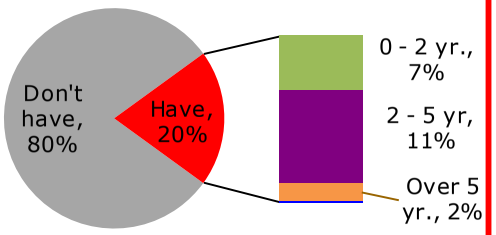
Any non-federal programs (unaided)	6% ↓
Incentive (aided)	19%
Technical assistance (aided)	9%
Budget/mgmt assistance (aided)	6%
Financing assistance (aided)	6%
Federal programs	13%

*Energy Efficiency Barriers

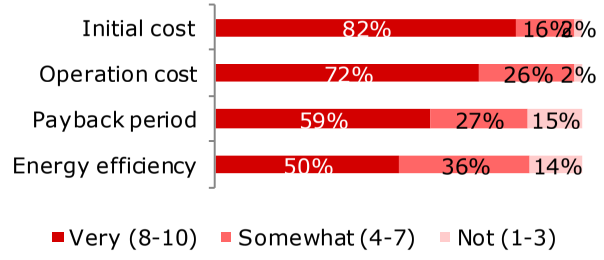


↑↓ indicate significant differences between health care facilities and non-health care facilities at 90% confidence. Note that some percentages may not add up to 100% due to rounding.
*Indicates baseline data.

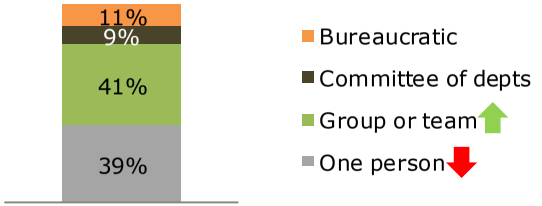
Payback Period



*Importance in Equipment Purchases



Decision-Making Process



Mean # involved in equip. decisions: 3.5

3.1.3 Warehouses

The warehouse sector includes facilities that primarily store goods, including warehouses, storage facilities, distribution facilities, and wholesalers. Warehouses are a moderate percentage of the overall population (7%).

Based on our previous database review, we found that warehouses comprised approximately 4% of the Commercial Solutions program participants, which represents a small portion of the warehouse population. Warehouses have the second-highest savings per project by sector, and account for 6% of reported program kW savings and 6% of reported kWh savings. Nearly all Commercial Solutions projects in the warehouse sector were lighting (94%), followed by "other" projects (6%).

- Most warehouses (91%) report having some type of linear fluorescent lighting, with 54% of warehouses still using T-12 fixtures. Thirty percent also report having lighting other than linear fluorescents, which is moderate compared to non-warehouses. Our technical review found that lighting accounts for more than two-thirds of warehouse energy usage (68%), indicating that warehouses provide a significant potential for savings in lighting programs, especially through the replacement of inefficient T-12 lighting.
  - Warehouses' usage of lighting controls is moderate compared to the other sectors (43% using any efficient lighting controls[7]), but warehouses have a low percentage of indoor occupancy sensors (8%) and a significantly lower percentage of day lighting sensors (2%) compared to other sectors. Warehouses also use lighting timers (26%) on a level similar to non-warehouses.
- HVAC is a lower priority for the warehouse sector than for other sectors. Warehouses have a mean of 47% air-conditioned space, which is the lowest of all studied sectors and is significantly lower than in the other sectors. This is, however, higher than our technical review, which found (nationwide) that only about 15% of the square footage at warehouses is air-conditioned. Warehouses are more likely to have newer HVAC equipment than other facility types, reporting that 47% of their HVAC equipment is less than four years old, a significantly higher percentage than non-warehouses. The penetration of programmable thermostats is moderate compared with non-warehouses (70%).
- Warehouses are also significantly more likely than non-warehouses to say that they have metal or metallic-surfaced roofing (62%). This is consistent with our technical review, which found that 72% of warehouses had metal roofing. Most of this roofing is not cool roofing; our phone survey found that only 16% of warehouses said they had bright white (cool) roofing, indicating that there are many opportunities in this sector to improve the efficiency of its metal roofing.
- Fewer warehouses reported purchasing energy efficient equipment in the last two years than non-warehouses (17%).

[7] Efficient lighting controls identified as occupancy or daylighting sensors, timers, and EMS controls.

- Forty percent of Warehouse participants reported that they did not have enough information on energy efficiency.

➢ Sixty-eight percent of warehouses said that only one person is responsible for decisions on capital investments, with the mean number of decision makers being 2.5, which is significantly lower than some of the other industries we investigated. This indicates that the program has to sway fewer people at a warehouse to move the business toward energy efficiency improvements.

Opportunities in Warehouses

➢ The program also has several opportunities to intervene and help improve warehouse equipment and knowledge: About one in four warehouses (26%) said that they did not know what information they would need before buying energy efficient equipment, indicating that warehouses may need to learn more about the energy efficient technologies that are available to make educated, informed decisions. Furthermore, because so few warehouses have upgraded their equipment in the last two years, they may have more upcoming opportunities as older equipment needs to be replaced, most likely in lighting where 21% intend to upgrade in the next two years.

- Warehouses gave a moderately high rating to the importance of energy efficiency in their most recent equipment purchase (mean of 7.2), and gave significantly higher ratings than non-warehouses to the importance of the payback period (7.8 mean rating, 70% rating “very important”) in their last purchase.

Warehouses

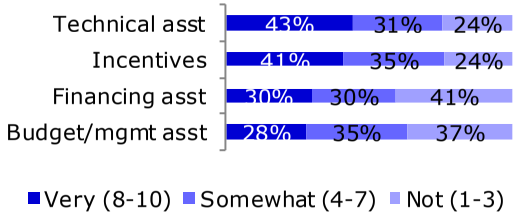
Company Size
66% Small
28% Medium
6% Large

13,371 Avg. Sq. Ft. | 94% <50 Employees
100% Pay Util. Bills | 51 Avg. Hours/Wk
59% Own Building | 47% Avg. Cond. Sq.
29 yr. Avg. Bldg Age | 16% >1 TX Facility

Needs in Marketplace

New EE equip in last 2 years	17% ↓
Received any incentives	0%
Buying EE equip in next 2 years	22%
% with T-12s installed	54%
% with indoor occupancy sensors	8%
% with cool roofing	16%

Interest in Program Offerings



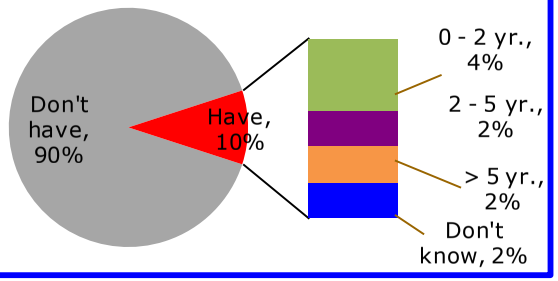
*Knowledge & Attitudes (Mean, 0-10)

Buys most EE equip possible	7.5
Knowledge of lighting savings	6.8
Knowledge of other savings	6.5
Top measure mentioned: Building envelope	
Knowledge of HVAC savings	6.0
Efficiency of facility	6.0

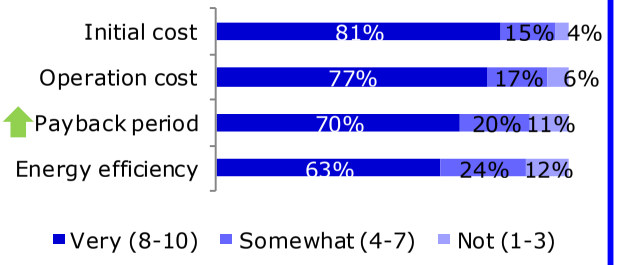
*Program Awareness

Any non-federal programs (unaided)	22%
Incentives (aided)	28%
Budget/mgmt assistance (aided)	13%
Technical assistance (aided)	20%
Financing assistance (aided)	13%
Federal programs	13%

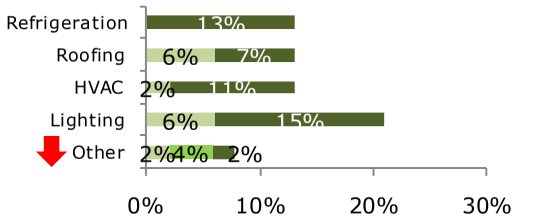
Payback Period

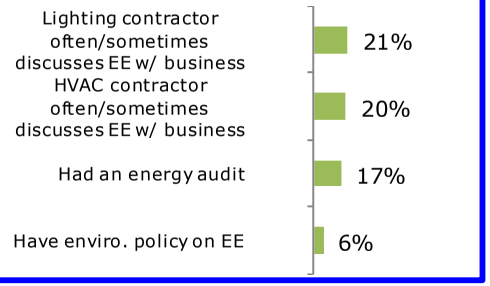


*Importance in Equipment Purchases

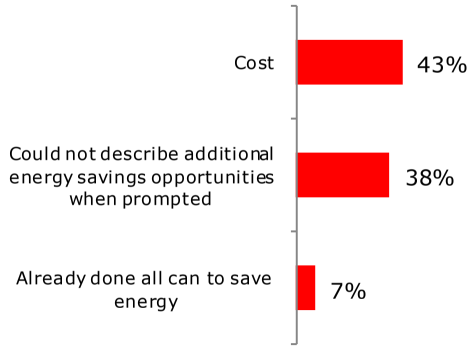


Opportunities

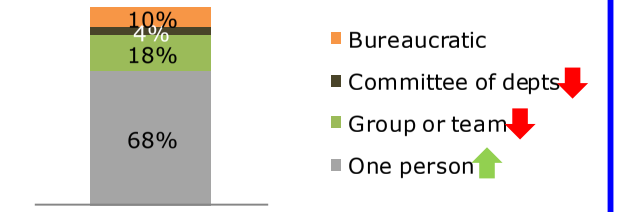




*Energy Efficiency Barriers



Decision-Making Process



Mean # involved in equip. decisions: 2.4 ↓

↑↓ indicate significant differences between warehouses and non-warehouses at 90% confidence.
Note that some percentages may not add up to 100% due to rounding.
*Indicates baseline data.

3.1.4 Manufacturers

Our study mostly focused on small manufacturers, who comprised about 80% of the manufacturers we contacted. Manufacturers are a moderate percentage of the overall facility population (6%).

Based on our previous database review, we found that manufacturers comprised approximately 13% of the Commercial Solutions program participants. Manufacturers have the highest savings per project by sector, and account for the largest portion of Commercial Solutions program savings: 23% of reported program kW savings and 29% of reported kWh savings. Most Commercial Solutions projects for the manufacturing sector are lighting projects (74%), followed by HVAC (17%), roofing (7%), and "other" projects (2%).

- Most warehouse lighting is some type of linear fluorescent: 84% report having linear fluorescents, fewer than in non-manufacturing facilities. Forty-three percent also report having lighting other than linear fluorescents.
- Our survey found that penetration of T-12s is high in manufacturing facilities (53%), though not significantly higher than in other facility types. Penetration of T-5s, however, is low (4%), and approximately one-third (31%) said that they do not know whether they have T-5s in their businesses at all.
    - Manufacturers' usage of lighting controls overall is significantly lower than non-manufacturers (33%), and manufacturers have a low percentage of indoor occupancy sensors (9%) and day lighting sensors (5%). Manufacturers also report a significantly lower presence of timers (9%) than non-manufacturers. Our trade ally interviews revealed that safety concerns may be an especially strong barrier to lighting controls in this sector, as discussed in the Lighting Controls section.
- HVAC is a lower priority for the manufacturing sector than for other sectors: Manufacturers have a mean of 60% air-conditioned space, which is significantly lower than non-manufacturers. Manufacturers are more likely to have newer HVAC equipment, reporting that 54% of their HVAC equipment is less than four years old – the highest of all six sectors and significantly higher than non-manufacturers. A significantly higher percentage of manufacturers (11%) than non-manufacturers said that they have no air conditioning at their facility.
    - Of the space that is air-conditioned, however, there is an opportunity to move manufacturers toward installing programmable thermostats. Penetration of programmable thermostats is significantly lower for manufacturers than for non-manufacturers (51%).

Opportunities in Manufacturing

- Manufacturers are also significantly more likely than other facility types to say they have metal roofing (70%). This is consistent with our technical review, which found that 80% of manufacturers have metal roofing. Manufacturers are significantly more likely than non-manufacturers to say that their roof was last upgraded more than 15 years ago (30%).
- Furthermore, as we found in our database review, manufacturing facilities produce the highest amount of Commercial Solutions program savings both in terms of overall savings and savings per project, potentially there are opportunities for a deep level of savings moving forward.

Barriers in Manufacturing

- The key barrier in the manufacturing sector is that energy efficiency is not a priority in their businesses. Manufacturers gave themselves the lowest mean rating (6.3) on buying the most efficient equipment possible, and also gave a significantly lower mean rating than other sectors to the importance of energy efficiency in their most recent equipment purchase (6.3).
    - The primary reasons manufacturers said they would not buy efficient equipment is because of concerns about its availability, performance, and effect on production (12%). Furthermore, 14% of manufacturers who said they were not interested in one or more Commercial Solutions program offerings said that their business is too small to change.
- The barriers that manufacturers cited (unavailability of equipment, their business being too small to change) indicates they may not be aware of specific savings opportunities for the equipment they have. Manufacturers appear to be the most knowledgeable about their equipment compared to the other sectors we studied, with few manufacturing respondents said that they did not know the attributes of their equipment types. Furthermore, significantly more manufacturers than non-manufacturers said that they have enough information on ways to save energy (67%); this is most likely due to the fact that their profession is “blue collar” compared to most of the other sectors we studied which are more “white collar”. Additionally, this sector appears to interact with market actors who are pushing energy efficiency more than some of the other sectors we studied. Manufacturers are more likely to identify ways to save energy, yet upfront cost is a large barrier for this segment, expressing the need for utility incentives.
- The strongest opportunities with manufacturers lie in the lighting sector. Manufacturing is the least likely to have outdoor sensors than any other sector (9%). Manufacturers have the highest penetration of T-12s (63%) and incandescent bulbs (38%).
    - A significantly higher percentage of manufacturing facilities (30%) reported that their roofing is old (last upgraded more than 15 years ago) and will likely need replacement soon.

Manufacturing

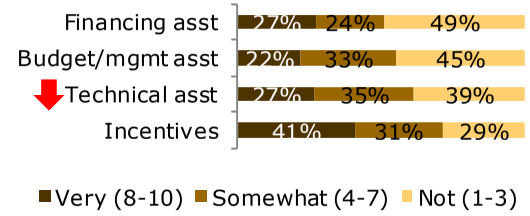
Company Size
80% Small
17% Medium
2% Large

10,850 Avg. Sq. Ft. | 87% <50 Employees
98% Pay Util. Bills | 49 Avg. Hours/Wk
71% Own Building | 60% Avg. Cond. Sq.
31 yr. Avg. Bldg Age | 0% >1 TX Facility

Needs in Marketplace

New EE equip in last 2 years	23%
Received any incentives	2%
Buying EE equip in next 2 years	25%
% with T-12s installed	53%
% w/programmable thermostats	51% ↓
% with roofing 15+ years old	30% ↑

Interest in Program Offerings



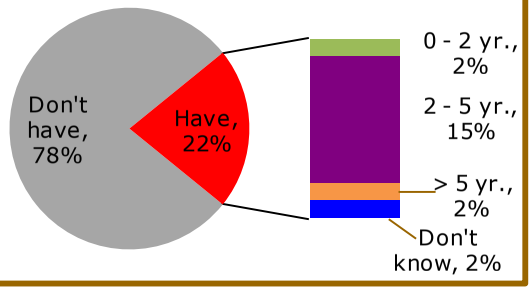
*Knowledge & Attitudes (Mean, 0-10)

Knowledge of other savings	6.4
Top measure mentioned: renewables	
Knowledge of lighting savings	6.3
Buys most EE equip possible	6.3 ↓
Efficiency of facility	5.9
Knowledge of HVAC savings	5.4

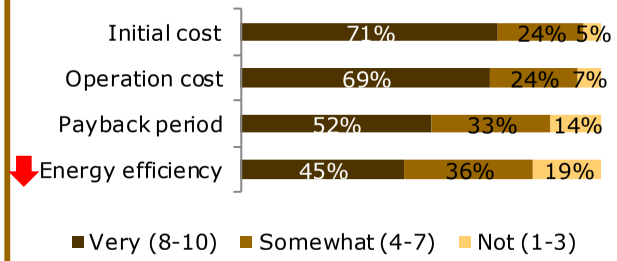
*Program Awareness

Any non-federal programs (unaided)	16%
Technical assistance (aided)	18%
Financing assistance (aided)	18% ↑
Incentives (aided)	18%
Budget/mgmt assistance (aided)	12%
Federal programs	18%

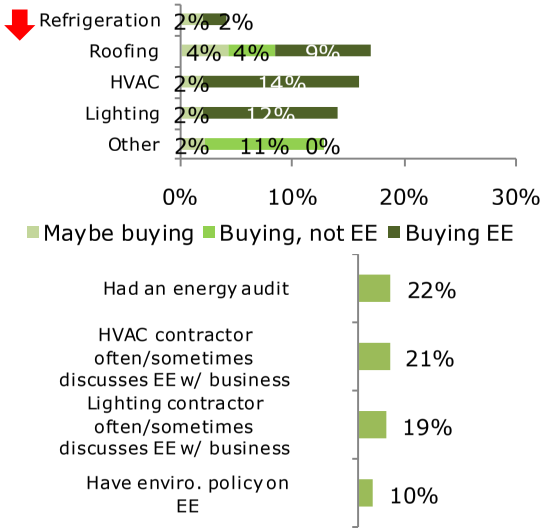
Payback Period



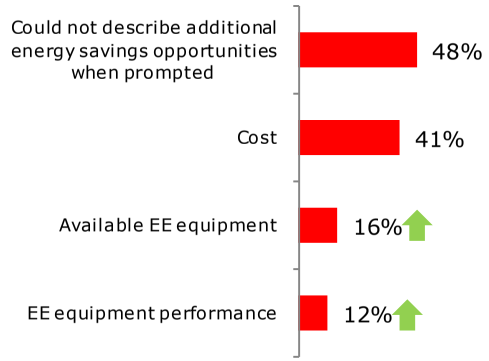
*Importance in Equipment Purchases



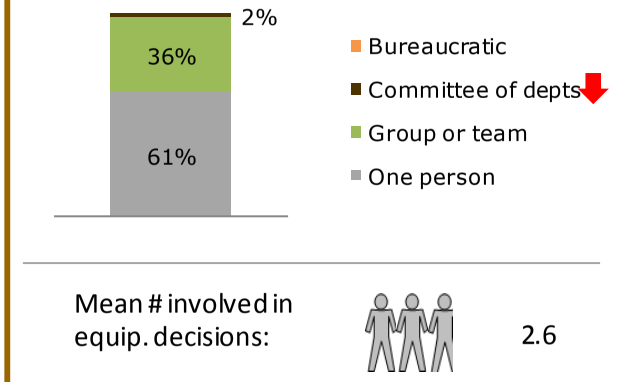
Opportunities



*Energy Efficiency Barriers



Decision-Making Process



Mean # involved in equip. decisions: 2.6

↑↓ indicate significant differences between manufacturers and non-manufacturers at 90% confidence. Note that some percentages may not add up to 100% due to rounding.
*Indicates baseline data.

3.1.5 Small Retailers

Small retailers include businesses involved in the sales of goods to the general public. Our sampling specifically targeted retailers we classified as "small," defined as a retailer with revenues of less than $5 million per year (based on public records). Of the respondents we interviewed, 81% classified themselves as small and only one respondent classified itself as large. We found that retailers comprise about 17% of the total commercial population. Our count of the overall retail population does not calculate the percentage of small retailers alone.

Based on our previous database review, we found that retailers comprise approximately 4% of the Commercial Solutions program participants and account for a high percentage of program savings, 22% of reported program kW savings and 19% of reported kWh savings. Most Commercial Solutions projects for the retail sector are lighting projects (58%), followed by HVAC (29%), roofing (8%), and "other" projects (5%).

Opportunities

- The opportunities for lighting energy savings in the small retail sector are mostly in upgrading linear fluorescent lighting, which has a 50% penetration rate of T-12s among small retailers. Penetration of lighting other than linear fluorescent (21%) and outdoor lighting (36%) is significantly lower in small retailers than non-retailers. Our technical review found that lighting accounts for 34% of retailer energy use, indicating that small retailers provide a significant potential for savings in lighting programs, especially through replacing inefficient T-12 lighting.
  - Small retailers are among the most knowledgeable of all sectors about their lighting, with only 13% unable to name any lighting type, and only 19% (significantly lower than non-retailers) unsure whether they had T-12s at their facility.
  - Small retailers' usage of lighting controls is moderate (40%) compared to the other sectors, but small retailers still have a low percentage of indoor occupancy sensors (6%) and day lighting sensors[8] (6%). Small retailers report a similar percentage of lighting timers (25%) to non-retailers.
- Small retailers report a mean of 70% air-conditioned space, and our technical review found (nationwide) that air conditioning only accounted for about 18% of small retailers' energy usage.
  - Small retailers, however, reported having the oldest HVAC systems: 20% of small retailers, significantly more than non-retailers, reported that their HVAC system is more than 12 years old.
  - Penetration of programmable thermostats is also significantly lower for small retailers than for non-retailers (55%).

[8] Many retailers may not be likely to use occupancy sensors; however, daylighting may be an opportunity.

- The opportunities in the roofing sector are lower for the small retail sector than other sectors. Twenty-two percent of small retailers said that their roof is bright white, and half (50%) said that they had upgraded their roof in the last five years.

Barriers in Small Retail

- A key barrier in the small retail sector is that many may not be able to implement major equipment changes. Seventeen percent of small retailers, a significantly larger percentage than non-retailers, said they rent their facility and cannot make changes to their equipment. Furthermore, more than one in five (21%) small retailers who were not interested in the program offerings said that they did not have the authority to decide whether to participate.
  - Small retailers may be unlikely to have already investigated energy efficiency. Only 7% of small retailers, significantly fewer than non-retailers, said they had ever gotten an energy audit at their facility. Small retailers also reported fewer instances of their lighting contractors (4%) or HVAC contractors (9%) talking to them about energy efficiency.
- Small retailers were significantly more likely than the remaining sectors to give the highest rating (10 out of 10) to the importance of energy efficiency in their last equipment purchase (34%). Additionally, while small retailers may not be aware of energy efficiency opportunities, they are not against being energy efficient. More small retailers than non-retailers said that there were no barriers to being energy efficient (22%).
  - Furthermore, small retailers are already among the more knowledgeable sectors about the equipment at their facility, with few respondents unable to answer questions about the equipment types that they had in use.

Small Retail

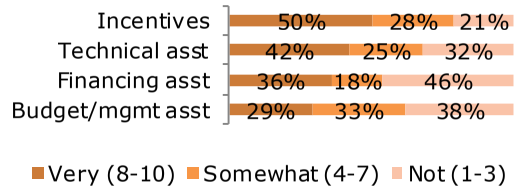
Company Size
81% Small ↑
17% Med.
1% Large

4,461 Avg. Sq. Ft. | ↑97% <50 Employees
97% Pay Util. Bills | 51 Avg. Hours/Wk
58% Own Building | ↓70% Avg. Cond. Sq.
37 yr. Avg. Bldg Age | 6% > 1 TX facility

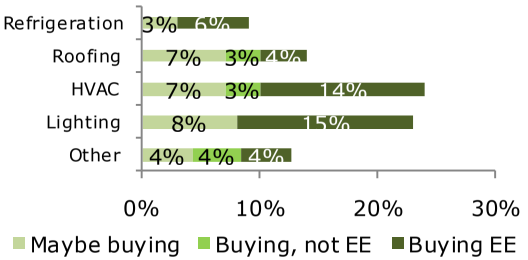
Needs in Marketplace

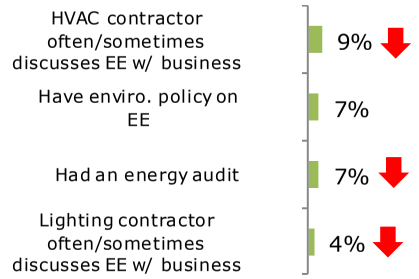
New EE equip in last 2 years	21%
Received any incentives	0%
Buying EE equip in next 2 years	31%
% with T-12s installed	50%
% w/programmable thermostats	55% ↓
% AC systems 12+ years old	20% ↑

Interest in Program Offerings



Opportunities





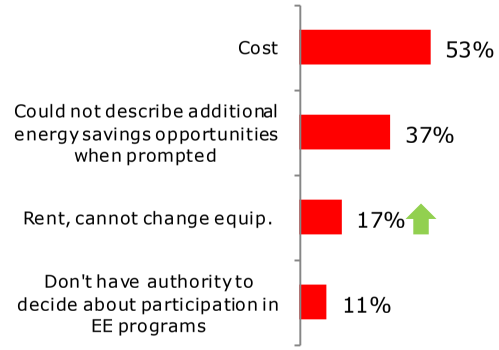
*Knowledge & Attitudes (Mean, 0-10)

Buys most EE equip possible	7.3
Knowledge of lighting savings	6.3
Knowledge of other savings	5.8
Top measure mentioned: renewables ↑	
Efficiency of facility	5.8
Knowledge of HVAC savings	5.4

*Program Awareness

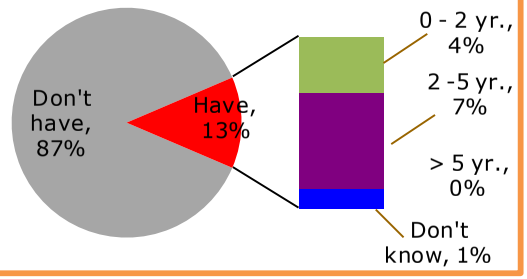
Any non-federal programs (unaided)	15%
Incentives (aided)	14% ↓
Technical assistance (aided)	10%
Budget/mgmt assistance (aided)	4% ↓
Financing assistance (aided)	0%
Federal programs	12%

*Energy Efficiency Barriers

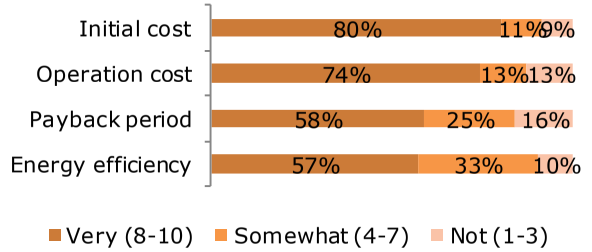


↑↓ indicate significant differences between small retailers and non-retailers at 90% confidence. Note that some percentages may not add up to 100% due to rounding.
*Indicates baseline data.

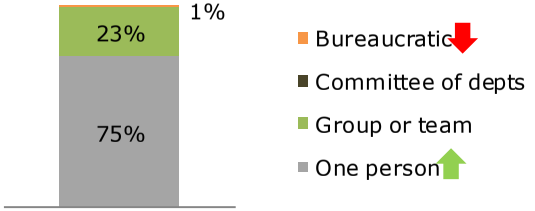
Payback Period



*Importance in Equipment Purchases



Decision-Making Process



Mean # involved in equip. decisions: 1.4 ↓

3.1.6 Churches and Religious Organizations

The church and religious organization sector includes any building primarily used by a religious group, excluding any religiously affiliated schools or colleges. Religious organizations comprise about 3% of the total commercial population in the six utilities' territories.

Based on our previous database review, we found that religious organizations comprised approximately 11% of the Commercial Solutions program participants. This represents a larger portion of the religious organization population than other sectors, but a relatively smaller percentage of Commercial Solutions program savings, 6% kW savings and 5% kWh savings. Most Commercial Solutions projects for the religious organization sector are lighting projects (59%), followed by HVAC (34%) and roofing (6%).

Opportunities in Religious Organizations

- Religious organizations present an opportunity for savings through lighting upgrades: Religious organizations have by far the largest reported use of non-fluorescent lighting in their facilities (74%), and also have significantly higher penetration of incandescent lighting (60%) than non-religious organizations. However, churches also have the highest penetration of CFLs (44%), indicating that many churches likely have both incandescent and CFL lighting installed.
  - Religious organizations have a high level of inefficient lighting. More than six in ten religious organizations have incandescent lighting (60%), and half (50%) have T-12 lighting. These organizations especially need assistance in identifying opportunities to upgrade their linear fluorescent lighting – significantly more religious organizations than non-religious organizations said that did not know the type of any of the linear fluorescent lighting at their facility (29%), so there potentially could be a larger amount of T-12s.
  - Most religious organizations said that they had outdoor lighting at their facility (89%), which is significantly higher than non-religious organizations. Despite the high penetration of outdoor lighting, religious organizations had low levels of knowledge about their outdoor lighting compared to other sectors. Significantly more religious organizations than non-religious organizations said they were unable to identify their specific outdoor lighting equipment (10%), indicating that more outreach may be useful to this sector in identifying outdoor lighting savings opportunities.
  - Religious organizations report significantly higher usage of efficient lighting controls than non-religious organizations overall (77%), but their usage of indoor occupancy sensors is significantly lower than non-religious organizations (1%). Religious organizations are significantly more likely than non-religious organizations, however, to use outdoor motion sensors (39%) and indoor or outdoor lighting timers (47%).
- HVAC presents large opportunities for savings in the religious organization sector. Our survey found that 96% of the square footage in religious organizations is air

conditioned, significantly higher than non-religious organizations. Furthermore, our technical review found that cooling accounts for 33% of religious organizations' energy usage, compared with only 18% of energy used for lighting[9]. This is the only sector included in this study where cooling accounts for more energy use than lighting. Nearly half of religious organizations report having a residential-style split AC system (47%),

- However, knowledge about their equipment is also an issue in the religious organization sector for HVAC equipment: significantly more religious organizations than non-religious organizations said that they did not know their system type (16%).
- Penetration of programmable thermostats is significantly higher for religious organizations than for non-religious organizations (85%).

- Religious organizations are also significantly more likely than non-religious organizations to say that they have built-up roofing (BUR (43%) and wood shingle or shake roofing (13%). Our technical review[10] found a similar percentage of wood shingle or shake roofing nationwide (14%), but a much higher percentage of metal roofing (77%) than we found in our phone study (37%).
  - The religious organizations included in our study have some potential for roofing upgrades, as significantly more religious organizations than non-religious organizations said that they had brown or wood-colored roofs (35%), and few religious organizations said that they had bright white roofing (4%). Non-white, cool roofing products do exist, and churches with concerns about their roof's appearance can still be encouraged to install more energy efficient roofing options.
- Though religious organizations indicated lower levels of knowledge about their lighting and HVAC in the equipment sections, their interest in energy efficiency was higher than that of the other five sectors studied, indicating that the program has the potential to serve this sector very well.
  - Religious organizations indicate that they value energy efficiency in their equipment purchases. Forty-one percent said that they had purchased energy efficient equipment in the last two years, and religious organizations gave significantly higher mean ratings than non-religious organizations to selecting the most efficient equipment possible (8.0) and the importance of energy efficiency in their most recent equipment purchase (8.1).
  - The vast majority of religious organizations (89%) said that they own their facility, significantly higher than non-religious organizations, and only 3% of religious organizations said that they were renters who could not change their equipment (3%).

[9] Technical review of CBECS database, 2003.

[10] The technical review of CBECS data looked at three states, not just Texas, and had a very small religious sample from data collected in 2003.

Barriers in Religious Organizations

- One of the main barriers to energy efficiency is that religious organizations have a more complex decision-making process than the other five sectors studied. Few religious organizations said they only had one decision-maker on equipment purchases (9%), and they had the highest mean number of people (10.5) involved in making equipment decisions. However, because religious organizations rate their interest in energy efficiency so highly, tend to own their facilities, and have already taken energy efficiency actions, these barriers may be easier to overcome for this sector.

Churches

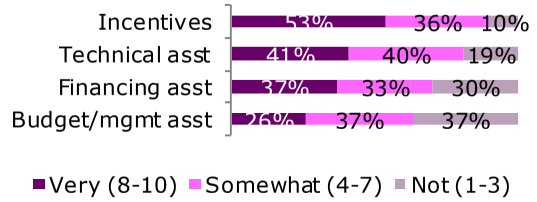
Company Size
51% Small
40% Medium
9% Large

14,061 Avg. Sq. Ft.
100% $ Util. Bills
89% Own Bldg
41 yr. Avg. Bldg Age
99% <50 Employees
45 Avg. Hours/Wk
96% Avg. Cond. Sq.
16% >1 TX Facility

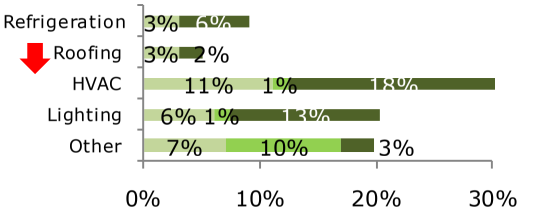
Needs in Marketplace

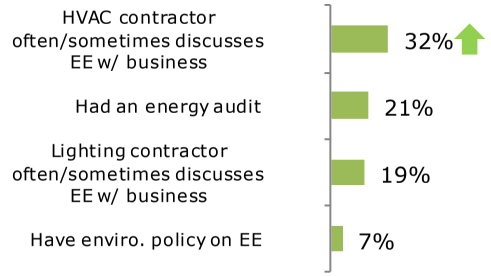
New EE equip in last 2 years	41%
Received any incentives	0%
Buying EE equip in next 2 years	30%
% with incandescents/T-12s	60%/51%
% of HVAC 7+ years old	33%
% with refrigeration	30%

Interest in Program Offerings



Opportunities





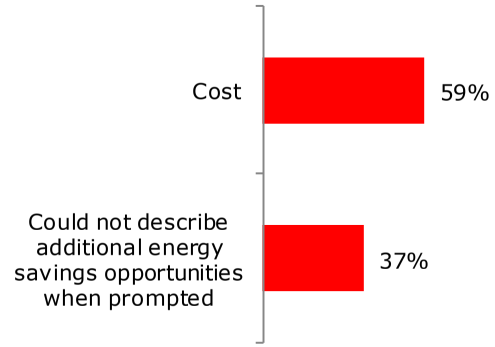
*Knowledge & Attitudes (Mean, 0-10)

Buys most EE equip possible	8.0
Knowledge of lighting savings	6.3
Knowledge of other savings	5.9
Top measure mentioned: Building envelope	
Efficiency of facility	5.9
Knowledge of HVAC savings	5.3

*Program Awareness

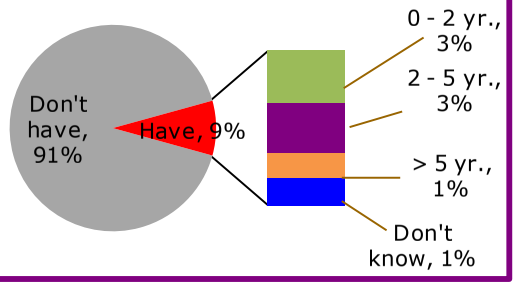
Any non-federal programs (unaided)	11%
Incentives (aided)	17%
Technical assistance (aided)	10%
Budget/mgmt assistance (aided)	9%
Financing assistance (aided)	7%
Federal programs	14%

*Energy Efficiency Barriers

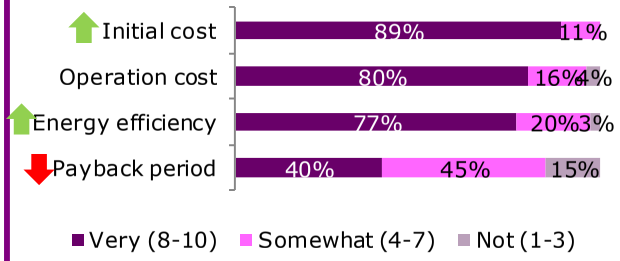


indicate significant differences between religious organizations and non-religious organizations at 90% confidence. Note that some percentages may not add up to 100% due to rounding.
*Indicates baseline data.

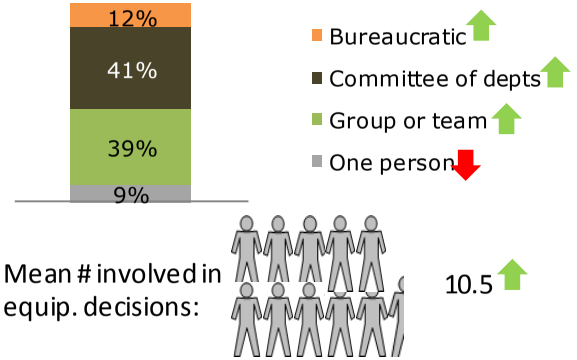
Payback Period



*Importance in Equipment Purchases



Decision-Making Process



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3.2 Findings by Equipment Type

In this section, we present our findings from the equipment module of our phone baseline study. We present our findings by sector, comparing each sector both to all other sectors combined and to all other sectors individually. We also supplement these with findings from our trade ally interviews, which offer high-level insights on the types of equipment in use in the marketplace.

3.2.1 Lighting

Our phone survey found that T-12s still have the highest overall level of penetration in the sectors studied, with 49% of all interviewed businesses reporting that they have T-12s installed. We present our lighting findings overall and by sector in Table 2 through Table 4, which provide the following information:

- **Penetration of lighting types**: The percentage of respondents who reported having each lighting type for linear fluorescent lights, indoor lighting other than linear fluorescent, and outdoor lights. Because respondents may have multiple types of lights, these percentages may add up to more than 100%. For context, we also report the percentage of respondents who said they did not know what types of lighting they had.

Interior Lighting Technology

While trade allies indicated that T-12 lighting is no longer installed in new fixtures or in retrofits or replacement of existing fixtures, trade allies do find a significant amount of T-12 lighting still in use in the existing facilities they serve. Trade allies report that they find T-12s in "most," "almost all," or "all" buildings more than ten years old, or they find it in 70% of offices and 80-90% of the other facilities they serve. This existing T-12 lighting is estimated to be at least ten years old, and is found mainly in manufacturing, and warehouse spaces. Our phone survey also found that T-12 penetration was higher than any other lighting type, with 49% of businesses reporting that they have T-12s in use (note that an additional 23% of respondents said they did not know if they had T-12s or not).

All trade allies said that their standard replacement for T-12 lighting was T-8 lighting with electronic ballasts. Trade allies reported installing T-8 fixtures with 32-watt lamps over 80% of the time. They use 28-watt lamps just 17% of the time, and 25-watt lamps only 1% of the time. One contractor mentioned that the 25-watt lamps are more expensive, and have lower returns on investment over time due to the higher costs of regular lamp replacement. This information demonstrates the need for training, education and help specifying lighting equipment.

Some trade allies also report seeing significant amounts of incandescent lighting in the facilities they retrofit. Two say they see incandescent lighting in many churches, where light quality and the ability to dim the lights are important. Incandescent lighting in churches can be harder to replace, but one lighting trade ally reports using LED fixtures as a replacement. Incandescent lighting is also reportedly found in 75 to 80% of task lights that use screw-in bulbs, and at least half the can or spot lighting used in retail facilities use incandescent or

halogen lighting. Screw-in fixtures and can lights are routinely replaced with twist CFLs or specialty CFL flood lights.

Table 2 shows the reported penetration of indoor lighting types from our customer phone survey. In these tables, we highlight percentages per sector that are significantly higher than all other sectors (e.g., churches compared to non-churches) in green, and those that are significantly lower than all other sectors in red. We also indicate differences between individual sectors (e.g., retailers compared with offices, retailers compared with health care facilities) with letters indicating that the percentage in one sector is significantly higher at the 90% confidence level than that of the sector(s). The letter next to the percentage identifies each sector and also appears at the top of each column (a-f).

Table 2. Penetration of Indoor Lighting Types by Sector

Lighting Type	Offices (n=72) (a)	Health Care (n=47) (b)	Ware-house (n=54) (c)	Manuf (n=49) (d)	Sm. Retail (n=72) (e)	Church (n=70) (f)	All 6 Sectors (not weighted) (n=364)
Indoor Linear Fluorescents	89%	98% ad	91%	84%	94%d	93%	91%
T-12	42%	47%	54%	53%	50%	51%	49%
T-8	22%	38%ade	30%	18%	33%d	21%	27%
T-5	6%	6%	11%	4%	8%	10%	8%
Don't know any linear fluorescent types	15%	19%	15%	10%	13%	29%acde	17%
Non-Linear Fluorescent Indoor Lighting	28%	38% e	30%	43% ae	21%	74%abcde	39%
CFL	10%	19%c	7%	22%ac	13%	44%abcde	20%
Incandescent	19%	26%e	20%	16%	11%	60%abcde	20%
Halogen	7%	9%	4%	14%c	10%c	23%abce	11%
LED	1%	11%ace	2%	4%	3%	14%acde	6%
Other indoor lighting	4%	4%	0%	4%	4%	7%	4%
Don't know any non-linear fluorescent types	0%	0%	0%	0%	0%	1%	<1%
Don't know any facility lighting types	3%	0%	2%	8%	1%	3%	3%

Colored boxes indicate significant differences between the sector and all remaining sectors collectively at 90% confidence. Letters indicate significant differences between individual sectors at 90% confidence.
Base: All respondents.

Barriers and Energy Efficiency Standards

Opinion Dynamics interviewed 11 trade allies who conduct work in lighting in the six utility territories. Our trade ally interviews found that the main barrier to participation in utility programs was a lack of money to install the energy efficient products that meet program requirements. This finding is consistent with our phone survey, which found that 51% of all businesses said cost would prevent them from buying energy efficient equipment of any type.

Some trade allies also discussed a concern for the quality of energy efficient lighting as a reason it is not always installed. Two said that some clients did not believe that energy efficient lighting would provide the right ambiance in their facility.

Exterior Lighting Technology

In our interviews, only five of the lighting trade allies reported installing lights in exterior areas, like parking lots or parking garages. Of the five that replace exterior lighting, the fixtures being replaced vary from mercury or high pressure sodium lighting, to metal halide, to T12 fixtures. LED technology for exterior lighting applications is starting to be installed in Texas, with one trade ally reporting that they always install LED lighting in exterior spaces, and another saying they install LEDs 15% of the time. Most of the trade allies replace existing lighting with T5 lighting or metal halide fixtures. This represents an opportunity to educate lighting contractors about the benefits of LED lighting in exterior applications.

Our phone study found that more than half (56%) of all businesses have exterior lighting, and that halogen and mercury vapor are the two most common types reported.

Table 3 shows the reported penetration of outdoor lighting types from our customer phone survey. In these tables, we highlight percentages per sector that are significantly higher than all other sectors (e.g., retailers compared to non-retailers) in green, and those that are significantly lower than all other sectors in red. We also indicate differences between individual sectors (e.g., retailers compared with offices, retailers compared with health care facilities) with letters indicating that the percentage in one sector is significantly higher at the 90% confidence level than that of the sector(s). The letter next to the percentage identifies each sector and also appears at the top of each column (a-f).

Table 3. Penetration of Outdoor Lighting Types by Sector

Lighting Type	Offices (n=72) (a)	Health Care (n=47) (b)	Ware-house (n=54) (c)	Manuf (n=49) (d)	Sm. Retail (n=72) (e)	Church (n=70) (f)	All 6 Sectors (not weighted) (n=364)
Outdoor lighting	50% $_{e}$	60% $_{e}$	52% $_{e}$	47%	36%	89%$_{abcde}$	56%
Halogen	7%	15%	9%	16%	15%	34% $_{abcde}$	16%
Metal halide	4%	13%$_{ae}$	13%$_{ae}$	4%	4%	10%	8%
Mercury vapor	6%	9%	11%	16%$_{a}$	15%$_{a}$	33%$_{abcde}$	15%
High-pressure sodium	6%	15%$_{ade}$	7%	2%	3%	14%$_{ade}$	8%
Low-pressure sodium	1%	4%	0%	2%	1%	3%	2%
LED	6%	11%$_{cd}$	2%	2%	8%	7%	6%
Other outdoor lighting	19%	13%	11%	16%	32%$_{abcdf}$	14%	18%
Don't know outdoor lighting types	4%	9%	2%	0%	0%	10%	4%

Colored boxes indicate significant differences between the sector and all remaining sectors collectively at 90% confidence. Letters indicate significant differences between individual sectors at 90% confidence.
Base: All respondents.

LED Lighting Technology

In our interviews, we asked trade allies where they are installing any types of LED lighting. These interviews revealed that trade allies are not necessarily ready to adopt LED lighting in the commercial sector. Two of eleven trade allies report never installing LEDs at all, and three trade allies mentioned concerns about LED lighting, including whether LEDs will last as long as promised, what options exist for replacement when they eventually do wear out, (i.e., replacing bulbs versus replacing entire fixtures), and the belief that they create glare. One trade ally gave a positive assessment of LEDs, saying that LEDs produce crisper, more natural light than many other lighting technologies, and appreciates their ability to be dimmed.

Our phone survey found that LED penetration was low across all sectors, with only 10% of customers reporting having either interior or exterior LED lighting. To increase penetration of LEDs, therefore, the program may need to target trade allies first to educate them and address their concerns, so that trade allies can become stronger promoters of LEDs in the marketplace as this technology matures

Table 4 shows the reported penetration of LED lighting overall from our customer phone survey. In these tables, we highlight percentages per sector that are significantly higher than all other sectors (e.g., retailers compared to non-retailers) in green, and those that are significantly lower than all other sectors in pink. We also indicate differences between individual sectors (e.g., retailers compared with offices, retailers compared with health care facilities) with letters indicating that the percentage in one sector is significantly higher at the 90% confidence level than that of the sector(s). The letter next to the percentage identifies each sector and also appears at the top of each column (a-f).

Table 4. Overall LED Penetration by Sector

Lighting Type	Offices (n=72) (a)	Health Care (n=47) (b)	Ware-house (n=52) (c)	Manuf (n=49) (d)	Sm. Retail (n=72) (e)	Church (n=70) (f)	All 6 Sectors (not weighted) (n=364)
% with any LEDs installed	7%	15%$_{c}$	4%	6%	10%	20%$_{acde}$	10%
Indoor LEDs	1%	11%$_{ace}$	2%	4%	3%	14%$_{acde}$	6%
Outdoor LEDs	6%	11%$_{cd}$	2%	2%	8%	7%	6%

Colored boxes indicate significant differences between the sector and all remaining sectors collectively at 90% confidence. Letters indicate significant differences between individual sectors at 90% confidence.
Base: All respondents.

Lighting Controls

We present our lighting controls findings overall and by sector in Table 5, which provide the following information:

- **Penetration of lighting controls**: The percentage of respondents who reported having each of five types of lighting controls: indoor occupancy sensors or day lighting controls (out of those who have indoor lighting), outdoor motion sensors or photocells (out of those who have outdoor lighting), and those who have lighting timers (out of those who have indoor or outdoor lighting).

Our phone study found that nearly half (46%) of businesses overall had at least one type of lighting control. These controls were primarily outdoor lighting controls and timers, with 39% of businesses with outdoor lighting saying that they have outdoor motion sensors. Only 7% of interviewed businesses overall said that they have indoor occupancy sensors. In Texas, occupancy sensors do not have kW demand reduction associated with them.

Our trade ally interviews explored the use of lighting controls and found their use varied by sector, particularly for indoor occupancy sensors. The trade allies we interviewed reported installing occupancy sensors most often in warehouses, with occupancy sensors installed in 80 to 100% of the warehouses they serve. Occupancy sensors are least frequently installed in manufacturing spaces, where they are only used in places where they will not create a safety hazard, i.e., storage areas, offices with occasional use, restrooms, and in some aisles and hallways.

According to these trade allies, they install occupancy sensors in offices about 40% of the time. Two trade allies do not install any occupancy sensors in offices since they do not think typical office use is sporadic enough to make the sensors cost effective. Two say they almost always install occupancy sensors as part of their standard energy efficient upgrades. The remaining contractors say they only install them in spaces where they make sense, such as offices used intermittently, restrooms, break rooms and some stairwells. Occupancy sensors are reportedly never used in retail facilities, though our survey found that a few small retailers (6%) do use occupancy sensors.

The trade allies also do not install daylighting controls very often. Five of the lighting contractors we interviewed never install daylighting, and do not think it is cost effective. The others install it only occasionally in office, warehouse, manufacturing, and retail applications. One trade ally has installed some light tubes along with daylighting sensors in warehouses. Another trade ally says many of his manufacturing clients could not use daylighting at all because they must control the climate of their facilities.

Of the five trade allies who install exterior lighting, all use controls on the lighting they install. This is consistent with our phone survey, which found that outdoor lighting controls were more common than indoor lighting controls. Three trade allies exclusively use photosensors to control exterior lighting, and the other two install both photocells and some timers.

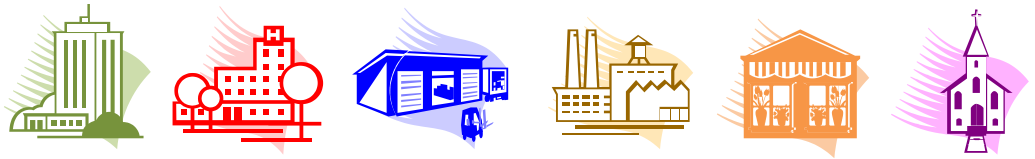
Because of the variation between sectors in their lighting needs and preferences seen in both our trade ally interviews and phone survey, the program may need to pay special attention to customizing lighting control recommendations based on business type.

Table 5 shows the reported penetration of lighting controls from our customer phone survey. In these tables, we highlight percentages per sector that are significantly higher than all other sectors (e.g., retailers compared to non-retailers) in green, and those that are significantly lower than all other sectors in pink. We also indicate differences between individual sectors (e.g., retailers compared with offices, retailers compared with health care facilities) with letters indicating that the percentage in one sector is significantly higher at the 90% confidence level than that of the sector(s). The letter next to the percentage identifies each sector and also appears at the top of each column (a-f).

Barriers to Lighting Controls

One trade ally said that some clients do not want to use occupancy sensors in their facilities, even in applications where they would be effective. Another, These clients are skeptical of occupancy sensor technology in general, thinking the sensors would turn lights off if people sit still for too long, believing their lights are already properly controlled using standard switches, and seeing no reason to spend extra money on lighting equipment. Another trade ally mentioned distrust in the quality of energy efficient products in general, mentioning that he regularly sees batches of ballasts and fixtures with high malfunction rates.

Table 5. Penetration of Lighting Controls by Sector



Lighting Type	Offices (n=72) (a)	Health Care (n=47) (b)	Ware-house (n=52) (c)	Manuf (n=49) (d)	Sm. Retail (n=72) (e)	Church (n=70) (f)	All 6 Sectors (not weighted) (n=364)
Indoor Occupancy Sensors	13% f	6%	8%	9% f	6%	1%	7%
Less than 25% of lights*	56%	67%	25%	25%	25%	100%	44%
25-49%	22%	0%	25%	25%	0%	0%	16%
50-74%	11%	33%	25%	25%	25%	0%	20%
75-99%	0%	0%	25%	0%	0%	0%	4%
100%	11%	0%	0%	25%	50%	0%	16%
Indoor Daylighting Sensors	1%	6%	2%	5%	6%	12% ac	5%
Outdoor Motion Sensors	19%	21%	14%	9%	23%	39% abcd	24%
Less than 25% of lights*	57%	83%	0%	50%	67%	67%	61%
25-49%	14%	0%	25%	0%	17%	25%	18%
50-74%	0%	0%	50%	0%	17%	0%	6%
75-99%	0%	0%	25%	0%	0%	0%	2%
100%	14%	0%	0%	50%	0%	8%	8%
Don't know	14%	17%	0%	0%	0%	0%	4%
Outdoor Photocells	11%	29% a	43% a	35% a	35% a	37% a	32%
Indoor or Outdoor Lighting Timers	22% d	26% d	26% d	9%	25% d	47% abcde	26%

Colored boxes indicate significant differences between the sector and all remaining sectors collectively at 90% confidence. Letters indicate significant differences between individual sectors at 90% confidence.
Note: The outdoor lighting controls penetration rate is based only on those who report having outdoor lighting at their facility. The indoor lighting penetration rate is based only on those who report having indoor lighting at their facility.
*Base: Those with lighting control type above.

3.2.2 HVAC

We interviewed three trade allies who provide HVAC services. These three trade allies varied in the types of services that they provided to their clients.

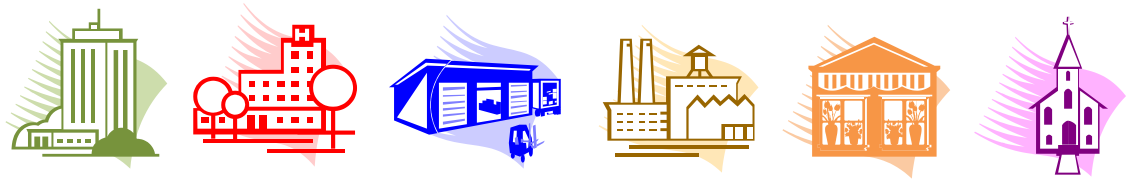
Regarding HVAC controls, all three trade allies report that they frequently install controls (programmable thermostats or EMS) with HVAC upgrades, and they are pushing businesses towards the use of EMS (reportedly up to 60% to 75% of upgrades they conduct). Our phone survey found that most facilities that control their equipment have programmable thermostats (69%), but very few have EMS (2%).

As to other types of HVAC equipment, most packaged and split systems are set up to use economizer cooling, but this is not effective in many climate regions of Texas. It is often too humid, or temperatures never get cool enough to be effective. The three contractors interviewed usually deactivate the economizer, or change the factory settings to adjust it to the climate. Utilities should evaluate the climate in their region and provide specific recommendations for economizer use to their clients. Instead of deactivating the economizer completely, properly setting it up can allow some energy saving during cooler portions of the year.

Our trade ally interviews also explored the use customers variable frequency drives/variable speed drives (VFDs/VSDs), although we did not ask customers about VFDs/VSDs. Variable speed or variable frequency drives are also not extremely common in the facilities these contractors visit in Texas. One trade ally we interviewed says VFD/VSDs are always installed on new construction projects, but have only been added on four of thirty retrofit projects recently completed in Texas. Another trade ally includes the cost of VFD/VSD upgrades on all his project bids, but these upgrades are not always undertaken due to a lack of up-front funding. The third trade ally has only seen VSDs used in one Texas school. It is important to note that in Texas the focus is on kW rather than kWh savings which prevents utilities from focusing on these measures.

Table 6 shows the penetration of HVAC types and ages by sector. In this table, we highlight percentages per sector that are significantly higher than all other sectors (e.g. health care compared non-healthcare) in green, and those that are significantly lower than all other sectors in red. We also indicate differences between individual sectors (e.g., retailers compared with offices, retailers compared with health care facilities) with letters indicating that the percentage in one sector is significantly higher at the 90% confidence level than that of the sector(s). The letter next to the percentage identifies each sector and also appears at the top of each column (a-f).

Table 6. Reported Penetration of HVAC Systems by Sector

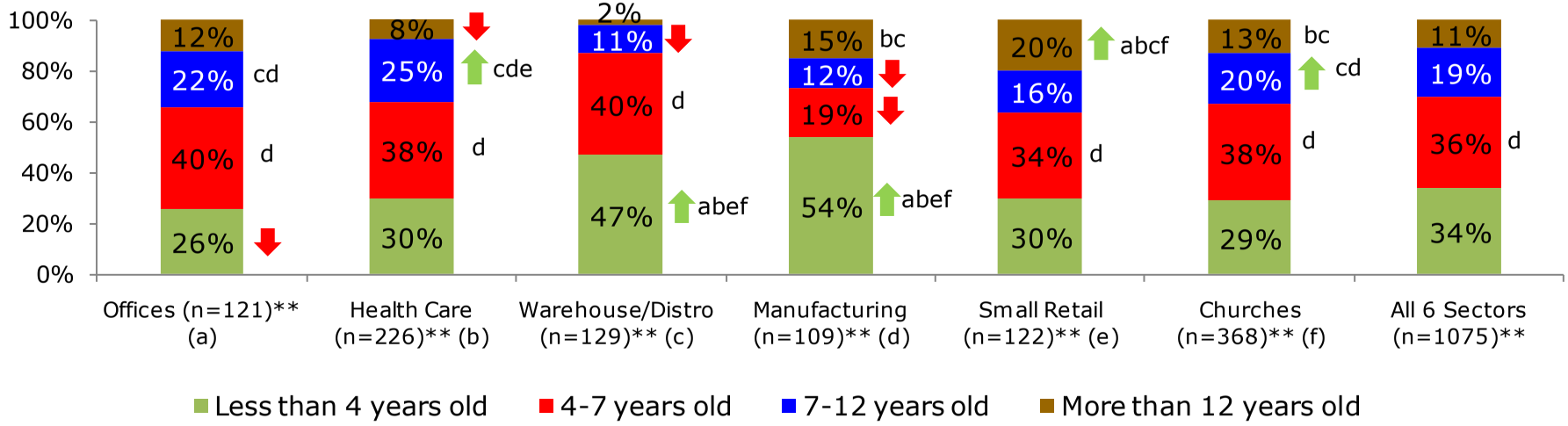


HVAC Type*	Offices (n=61) (a)	Health Care (n=40) (b)	Ware-house (n=50) (c)	Manuf (n=47) (d)	Sm. Retail (n=60) (e)	Church (n=68) (f)	All 6 Sectors (not weighted) (n=326)
Programmable Thermostat	67%	83% de	70%	51%	55%	85% acde	69%
Energy Management System	3%	8%	4%	2%	2%	0%	2%
HVAC Type (multiple response)							
Split systems	25%	42% ac	26%	40% a	35%	47% ac	36%
Rooftop AC units or packaged units	43% df	45% df	38% df	11%	33% df	19%	31%
Room air conditioners	7%	8%	12%	15% e	5%	16% ae	10%
Heat pumps	7%	10%	8%	2%	3%	4%	6%
Evaporative Coolers	3%	0%	10% f	6%	3%	1%	4%
Chillers	0%	10%	0%	4%	0%	3%	2%
Other	20% b	8%	10%	21% b	18% b	21% b	17%
None	0%	0%	0%	11%	7%	0%	3%
Don't know system type	3%	8%	10% e	4%	2%	16% ade	7%

Colored boxes and arrows indicate significant differences between the sector and all remaining sectors collectively at 90% confidence. Letters indicate significant differences between individual sectors at 90% confidence.
*Base: Owners and renters able to make changes to the facility equipment. Note that 11% of all respondents were renters who cannot change this measure type.

Figure 1. Ages of HVAC Systems by Sector

HVAC Type*	Offices (n=61) (a)	Health Care (n=40) (b)	Ware-house (n=50) (c)	Manuf (n=47) (d)	Sm. Retail (n=60) (e)	Church (n=68) (f)	All 6 Sectors (not weighted) (n=326)
Don't know age of system	8%	15% ef	6%	0%	3%	3%	6%



Colored boxes and arrows indicate significant differences between the sector and all remaining sectors collectively at 90% confidence. Letters indicate significant differences between individual sectors at 90% confidence.
*Base: Owners and renters able to make changes to the facility equipment. Note that 11% of all respondents were renters who cannot change this measure type.
**Base: Total number of units identified by respondents. Respondents in the "don't know" category could not state how many total units they have.

3.2.3 Roofing

We interviewed three trade allies who conduct roofing work. Notably, one of these three trade allies was not aware of utility programs for roofing, and another had never advised their clients about these programs or helped them receive incentives. However, our database review found that a significant percentage of Commercial Solutions projects (10%) during the first two years were for roofing.

According to our trade ally interviews, the main barrier to the implementation of cool roofing is the lack of knowledge about this technology, not just by the building owners and facility managers, but also by energy efficiency professionals and roofers themselves. The one roofing-only contractor we interviewed knew nothing about cool roofing, had never heard of ENERGY STAR® roofing or the Cool Roof Rating Council, and was unable to say whether the products they usually installed were cool or not. This firm gets their business by bidding on requests for proposals, where architects and facility managers have already developed the specifications. The roofer had no control over the specification process, and did not seem curious about the various types of roofing that were specified for different jobs. Neither of the other two contractors was much better informed, but they did at least have awareness of cool roof options and the availability of utility incentives for them.

Despite a lack of awareness, a proportion of roofs being installed in Texas are cool. One contractor reports installing Duro-last[11] roofing on roofing upgrades (mainly on retail facilities). A second roofing contractor reports that bright white single-ply roofing is installed on about 30% of their projects.

Other reported roofing installations are probably not cool. The remaining 70% of installations by the second roofing contractor are reportedly modified bitumen roofing (either Styrene Butadine Styrene or Atactic Polypropylene) or built-up roofing, both with a granulated white surface. It is not clear if these roofs were surfaced with special, cool, bright white granules (with a solar reflectance of 65% or more), or if they were the more typical grayish white granules (with solar reflectance of 25%).

One of the contractors we interviewed reported that most roofs on the warehouses and manufacturing facilities he works with have aluminum coatings. Metallic coatings and bare metal roofs tend to have somewhat higher solar reflectance, but their low thermal emissivity keeps them from being cool.

Because our database review indicates that there may be a special interest in roofing projects through the Commercial Solutions program, the program can increase its participation in the roofing component by focusing on trade ally education about roofing and its effects on energy usage. If roofer knowledge about energy efficiency increases, program participation should increase to even higher levels.

Table 7 and Table 8 show the penetration of roofing types by sector. In these tables, we highlight sector percentages that are significantly higher than all other sectors (e.g., offices compared to non-offices) in green, and those that are significantly lower than all other sectors in red. We also indicate differences between individual sectors (e.g., retailers

[11] Duro-last is a cool, bright white, PVC single-ply membrane roof product.

compared with offices, retailers compared with health care facilities) with letters indicating that the percentage in one sector is significantly higher at the 90% confidence level than that of the sector(s). The letter next to the percentage identifies each sector and also appears at the top of each column (a-f).

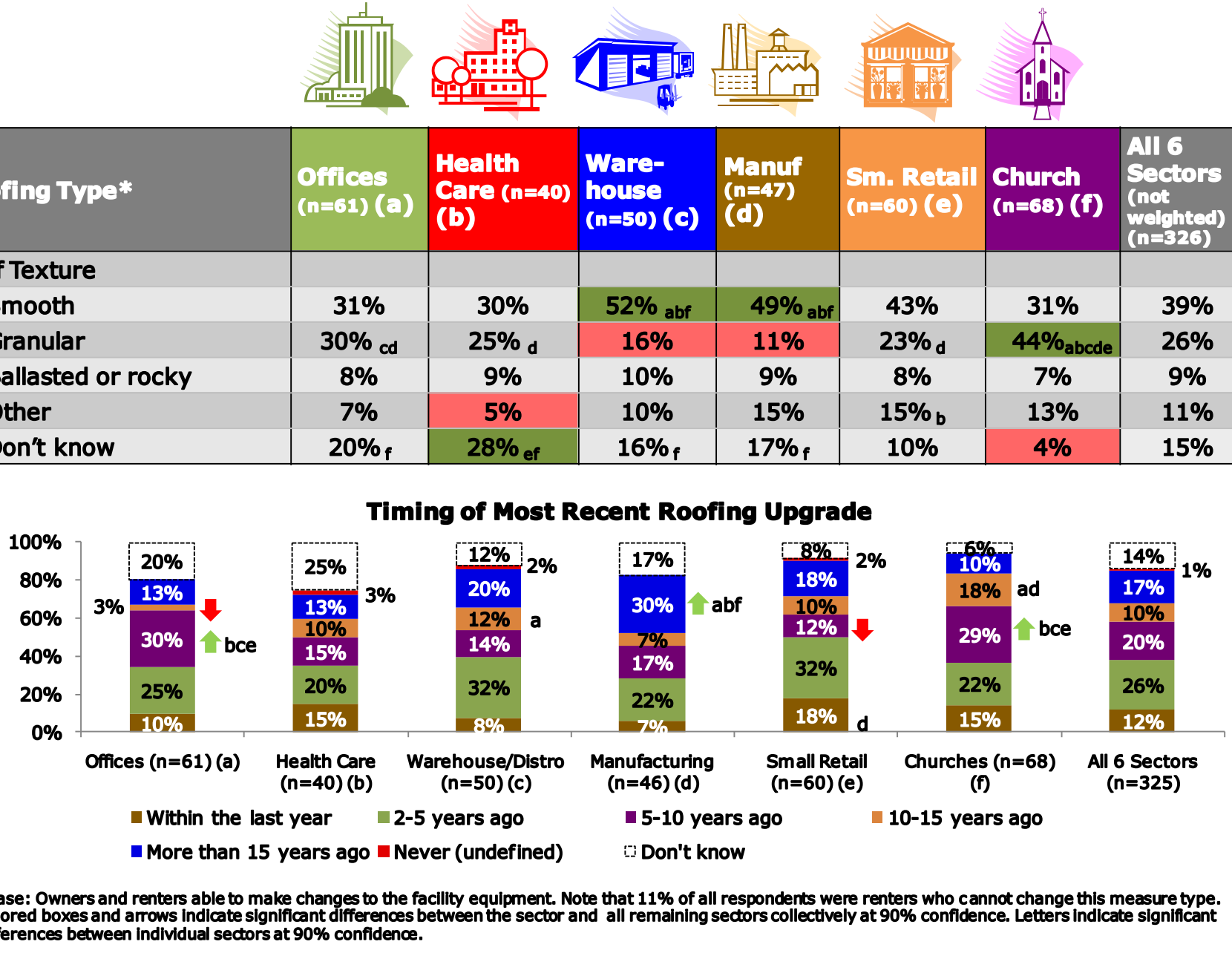
Table 7. Reported Roof Types and Colors by Sector

Roofing Type*	Offices (n=61) (a)	Health Care (n=40) (b)	Ware-house (n=50) (c)	Manuf (n=47) (d)	Sm. Retail (n=60) (e)	Church (n=68) (f)	All 6 Sectors (not weighted) (n=326)
Roof Type (multiple resp.)							
Built-Up Roofing (BUR)	31%	28%	20%	21%	25%	43%$_{cde}$	29%
Modified Bitumen	5%	0%	0%	0%	2%	1%	2%
Metal	30%$_{b}$	13%	62%$_{abef}$	70%$_{abef}$	47%$_{ab}$	37%$_{b}$	43%
TPO Single-Ply	0%	3%	0%	0%	2%	3%	1%
EPDM Single-Ply	0%	5%	0%	0%	0%	0%	1%
Slate/Tile	2%	0%	0%	2%	0%	1%	1%
Wood shingle or shake	2%	8%	2%	0%	7%	13%$_{ac}$	6%
Other	11%$_{d}$	13%$_{d}$	4%	2%	10%	7%	8%
Don't know	21%$_{ef}$	35%$_{cdef}$	18%	11%	8%	9%	16%
Roof Color (single resp.)							
Light grey or white	15%	25%	16%	32%$_{acef}$	15%	18%	19%
Dark grey or black	23%	15%	16%	13%	20%	14%	17%
Brown or wood	8%	5%	8%	2%	10%$_{d}$	35%$_{abcde}$	13%
Metallic	11%	8%	18%$_{f}$	15%$_{f}$	15%$_{f}$	4%	12%
Bright white	7%	5%	16%$_{bf}$	11%	22%$_{abf}$	4%	11%
Tan or beige	5%	5%	8%	15%$_{a}$	7%	10%	8%
Other	11%$_{cd}$	5%	2%	2%	5%	7%	6%
Don't know	20%$_{ef}$	30%$_{def}$	16%$_{f}$	11%	7%	6%	14%

Colored boxes and arrows indicate significant differences between the sector and all remaining sectors collectively at 90% confidence. Letters indicate significant differences between individual sectors at 90% confidence.
*Base: Owners and renters able to make changes to the facility equipment. Note that 11% of all respondents were renters who cannot change this measure type.

Table 8. Reported Roof Textures and Ages by Sector

Roofing Type*	Offices (n=61) (a)	Health Care (n=40) (b)	Ware-house (n=50) (c)	Manuf (n=47) (d)	Sm. Retail (n=60) (e)	Church (n=68) (f)	All 6 Sectors (not weighted) (n=326)
Roof Texture							
Smooth	31%	30%	52% abf	49% abf	43%	31%	39%
Granular	30% cd	25% d	16%	11%	23% d	44% abcde	26%
Ballasted or rocky	8%	9%	10%	9%	8%	7%	9%
Other	7%	5%	10%	15%	15% b	13%	11%
Don't know	20% f	28% ef	16% f	17% f	10%	4%	15%



*Base: Owners and renters able to make changes to the facility equipment. Note that 11% of all respondents were renters who cannot change this measure type. Colored boxes and arrows indicate significant differences between the sector and all remaining sectors collectively at 90% confidence. Letters indicate significant differences between individual sectors at 90% confidence.

3.2.4 Refrigeration

Penetration of refrigeration was low among the sectors we studied: Only 18% of all businesses interviewed said that they had commercial refrigeration at their facility.[12] Our survey also asked customers to describe the amount of refrigerated space for case coolers and walk-in coolers, but too few customers answered these questions to provide data by sector. Overall, customers who had reach-in or case coolers had a mean of approximately 32 linear feet of refrigerated space. Customers who had walk-in coolers or freezers had a reported mean of approximately 870 square feet of refrigerated space.

We did not conduct interviews with any trade allies who specialized in commercial refrigeration.

Table 9 presents our refrigeration penetration findings by sector. In these tables, we highlight sector percentages that are significantly higher than all other sectors (e.g., churches compared to non-churches) in green, and those that are significantly lower than all other sectors in red. We also indicate differences between individual sectors (e.g., retailers compared with offices, retailers compared with health care facilities) with letters indicating that the percentage in one sector is significantly higher at the 90% confidence level than that of the sector(s). The letter next to the percentage identifies each sector and also appears at the top of each column (a-f).

[12] This percentage excludes offices, who were not asked about commercial refrigeration.

Table 9. Penetration of Refrigeration Types by Sector

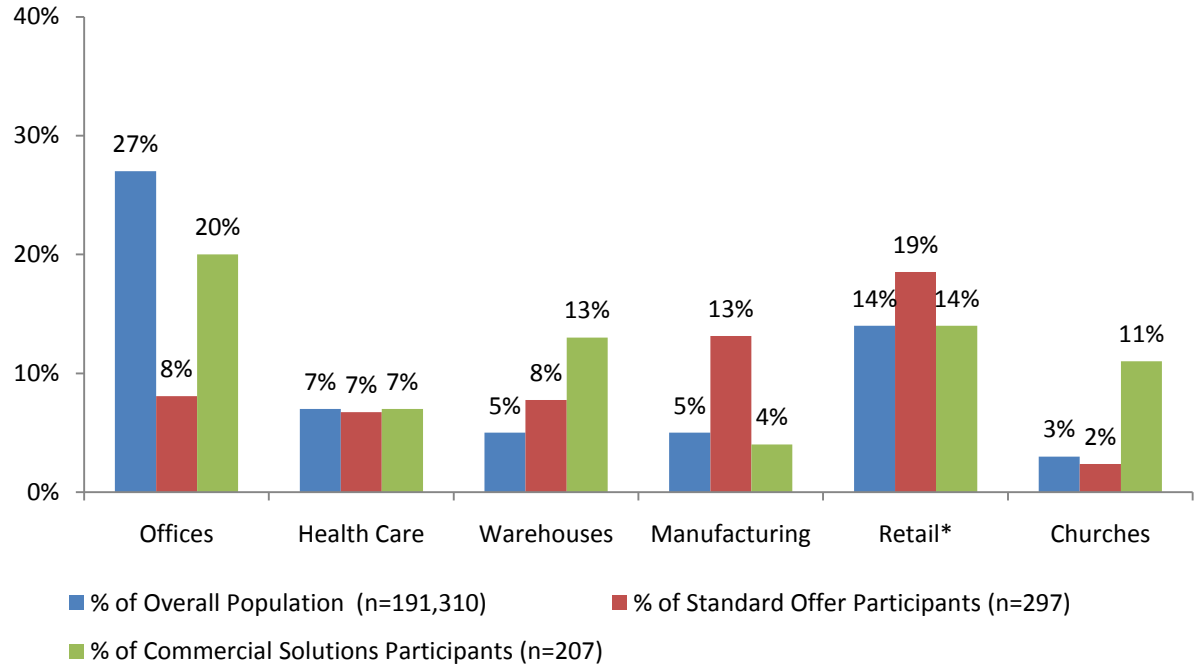
Refrigeration Type	Health Care (n=46) (b)	Ware-house (n=54) (c)	Manuf (n=48) (d)	Sm. Retail (n=72) (e)	Church (n=70) (f)	All 5 Sectors (not weighted) (n=290)
Facility has refrigeration	15%	13%	10%	17%	30%$_{bcde}$	18%
Refrigerator type						
Reach-in cooler or freezer	4%	6%	0%	4%	22%$_{bce}$	8%
Walk-in cooler or freezer	11%$_{cf}$	2%	4%	6%	1%	4%
Case cooler or freezer	0%	0%	0%	3%	0%	1%
Process cooling or freezing	0%	2%	2%	0%	0%	1%
Other	2%	4%	6%	6%	3%	4%
Don't know	0%	0%	0%	0%	2%	1%

Note: Offices did not receive these questions. Base: All respondents for all sectors but offices.
Colored boxes indicate significant differences between the sector and all remaining sectors collectively at 90% confidence. Letters indicate significant differences between individual sectors at 90% confidence.

A. APPENDIX: SECTOR DEFINITIONS AND SIC CODES

There were two primary criteria for selecting these six sectors: (1) The sector has low participation rates in the Standard Offer program (relative to their overall population), indicating that the sector may need additional support to participate in energy efficiency programs; (2) The sector has high potential for savings through the Commercial Solutions program (either through large numbers or customers and/or a large number of potential measures that could be installed). Note that we analyzed average savings among those already participating in the Commercial Solutions program to determine this second criterion. Figure 2 below compares program participation to the population from the geography selected in the six sectors we studied.

Figure 2: Participation in Programs compared to Population



Based on our review of the sectors, Opinion Dynamics proposes focusing the baseline efforts on the following six sectors:

- Offices
- Health care providers
- Warehouses
- Manufacturing facilities
- Churches and religious organizations

- Small retailers

Table A-1 provides the savings estimates and participation rates for both the Standard Offer program and Commercial Solutions program. The proposed sectors are indicated in boldface.

Table A-2 indicates the SIC codes used in identifying each sector in the general population. Below, we go into more detail on our justifications for the sectors we propose.

Table A-1. Participation and Savings from Commercial Solutions and Standard Offer Programs

Building Type	Percentage of Utilities' Target Population (based on SIC code) (n=126,305)	Standard Offer Program Projects			Commercial Solutions Projects		
		% of total population participating	Mean Peak Savings (kW) Per SOP Project	Mean Total Savings (kWh) Per SOP Project	% of total population participating	Mean Peak Savings (kW) Per CS Project	Mean Total Savings (kWh) Per CS Project
Office	**34%**	**0.10% (low)**	**4 (40.6)**	**4 (181,356)**	**0.21%**	**3 (21.5)**	**3 (89,042)**
Retail**	**17%**	**1.84%**	**6 (31.3)**	**6 (144,095)**	**0.64%**	**9 (12.4)**	**9 (53,673)**
Health care or hospital	**9%**	**0.47% (low)**	**3 (51.7)**	**3 (267,842)**	**0.36%**	**4 (19.1)**	**4 (85,642)**
Government (local, state, or federal; including military) [a]	8%	1.07%	8 (27.6)	5 (148,965)	0.48%	10 (10.9)	10 (35,354)
Restaurant or food service	7%	0.41% (low)	12 (5.3)	12 (17,256)	0.45%	12 (7.7)	11 (32,406)
Warehouse, storage, or distribution	**7%**	**0.42% (low)**	**2 (84.1)**	**2 (556,868)**	**0.19%**	**2 (31.0)**	**2 (145,262)**
Manufacturing	**6%**	**0.82%**	**1 (116.0)**	**1 (748,250)**	**0.56%**	**1 (42.0)**	**1 (271,277)**
Grocery store	4%	2.23%	9 (27.0)	7 (138,414)	0.49%	6 (16.0)	6 (70,890)
School or university [a]	3%	8.19%	7 (28.5)	9 (77,664)	0.87%	11 (10.3)	12 (27,122)
Church or religious institution	**3%**	**0.23% (low)**	**10 (16.7)**	**10 (60,367)**	**0.80%**	**8 (13.9)**	**8 (55,495)**
Lodging	1%	1.59%	5 (33.0)	8 (136,451)	0.64%	7 (16.0)	7 (69,236)
Gym	1%	0.38% (low)	11 (9.1)	11 (22,951)	1.25%	5 (16.5)	5 (70,955)

[a] Local governments and schools were the subject of the Opinion Dynamics Texas School and Local Government Energy Efficiency Market Assessment and Baseline Study conducted for CLEAResult in 2009, so they are not eligible for the Commercial Solutions baseline study. They are included only for reference. **Note that our baseline targets only small retailers as described in the text.

Sectors for Study

Offices

The office sector includes both large and small office customers. Offices comprise the largest sector of the utilities' target market population overall (34%), but the Standard Offer program has reached only a small portion of this population (0.10%, which is the lowest participation rate of all the sectors).

Offices also comprise 16% of applications in the Commercial Solutions program (number not shown in table above), indicating that there is a need for additional assistance among this sector. Moreover, the potential for energy savings in the office sector is one of the highest among all potential sectors. Office-sector projects under the Commercial Solutions program had a mean estimated annual 21.5 kW demand reduction and 89,042 kWh total savings. These were the third-highest mean savings estimates, behind only warehouses and manufacturing.

Health Care Providers

The health care sector includes hospitals, doctors' offices, outpatient facilities, nursing homes, and any other businesses that are dedicated to providing medical treatment. While it is the third-largest sector in the target population (9%), this sector's participation rate in the Standard Offer program is among the lowest.

Health care providers also offer moderately high potential for savings, both in terms of peak demand savings and overall usage savings, ranking fourth (behind offices, warehouses, and manufacturing) in terms of average savings for those in the Commercial Solutions program (19.1 kW and 85,642 kWh, respectively).

Warehouses

The warehouse sector includes warehouses, storage facilities, distribution facilities, and wholesalers. Warehouses also have low participation rates in the Standard Offer program, but produced the second-highest savings overall (after manufacturing) among participants in the Commercial Solutions program (31 kWh and 145,262 kWh).

Manufacturing Facilities

The manufacturing sector has the highest potential for savings of all program sectors, ranking number one in terms of average savings in both the Standard Offer and Commercial Solutions program. Manufacturing has had moderate participation across both programs (0.82% in Standard Offer and 0.56% in Commercial Solutions), but is included because it provides the largest energy savings both in peak usage and overall usage. Further, the Standard Offer program tends to attract larger, metropolitan, manufacturing facilities while the Commercial Solutions program tends to attract smaller facilities in remote locations. Given that some manufacturing facilities are choosing to participate in the Commercial Solutions program, some of these groups appear to benefit from the additional support

provided by the Commercial Solutions program.

Churches and Religious Organizations

While churches make up a relatively small portion of the overall target population (3%) and past projects provided moderately low savings (ranked 8 out of 12), this sector falls among the sectors with the lowest participation rates in the Standard Offer program. In addition, it includes a much larger proportion of the population participating in the Commercial Solutions program (0.80%) than in the Standard Offer program (0.23%), indicating that the religious organization sector seems to benefit from the Commercial Solutions program.

Small Retailers

The sixth sector does not meet the same criteria in that retailers are well represented in the Standard Offer program. The retail sector also has only moderately low savings; however, a large number of retailers are choosing to participate in the Commercial Solutions program. The difference, however, is in the types of retailers that are participating.

Based on our review of the program databases, Commercial Solutions retail participants tend to be smaller retailers with single projects that are handled directly by the customer. Standard Offer retail participants tend to be large national chains with bundled projects.

Many Standard Offer projects are handled through rebate administrators or other third parties, who work with large, national chains to help them identify and apply for utility incentive programs. These third parties are overwhelmingly participating in the Standard Offer program rather than the Commercial Solutions program. An analysis of the Standard Offer database revealed that known rebate administrators accounted for 43% of all applications in the retail sector. The Commercial Solutions database did not have any applications from third parties in the retail sector.

Therefore, we propose specifically targeting small retailers for the Commercial Solutions baseline, as these retailers are less likely to partner with a rebate administrator and thus are more likely to be better served by the Commercial Solutions program offerings.

Table A-2. Sector SIC Codes

Sector Name	SIC Code (2 or 4-digit)
Office	60, 61, 62, 63, 64, 65, 67, 7291, 7299, 73, 81, 83, 8611, 8621, 8631, 8641, 8651, 8699, 87
Health Care	80
Warehouse	4214, 4221, 4222, 4225, 4226, 50, 51
Manufacturing	20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39
Church or religious organization	8661
Small Retailers*	52, 53, 55, 56, 57, 59, 7221, 7231, 7241, 7251, 7841

* In this study, we defined "small retailers" as those with less than $5 million in revenue per year.

Sectors Excluded from Study

Government and Schools

We studied governments and schools in the Opinion Dynamics Texas School and Local Government Energy Efficiency Market Assessment and Baseline Study conducted for CLEAResult in 2009, so they are not eligible for the Commercial Solutions baseline study. Therefore, we did not analyze them for meeting any criteria for inclusion.

Grocery Stores

Participation in the Standard Offer Program has been relatively high (2.23%) with Grocery stores, while participation has been limited in the Commercial Solutions program (0.44% of the population). The average energy savings is typical of a program participant thus far. As such, we have not targeted this sector.

Restaurants

Although restaurants have been moderately unlikely to participate in either program (0.45% of the population in Commercial Solutions and 0.41% in Standard Offer), the potential for savings is lower (lowest for peak savings and second-lowest in overall savings). As such, we did not include restaurants in the top six sectors.

Lodging

Like grocery stores, lodging may be better suited to the Standard Offer program. The Standard Offer program (1.59% of the population) has had stronger participation than the Commercial Solutions program (0.64%) in this sector.

Gyms

Gyms indicate differences between the two programs, with a much higher percentage of the population participating in the Commercial Solutions program (1.25%) than in the Standard Offer program (0.38%). This indicates that gyms may be a target sector for the Commercial Solutions program. Gyms also achieved moderate estimated savings per project (ranked fifth in peak demand reduction and overall savings). Savings per project have been higher for gyms participating in the Commercial Solutions program than in the Standard Offer program; gyms were only one of two sectors (the other being restaurants) where this was the case. However, gyms made up such a small portion of the overall target population (only 1%) that we determined this sector was too small to include in the top six sectors.