Commercial Audits and their Impact on Project Implementation

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Abstract

In 2009, Oncor launched a Commercial Energy Audit Program that provides energy audits at no cost or at a reduced cost to commercial customers. The program was designed to increase participation in Oncor's incentive-based commercial programs by helping customers identify eligible energy efficiency projects. In addition, the program seeks to overcome market barriers by providing education and customer service and support to underserved and financially constrained markets such as small businesses, nonprofits, educational institutions, and governmental facilities.

The Commercial Energy Audit Program provides a comprehensive audit that includes benchmarking, a customized report outlining the most cost-effective projects to achieve energy efficiency goals, and a summary of incentives available to help implement projects. Program participants are encouraged but not required to follow-through with energy efficiency projects. This paper will assess the value of the Commercial Energy Audit Program by analyzing the number, type, and comprehensiveness of projects implemented by customers that received an energy audit from Oncor. Additionally, this paper will explore the types of energy audits that work best to generate projects and energy savings by several variables including; market sector, collaboration with contractors; and technology. This paper will outline the key strategies for developing a commercial audit program, review the actual audit-to-project conversion rates, discuss the most beneficial information to include in audit reports, review lessons learned, and process improvements made to the program to improve effectiveness and customer satisfaction.

Introduction

Oncor is a regulated electric distribution and transmission utility that provides reliable electricity delivery to customers. Oncor operates the largest distribution and transmission system in Texas, delivering power to approximately three million homes and businesses and operating approximately 117,000 miles of distribution and transmission lines in Texas. In 2008, Oncor made a $100 million commitment allocated over five years towards energy efficiency programs. These funds are not recoverable through rates, but these "Commitment Programs" are implemented under the same guidelines as Oncor's statutory programs.

The programs paid for by the Commitment funds were designed to complement Oncor's existing suite of energy efficiency initiatives. The Commitment Programs include a variety of initiatives including residential and commercial audits, technology-based market transformation programs, and a consumer education and awareness campaign. When developing the Commitment Programs, Oncor conducted research to create programs that increase the awareness and penetration rates of existing programs and that target under-served markets. The Commercial Energy Audit Program was identified as one program that could help Oncor achieve its strategic and energy-saving goals.

Oncor created the Commercial Energy Audit Program (the "program") to 1) assist customers with identifying potential energy efficiency opportunities, 2) generate evaluation data to determine the condition of existing facilities, and 3) discover and drive qualified projects towards their incentive-based programs. The Commercial Energy Audit Program was launched in 2009 and has been implemented for three years. This paper will explore the value and effectiveness of energy audits, the best methods to reach underserved commercial markets, and lessons learned regarding how and when to incorporate energy audits into existing commercial programs.

Commercial Energy Audit Program Design

Target Markets

The program is designed to target all facilities that receive electric service at a commercial rate. Through its market research, Oncor determined that the small commercial class and nonprofit customers typically demonstrated lower program participation rates in previous years. Therefore, an additional emphasis was placed on marketing the program and providing audits to these sectors. Additionally, in 2009 municipalities in Texas began receiving notification of money available from the State Energy Conservation Office (SECO) as a result of the American Recovery and Reinvestment Act (ARRA). All cities and counties in Texas were eligible to receive funds, but they were required to file a plan and receive approval prior to being awarded funds for projects. As a result, Oncor conducted additional outreach to these sectors to utilize the Commercial Energy Audit Program to provide guidance for their planning.

Requirements

Each customer interested in receiving an audit is required to complete a Program Application. In the application, information is collected to evaluate the facility's energy performance using ENERGY STAR®'s Portfolio Manager and to determine the potential for equipment upgrades. Facilities that score less than a 75 in Portfolio Manager and show the potential for at least two equipment upgrades, such as lighting or air conditioning, are eligible to receive an audit.

Auditors

Audits performed through the program are conducted by a network of participating contractors. The program has open contractor enrollment and each applicant must meet minimum qualifications. The minimum qualifications include a Certified Energy Manager or Professional Engineer on staff to prepare and review energy audit reports and a minimum of two years experience conducting professional energy audits on commercial facilities. In addition, each participating contractor must maintain specific insurance requirements and remain a business in good standing with the State of Texas.

Auditors are required to prepare a formal audit report for each facility. Oncor created a standard audit report template that outlines the reporting requirements that each contractor is encouraged, but not required, to use. Contractors have the option of providing the report on their

own template, but it must contain the required information. Each audit report is reviewed for accuracy and comprehensiveness by the third-party Program Implementer contracted by Oncor.

Tracking & Reporting

The program is designed to incorporate a feedback loop that includes customer surveys to determine projects implemented and feedback on the audit process. Oncor set up a process to track how many projects were conducted by customers that received an audit. Additionally, the Program Implementer conducts follow-up surveys with a sample of customers six months after the audit. These surveys help identify projects that were implemented but not accounted for in another program. Tracking these projects has provided information for evaluating the potential cost-effectiveness of an audit program. For this program, all projects implemented that received an incentive from another program are not counted towards the cost-effectiveness.

Annual Process Improvements

Each year the program has undergone an evaluation process. During this time, customers and auditors are interviewed to determine the program's effectiveness and provide feedback on enhancements or improvements. In 2009, each facility was eligible to receive an initial audit and a detailed audit. It was determined that the amount of effort on the customer's behalf and money from Oncor did not provide substantial benefit. In 2010, the program we improved to provide one, comprehensive audit. In 2011, the program was enhanced to include additional "what you can do now" information, facility pictures, and recommended equipment specifications. These improvements have allowed the program to provide more information in a streamlined format to improve customer understanding and ability to deploy immediate action.

What is an Energy Audit?

There are many types of commercial energy audits available today and they can include features such as site evaluations, energy-efficient measure recommendations, benchmarking, comprehensive equipment performance evaluations, financial calculations, and much more. The American Society of Heating and Refrigerating and Air-Conditioning Engineers (ASHRAE) has developed a tiered approach to commercial audits that has become widely recognized. With the ASHRAE audit structure, the higher the tier, the more comprehensive the audit. Oncor utilized the existing ASHRAE audit parameters when determining what services to include in the program. Since the program launched in 2009, it has been adjusted based on lessons learned (see section on Lessons Learned for more information) to meet market needs and expectations. As a result, the standard audit conducted by the Commercial Energy Audit Program has become a hybrid of ASHRAE level one and level two standards. Table 1 provides a comparison of the ASHRAE audit parameters to the program's standard audit.

Table 1: Auditing Parameters

Parameter	ASHRAE Level I	ASHRAE Level II	Commercial Audit Program
Site evaluation	Yes	Yes	Yes
Benchmarking	Yes	Yes	Yes
List of low-cost, no-cost measures	Yes	Yes	Yes
List of high cost measures	Yes	Yes	Yes
Detailed energy savings	Yes	Yes	Yes
Detailed cost savings	Yes	Yes	Yes
Detailed scope of measure evaluation	Yes	Yes	Yes
System performance testing		Yes	
Cost estimates of measures		Yes	Yes
Estimates of "people factor"		Yes	
Analysis of maintenance procedures		Yes	
Payback periods of measures		Yes	Yes
Applicable state, federal and utility incentives	Yes	Yes	Utility Only
LEED Operations & Maintenance credits	Yes	Yes	

In addition to the parameters listed in the table, the program provides references for "How to start saving energy now," pictures of equipment, and performance specifications for recommended upgrades.

From Audits to Projects – How to Transition

The transition after an audit into the project implementation cycle is critical to helping Oncor achieve its strategic goals. Successfully transitioning a customer from an audit to a project with verifiable energy savings requires high-touch account management and coordination with auditors and other utility program managers.

The program conducts transitions by reviewing audit reports with customers, connecting them with the Program Manager(s) for programs in which they may be eligible to receive incentives, and conducting additional follow-up six months after the audit is conducted. Additionally, auditors provide Oncor Program Managers with a synopsis of the audit findings, recommendations made for energy efficiency projects, and customer contact information. Program Managers follow-up with customers shortly after the audit is complete to assist them in determining which projects to implement and complete the necessary applications for incentives.

Determining which incentive program to recommend for each energy-efficient improvement is based on the customer's market sector, the type of improvement recommended, and which program can provide the most financial incentive for the customer. Table 2 provides an overview of Oncor's incentive-based programs that receive referrals from the Commercial Energy Audit Program.

Table 2: Oncor's Incentive-Based Programs

Program	Description
Commercial Standard Offer Program	Oncor provides incentives in this program to Service Providers who install approved energy efficiency measures for business, government, nonprofit, and worship facilities in Oncor's service area.
Small Commercial Standard Offer Program	Oncor provides incentives in this program to Service Providers who install approved energy efficiency measures for small commercial customers in Oncor's service area.
Educational Facilities Program	This program was created to provide viable energy efficiency and demand side reduction solutions for private and public schools K-12, charter schools, colleges and universities located within Oncor's service area.
Government Facilities Program	This program was created to help city and county governments reduce energy use and expenditures through energy efficiency upgrade projects. The no-cost program is available to local government entities in Oncor's service area.
School Grant Program	This program was designed to help schools reduce their energy spending by providing matching grant dollars for the implementation of energy efficiency projects. Matching grant funding of up to $25,000 per project (or no more than 50 percent of project cost, whichever is less) can be used to pay for equipment, materials, and labor provided by non-district personnel. Program staff is available to guide you through each step of the grant process, from identifying qualifying projects and completing the Application, to verifying your energy savings.
City Grant Program	This program was designed to help cities reduce their energy spending by providing matching grant dollars for the implementation of energy efficiency projects. Matching grant funding of up to $50,000 per project (or 50% of project cost, whichever is less) can be used to pay for equipment, materials, and labor provided by non-city personnel. Program staff is available to guide you through each step of the grant process, from identifying qualifying projects and completing the application to verifying your energy savings.
Worship Facility Grant Program	This program is designed to assist worship facilities and faith-based organizations with improving the energy efficiency of their facilities by providing matching grant dollars of up to $100,000 for the implementation of electric energy efficiency projects.
Nonprofit Grant Program	This program is designed to assist nonprofit organizations with improving the energy efficiency of their facilities by providing matching grant dollars of up to $100,000 for the implementation of electric energy efficiency projects.

Analysis and Results

We analyzed the program's effectiveness based on three key factors: Conversion rate, participation by market sector, and energy savings.

The Conversion Rate

A key indicator of the program's success hinges on the actual conversion rate. Oncor services 512,831 commercial accounts. Since the program's inception in 2009, 333 audits have been conducted. The amount of audits conducted each year has been dictated by the program budget. Out of the 333 audits conducted, 53 projects have been implemented for an overall conversion rate of 15.9%. While this conversion rate demonstrates the program's overall impact on project implementation, analyzing the number of projects and audits by market sector provides additional insight into each market, their reception to the audit, and their ability to implement projects. Table 3 shows the conversion rate for each program based on their target markets. Overall, the conversion rate was lower than anticipated, especially for the nonprofit and

worship sectors where Oncor placed an additional emphasis on performing audits. The lessons learned section of this paper outlines some of the key challenges that Oncor has identified that have contributed to the low conversion rates.

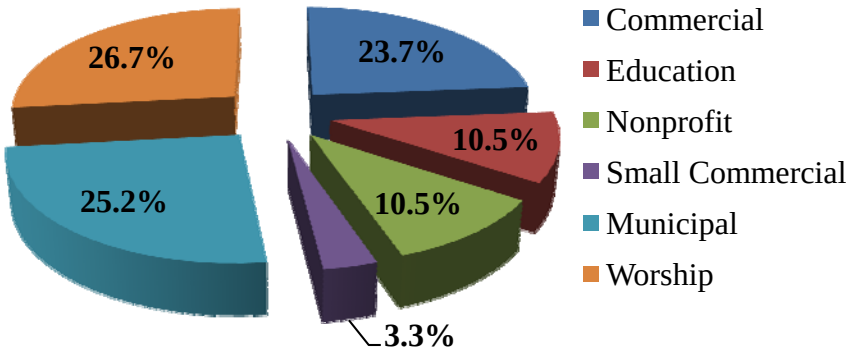
Table 3: Conversion Rates by Program

Program	No. of Audits in Sector	No. of Projects	Conversion Rate
City Grant	84	10	11.9%
Commercial SOP	79	20	25.3%
Government Facilities	84	1	1.2%
LED Lighting	333	8	2.4%
Nonprofit Grant	35	2	5.7%
School Grant	35	4	11.4%
Small Commercial SOP	11	2	18.2%
Worship Grant	89	6	6.7%

Market Sector

Chart 1 below shows the breakdown of audits conducted by market sector. Overall, the participation rate of each sector is indicative of the interest level and access to each market sector. The program's goal was to reach the smaller commercial market, which occurred predominately through worship facilities. Smaller businesses were targeted, but difficult to reach primarily due to tenant-owner relationships. Each year the program evaluates the participation levels and reviews feedback and market conditions to make process improvements to ensure that Oncor reaches the underserved markets.

Chart 1: Audits Conducted By Market Sector



In 2009, all audits were paid for in full by the program. Due to the cost structure, there were a high percentage of large commercial customers that took advantage of the program. Many

of these customers had building engineers on staff and other resources that mitigated the value of the audit. As a result, Oncor restructured the incentive levels to target smaller commercial, educational, and governmental customers who would gain the most value from the program. Therefore, in 2010 the incentive structure was modified and large commercial customers were subject to a cost-share of 50% of a predetermined cost for an audit. In 2011, the incentive structure was modified once more and the cost for an audit was determined by the square footage of the facility. This modification allowed Oncor to offer an incentive to auditors that more closely corresponded with the level of effort required to perform an audit.

In 2009 and 2010 there was a strong participation rate from municipalities. This spike in the participation rate correlates with SECO's release of ARRA funds to cities and counties. Many municipalities used the program to conduct audits of several of their facilities to help them determine which projects to pursue using the ARRA funding. In 2010, Oncor launched the Worship and Nonprofit Matching Grant Programs. Facilities with a peak electric demand of 250 kW or greater were required to go through the audit program prior to submitting an application for a grant. This strategy was implemented to help these customers hone in on comprehensive improvements. While lighting and heating, venting, and air conditioning projects were the most commonly implemented measures, there were several projects that included LED lighting, solar photovoltaic, and roofing upgrades. Chart 2 and Table 4 demonstrate the types of projects implemented through Oncor's incentive-based programs.

Chart 2: Types of Projects Implemented

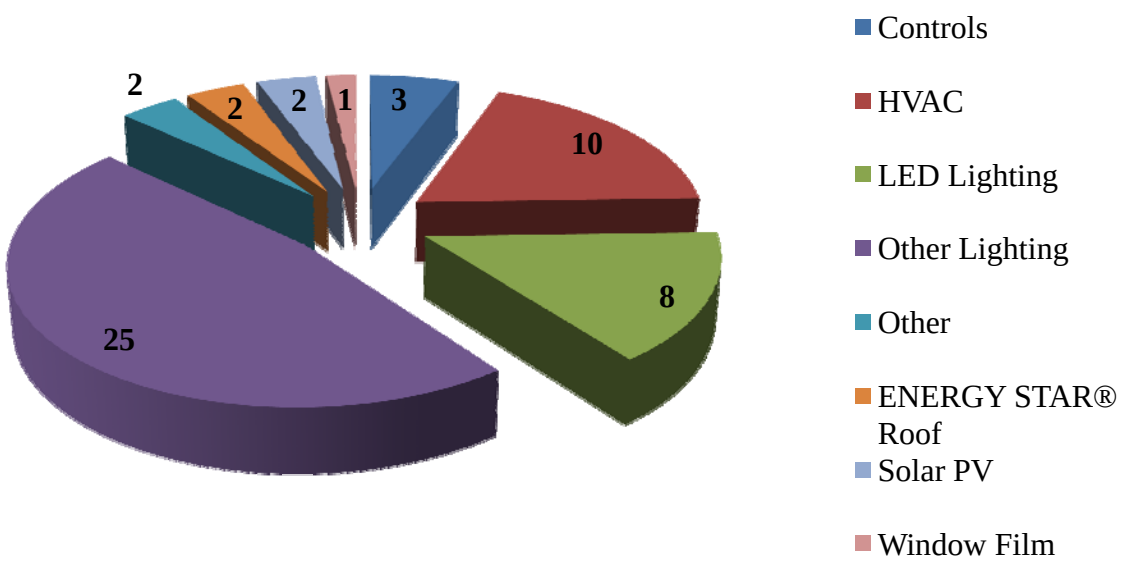


Table 4: Projects Implemented by Program

Program	Controls	HVAC	LED Lighting	Other Lighting	Other	ENERGY STAR® Roof	Solar PV	Window Film	Total
City Grant		2		6		2			10
Commercial SOP	3	1		13	2			1	20
Government Facilities		1							1
LED Lighting			8						8
Nonprofit Grant		1		1					2
School Grant		1		1			2		4
Small Commercial SOP		1		1					2
Worship Grant		3		3					6
Total	3	10	8	25	2	2	2	1	53

Capturing Energy Savings

Most utility programs are required to meet specific cost-effectiveness parameters, which are typically driven by the amount of savings a program generates. It is difficult to determine if an audit alone provides any energy savings. During an audit general operational and behavioral issues may be identified, and post-audit strategies many be implemented to mitigate their impacts on energy consumption. The program focuses on identifying energy savings using two methods: evaluating post-audit projects that were completed and verified through other programs and conducting follow-up surveys to capture information about projects implemented that did not receive an incentive. The projects identified through the surveys focuses on those not eligible for an incentive or behavioral and operational changes that impact the energy consumption of the facility. Table 5 outlines the associated savings.

Table 5: Electric Energy Savings Attributed to Audits

Method	kW	kWh
Projects implemented that received an incentive (through another program)	10,848	26,757,695
Projects implemented without an incentive (survey results)	281	1,125,996

Lessons Learned

Lesson 1: Know your audience.

One size does not always fit all. As with any program, the more that is known about a customer, the more benefit the program can provide. Identifying the goals and needs of each customer and tailoring the audit and the report to provide exactly what the customer needs helps encourage projects and expedites the project lifecycle. Some key questions to ask before each audit include: What tools or information do they need to make a decision to move forward with a project? Who makes the decision? Who manages the building? What are their concerns? What is the end goal? The example below demonstrates how simply identifying an overarching issue can resolve many smaller issues.

In 2010, a local city requested an audit of one of their facilities. It was a new building constructed specifically for a top tax-paying business. The building was built to be above local energy code and had many energy-efficient features, but the tenants were astounded by the monthly utility bills. On the day of the audit, the group started with a review of current concerns followed by an onsite inspection. During the inspection, the auditor interviewed some of the tenants and determined that the high energy consumption stemmed from two sources. First, while the building was built to be efficient, the tenants were never provided training on how to use many of the energy-efficient controls. Second, only half of the building was occupied and the thermostats on each side of the building were "dueling." While one side was set to cool, the other side was set to heat. At the conclusion of the audit, the auditor programmed all the thermostats and taught the tenant how to manage the built in controls. While these savings were not captured because they were a result of behavioral modifications, the tenants overall ability to be comfortable in the space and save money on their utility bill achieved the end goal of producing energy savings and providing education.

Lesson 2: Don't go overboard.

Providing information in a report is great, but only if the information is relevant, easy to find, and easy to interpret. An audit can quickly become complex if a scope is not clearly defined. When an audit begins to go into too much detail, the report can quickly become cumbersome and difficult to interpret. Smaller commercial customers often prefer a high-level synopsis with enough details about the financial impacts to present to key decision makers. The decision making process for smaller commercial customers is typically more streamlined and

they have less experience interpreting technical information. These customers benefit the most from a list of recommended projects that they can prioritize based on their current budget parameters and planning cycles.

Lesson 3: Review the audit report with the right people.

Reviewing the audit report is critical and reviewing it in person is best. Invite key decision makers to join the meeting so they understand what was evaluated during the audit and the recommendations. This is especially effective with schools, cities, and larger companies that have several decision making panels that need to reach a consensus before projects are approved. If a customer does not have the right information to make a decision, the audit is perceived of being of no value. Taking the time to help customers understand the results and how to integrate recommended improvements into their budget or business plan is what drives project implementation.

Lesson 4: Train auditors to provide excellent customer service.

Auditors are a key ally for audit-based programs. Keeping them informed and engaged allows them provide exceptional customer service by setting realistic expectations and guiding them through the process. Auditors can provide the "heavy-lifting" when given the proper tools by facilitating the project life cycle and generating more projects and energy savings.

Conclusion

The Commercial Energy Audit Program has provided Oncor with the opportunity to reach underserved markets and provide a unique service. Many customers can benefit from assistance addressing the "Where do I start?" barrier. Through annual process improvements, the program has been able to hone in on target areas, promote new technologies, and effectively provide project leads to other incentive programs. Overall, it takes quite a few audits to find a customer that is willing and able to implement a project. However, for those that receive an audit there is a drive to achieve more comprehensive improvements. Out of 333 audits, 53 projects were implemented by 24 customers. While the overall conversion rate may be 15.9%, the rate of turning simple projects into comprehensive projects is much higher at 45%.

A program that offers only energy audits is difficult to make cost-effective because the savings it generates of often reported under another program. To make an audit program cost-effective, it should be integrated as an "add-on" feature or part of a bigger participation pathway. The commercial market is large and possesses huge opportunities for utility programs. Integrating an energy efficiency strategy that offers any type of facility audit has demonstrated a benefit for smaller facilities that need access to assistance identifying areas for improvements. Overall, when developing an audit-based program it should be flexible to meet each individual customer's needs and goals.