

Synapse
Energy Economics, Inc.

Commercial & Industrial Customer Perspectives on Massachusetts Energy Efficiency Programs

**Prepared for the Massachusetts Energy
Efficiency Advisory Council**

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Executive Summary

This report includes a forecast of economic conditions in Massachusetts for 2013 through 2015, as well as a survey of commercial and industrial (C&I) customer perspectives on the Massachusetts energy efficiency programs. The Massachusetts Energy Efficiency Advisory Council (EEAC) asked Synapse Energy Economics, Inc. (Synapse) to conduct this assessment in order to inform the development of the Three-Year Statewide Energy Efficiency Plans for 2013 through 2015.

The primary purpose of this report is to assess the extent to which C&I customers are likely to participate in the Massachusetts energy efficiency programs over the next few years. The economic forecast is intended to provide an indication of the extent to which economic conditions might create barriers to C&I customer participation in the energy efficiency programs. The survey is intended to assess the variety of barriers that C&I customers face with regard to energy efficiency program participation.

Economic Forecast

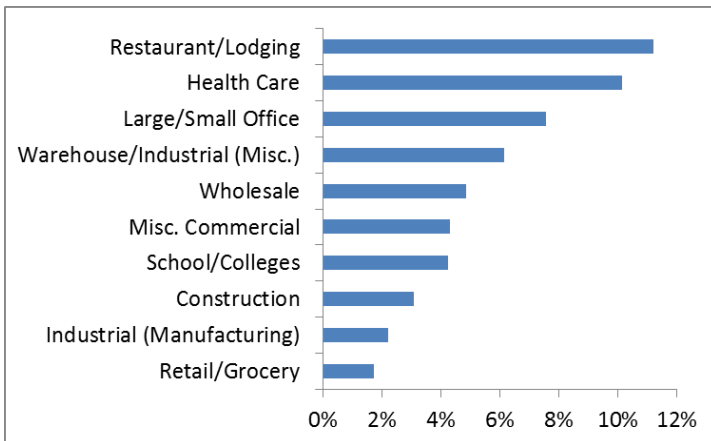
Our economic forecast relies upon historic and forecast data from Moody's Analytics, a source that is frequently used by planning agencies for economic forecasts. We present forecasts for the five regions of the state, based on county borders: (1) Bristol County, (2) Greater Boston, (3) Central Massachusetts, (4) Cape Cod and the Islands, and (5) Western Massachusetts. We also present economic forecasts for several industry types including: construction, healthcare, industrial, large/small office, miscellaneous commercial, restaurant/lodging, retail/grocery, schools/colleges, warehouse industrial, and wholesale.

The economic forecast suggests that, in general, the state's economy will see improved performance over the next several years. At the statewide level, gross state product, construction activity, residential construction permits, and retail sales are expected to grow, while unemployment rates, business bankruptcies, and commercial rental vacancy rates are expected to decline. The same overall trend of improvement can be seen within each region, as well. One exception to this trend is gross state product and retail sales in the Cape Cod/Islands region, which are expected to stay essentially flat between now and 2015.

On a statewide basis, most industries are projected to grow in Massachusetts over the next few years. Figure ES-1 below presents the forecast of employment growth, in percentage terms over 2011 through 2015, by the different industry types. Note that the growth rates by industry are different in the different regions of the state, and in some regions there are several industries that are expected to see reduced employment levels over this period. This regional information is presented in Section 2.2.

Healthcare and office industries are projected to grow strongly in every region of the state, and both are large components of every region's employment. Restaurant/lodging is projected to grow significantly in every region except the Cape/Islands. Construction is projected to have robust growth in Bristol, but less growth in other regions. Bristol County, the region hit hardest by the economic downturn in Massachusetts, is expected to see a large fall in unemployment over the 2011 through 2015 period, in part due to the construction growth expected there.

Figure ES-1. Employment Growth in Massachusetts, Percentage Increase 2011 – 2015



Survey Methodology

We began our survey by identifying a set of targets for customer types to interview. We planned to interview a total of 40 customers across the state. We identified a target set of customers to interview by first spreading the 40 interviews across the five state regions based on economic activity in those regions; and second by spreading the interviews in each region across the different industry types according to the level of economic activity within each industry type. We limited our target set of interviews to medium and large C&I customers, and we excluded governmental agencies from the target set. Furthermore, we attempted to focus our interviews on customers that have not participated in the Massachusetts energy efficiency programs for at least the past five years.

We then collected customer contact information from the Massachusetts energy efficiency program administrators and a few other stakeholders. We sent invitations to all of the 137 customers provided to us that were eligible and included contact information. Many of these customers did not respond to, or declined, our invitation. We conducted a total of 36 interviews.

The interviews that we conducted are presented by region and industry type in Table ES-1. Since a large number of customers did not respond to the survey invitations, the distribution of interviews by region and industry were determined more by customer interest and availability than by the information and priorities that we used to determine the target region and industry distribution. Nonetheless, the set of interviews that we were able to conduct is close enough to the target region and industry distribution that we believe it will provide the geographic and industry diversity that we set out to survey.

The one exception is that the vast majority of our interviews were with customers that have participated in the Massachusetts energy efficiency programs. We did not receive as many non-participant contacts from the stakeholders, and those that we did contact were much less likely to participate in our survey than the program participants. It is important to note that our survey results are likely to be influenced by the fact that so many of the respondents are program participants.

Table ES-1. Interviews Completed, by Industry Type and Region

Industry Type	Boston	Central Mass	Cape Cod	Western Mass	Bristol County	Total
Heavy industry	2	1	0	5	1	9
Warehouses & Distribution	0	0	0	1	0	1
Retail	1	1	0	1	2	5
Office	5	1	0	3	0	9
Schools & Colleges	4	0	0	0	0	4
Healthcare	3	1	1	0	0	5
Restaurants & Lodging	1	1	0	0	0	2
Miscellaneous	0	0	0	0	1	1
Total	16	5	1	10	4	36

It is also important to note that a sample size this small will not provide results that can be considered statistically significant. Nonetheless, we believe the results from these interviews provide useful insights for the EEAC and other stakeholders, consistent with the purpose of this study.

Survey Results

Overview of Common Themes

Most customers that we interviewed were program participants at some level and stated that they either will participate or are considering participating in programs in the next few years. In general, the customers we interviewed consider energy efficient equipment regularly when they make purchasing decisions.

Another theme we heard from most of our interviews was that payback period was the main criteria for evaluating energy efficiency investments and that energy efficiency investment payback periods compete with the payback periods for other capital investment projects.

A third theme we heard from many customers we interviewed was that capital constraints are a key barrier to moving forward with energy efficiency projects. Many customers have access to capital, but energy efficiency projects have to compete with other projects for that capital.

A fourth theme is that the general process for vetting and approving energy efficiency investments is similar across many customers. Projects are scoped, analyzed, and proposed on an annual basis and submitted to a higher level team for review and approval. Energy efficiency investments are frequently categorized as discretionary expenditures.

A fifth theme is that financing mechanisms, such as loans, are seldom, if ever, used. Instead, customers use existing capital to pay for the efficiency projects up-front, despite the widely recognized fact that the efficiency cost savings are experienced over many years.

It is clear from even our small sample that there are many different types of customers with different needs and barriers to participating in energy efficiency programs. This

diversity of customers creates a significant challenge for program administrators, because reaching additional customers and achieving deeper levels of savings per customer will likely require offering program technical and financial support that is more tailored to the unique needs of the many different types of electric and gas customers.

Positive Feedback

Many of the customers provided positive feedback on the programs. Some of the highlights include the following points.

- Many customers were grateful for the sustained incentives and technical assistance provided by energy efficiency program administrators over the years, and indicated that energy efficiency investments could not compete with other capital investments without the incentives and technical assistance received.
- Several customers mentioned that they appreciate the level of outreach that they receive from energy efficiency program administrators and have had a long-standing, trusting relationship with their account executives.
- Some customers recognized and appreciated the variety of efforts and approaches (such as the upstream lighting program and the Memorandum of Understanding approach) that the energy efficiency program administrators are leveraging.
- Several customers recognized the positive impacts of the program administrators' efforts over time, such as the ability to accelerate energy efficient product development and manufacturing and make energy efficient solutions affordable.

Summary of Barriers Identified by Customers

The barriers to participation that have emerged from the interviews can be organized in two categories: customer barriers and program barriers. Customer barriers are barriers that stem from a customer's internal decision-making processes. Program barriers are barriers that stem from the way the programs are designed or administered. The customer barriers were subdivided into the following categories: customer's capital constraints, economic climate, unsupportive corporate review and approval process, the customer is convinced it has done all the efficiency measures it can within its facilities, or distrust of new technology.

The program barriers were subdivided into the following categories: insufficient marketing and outreach, high transaction costs, inadequate responsiveness and timing, limited measures offered through the programs, insufficient incentives, the desire to opt out of the energy efficiency charge, the programs are not tailored to the unique needs of customers, and other barriers.

Figures ES-2 and ES-3 present a summary of the number of times each of these barriers was mentioned by customers in our interviews.¹ In general, program barriers were mentioned more frequently than customer barriers. Insufficient marketing and outreach as well as customer's capital constraints were mentioned most often, with transaction costs the next most frequently mentioned barrier.

¹ Note that each customer mentioned more than one barrier, and not all customers identified the same number of barriers. We present these figures simply to provide a summary of the frequency with which the different barriers were identified.

Figure ES-2. Customer Barriers Mentioned in the Interviews

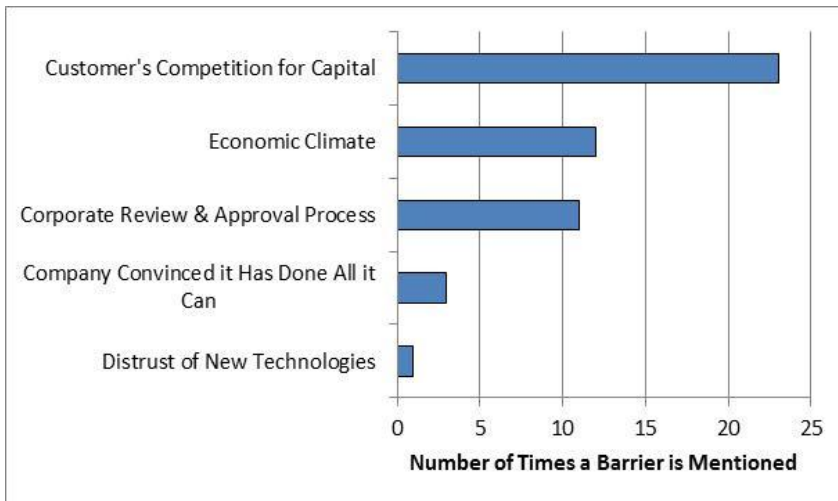
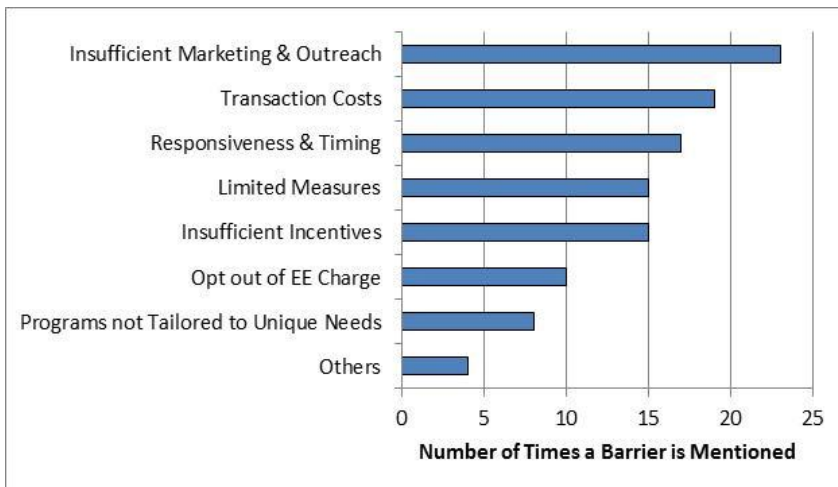


Figure ES-3. Program Barriers Mentioned in the Interviews



Customer Barriers

Customer's capital constraints. This is one of the most frequently cited and important barriers that customers face in energy efficiency program participation. Many customers, although not all, do not have a problem accessing capital. Their chief problem is with the competition for capital between energy efficiency investments and other investments, especially those investments that are more germane to the core business of the customer. Some customers have global operations, and face competition for capital in Massachusetts, in the United States, and elsewhere in the world. This competition for capital is so important to customers that it results in greater adherence to payback period constraints, as that is often the criteria that is used to determine which project deserves the constrained capital. Further, some customers mentioned that the significant upfront cost of efficiency measures, especially larger projects beyond lighting upgrades, created a barrier to participation.

Economic climate. The economy appears to have a relatively indirect impact on a customer's ability to participate in efficiency program, as many customers were not clear on the connection between economic conditions and efficiency program participation. When asked, customers held several views on the extent to which the economy affects their participation:

- Some customers do not see the economy as a barrier to participation.
- Other customers were quick to mention that the economy has affected their employee base, profit, or capital availability, making it more difficult to undertake nonessential projects.
- Some customers see efficiency as even more important in tight economic conditions, as a means to better manage budgets and reduce costs with minimal capital outlay.
- For other customers, the downturn in the economy exacerbates the competition for capital problems discussed above, in that capital might be harder to access or payback periods may need to be shorter.
- Still other customers noted that in a tight economic context they are more likely to let existing equipment run through its useful life, rather than retrofit it early. This creates a barrier to implementing efficiency measures as there is often insufficient time and resources to identify and procure the most efficient option at the time of equipment failure.

Unsupportive corporate review and approval process. Many customers noted that they have no problem getting support from corporate executives to implement energy efficiency projects. However, corporate decision-making practice often requires efficiency projects to compete for capital with investments that are more germane to a customer's business (see above), and sometimes corporate practices place very tight payback periods constraints on all investments, limiting the energy efficiency measures that can obtain corporate approval.

Customer convinced it has done all it can. This was not a commonly identified barrier, as only three customers identified this barrier. When mentioned, it was seen as a transient barrier that would disappear over time. Customers mentioned that they had done several efficiency projects, and that, while additional savings opportunities likely exist within their buildings, the savings are not likely to outweigh the transaction costs. One customer indicated that savings opportunities from the next generation of efficient equipment would likely propel them to participate in the future.

Distrust of new technology. Only one of the customers interviewed indicated that they were reluctant to implement energy efficiency measures because they did not trust or fully understand the efficiency technology. This customer was concerned that reducing energy consumption could reduce its production capability.

Other barriers. A few customers mentioned barriers or topics that did not fit into the categories above. These include: people have been lulled into a sense of security with prices of electricity and natural gas being relatively low, and participants are distracted by other energy projects like solar or geothermal.

Program Barriers

Insufficient marketing and outreach. Many of the customers feel that the program administrators could be more proactive in reaching out to and educating customers about

efficiency opportunities. Some customers felt program administrators were inconsistent in their outreach, or had limited contact with their representative. Others thought that, while the program administrators do reach out to them, the customer was driving the process and had previously researched the opportunities. Several customers noted that their gas program administrator has not reached out to them with energy efficiency opportunities, or provided any technical or financial support. This is particularly troubling to several customers who are very active in the electric efficiency programs and who believe they have significant gas efficiency opportunities. Some customers have regular, annual cycles of budgeting and investing in energy efficiency equipment, and they would prefer that the program administrators coordinate their program services with the customer's annual cycle.

High transaction costs. Many customers indicated that the paperwork and legwork involved in participation is too great, and that the overall process needs to be simplified. Some customers claimed that, for long lead-time projects, the time required to receive a financial incentive, as well as the uncertainty about obtaining a financial incentive, especially across program years, create a barrier to their participation.

Inadequate responsiveness and timing. Several customers thought their program administrator was unresponsive to their needs, and a few customers attributed it to the program administrators being overworked. Others thought it was difficult to time their participation, such as when major equipment fails and needs to be replaced immediately, or during new construction when projects need to go forward and cannot be held up by program participation.

Limited measures offered through the programs. Many customers expressed a desire for the programs to be more flexible and to allow the customers to recommend efficiency projects to undertake. Other customers suggested that specific equipment, such as more efficient elevators, should be offered incentives through the programs.

Insufficient financial incentives. Many customers noted that they would implement additional efficiency measures if they were provided with greater financial incentives. Additional financial incentives would help overcome the competition for capital that many customers face, as well as reduce the payback periods needed to meet corporate requirements. Many companies indicated that there is not enough coverage of technical support costs or availability of technical support in general. Some customers wished the programs offered different incentive structures and better addressed upfront costs as well as costs over the life of the measure.

Desire to opt out of the energy efficiency charge. Many customers claimed that they would be able to achieve much greater energy efficiency saving if they were able to keep all of the funds that they contribute to the Massachusetts energy efficiency programs and dedicate those funds to efficiency projects at their own facilities. This was especially true among the large customers, including those in the industrial, healthcare and schools/colleges industry types.

Programs not tailored to unique needs. Some customers thought that the program administrators did not make an effort to understand the unique needs of their industry. This was especially true for customers in the healthcare industry.

Other barriers. A few customers mentioned barriers or topics that did not fit into the categories above. These include: (a) the lack of transparency with regard to the amount that the customer is providing to efficiency program funding is a barrier when employees try to convince management to take advantage of efficiency programs offered by the

program administrators; and (b) customers appear to be confused by the number of energy efficiency providers in the market (i.e., ESCOs vs. renewable installers vs. lighting manufacturers/distributors vs. utilities/municipal aggregators/municipals).

Implications for Energy Efficiency Programs

The results of our economic forecast and customer survey lead us to draw the following conclusions with regard to energy efficiency program planning.

1. The Three-Year Energy Efficiency Plans should include savings goals that recognize that (1) the Massachusetts economy is forecasted to improve steadily over the next few years, (2) many customers do not see the state of the economy as a barrier to participation in the energy efficiency programs, (3) many customers have additional efficiency opportunities in their facilities and (4) many customers have an interest in participating in the programs again. In fact, several customers noted that in a tight economy they might be more likely to participate in energy efficiency programs as one of the few options they have to cut costs (as long as the payback periods are short enough).
2. The Three-Year Energy Efficiency Plans should recognize the potential savings available from the C&I New Construction programs, given that the economic forecast indicates that business construction activity is expected to steadily increase over the next few years.
3. Encouraging customers to adopt a deeper level of efficiency measures will likely require additional efforts to overcome some of the key barriers identified above, particularly customer budget limits and competition for capital, burdensome transaction costs of participating in the efficiency programs, and limited efficiency measures available by the efficiency programs.
4. Encouraging customers to adopt a deeper level of efficiency measures will also likely require increased engagement from the program administrators' account executives and efficiency support staff. This will be important both to reduce the transaction costs associated with the energy efficiency programs and to better serve the unique needs of the different customers.
5. The Three-Year Energy Efficiency Plans should recognize that many customers have apparently not received much outreach regarding gas efficiency opportunities, and that additional outreach and support from gas program administrators might lead to increased gas efficiency savings.
6. Program administrators should be required to collect and report more comprehensive data regarding the customers who participate in their energy efficiency programs. A better understanding of customer participation would provide the program administrators with very useful information about where the untapped efficiency opportunities lie and how to pursue them. It would also be very useful to identify and track the different types of participation, including: active participants (i.e., recent participants), inactive participants (i.e., past participants), non-participants, and proactive participants (where the customer prefers to take the lead with assistance from the program administrator) versus reactive participants (where the customer prefers the program administrator to take the lead).

Recommendations for Further Research

Our survey indicates that there are several areas where additional research might help to increase the participation of C&I customers over the next few years.

1. Most importantly, it would be helpful to continue efforts to better assess the perspectives of the C&I customers who have not participated in the Massachusetts energy efficiency programs to date.
2. It may be helpful to conduct statewide research into opportunities for reducing the transaction costs (including timing concerns) associated with participation in the energy efficiency programs. This could include a statewide effort to identify best practices within the state and from other parts of the country.
3. It may be helpful to conduct statewide research into training the program administrators' account representatives and support staff so that they have a better understanding of the needs of different customer types and different industries. This could include a statewide effort to train account executives and support staff and to share knowledge and experience across the program administrators.
4. It may be helpful to conduct statewide research into ways to expand the types of efficiency measures eligible for financial support, reduce the time required to accept measures for eligibility, and streamline the process that is used in deciding measure eligibility.
5. It may be helpful to conduct statewide research into opportunities for the gas program administrators to better coordinate their outreach and support services with electric program administrators.
6. It may be helpful to conduct statewide research into practices for spending the efficiency budgets more evenly over the course of a year, in order to avoid the year-end blitz that sometimes occurs in order to meet annual targets.

1. Introduction

Background

The 2010-2012 Massachusetts Joint Three-Year Electric and Gas Energy Efficiency Plans were the first statewide three-year plans that put the Massachusetts electric and gas energy efficiency program administrators on a path to meeting the 2008 Green Communities Act mandate that “electric and natural gas resource needs shall first be met through all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply.” Given that this first three-year plan was a ramp up to more aggressive levels of energy savings than had ever been achieved in the state, each year of the three-year plan had budget and savings targets that were higher than the previous year.

The 2010 electric C&I savings goals were nearly met (i.e., 98 percent of the goal was achieved), using 85 percent of the planned budget. The 2010 gas C&I savings goals were also nearly met (i.e., 95 percent of the goal was achieved), using 75 percent of the budget. However, the program administrators were not as successful in meeting their 2011 C&I program savings goals. Preliminary year-end statewide results for 2011 indicate that the electric and gas program administrators were short of their C&I savings goals and were not able to spend all of their remaining C&I budget to close the gap.²

Concerned that this trend might continue in 2012 and into the next three-year plan, the Massachusetts Energy Efficiency Advisory Council contracted Synapse Energy Economics to investigate the barriers that C&I customers face in participating in energy efficiency programs. The EEAC is specifically interested in determining whether the economic recession is a key factor preventing or delaying C&I customers’ participation in the energy efficiency programs. The primary purpose of understanding these barriers to C&I customers is to determine whether they can be addressed in planning and designing the programs for the 2013-2015 Energy Efficiency Plans.

Organization of the Report

In order to investigate the barriers, real and perceived, to commercial and industrial participation in energy efficiency programs, we first present a forecast of the state’s economic activity. This near-term forecast is intended to provide context for targeting C&I customers in Massachusetts over the period coinciding with the 2013 – 2015 Three-Year Energy Efficiency Investment Plan.

Next, as background to Synapse’s investigation, we summarize the results of measurement and verification (M&V) studies conducted on the Massachusetts C&I programs over the past two years. This summary presents some of the barriers to C&I participation identified in recent research, and provides a foundation for our customer survey.

We then present the results of surveys of several C&I customers, in order to develop a better picture of the barriers they face in participating in the Massachusetts energy efficiency programs, as well as an indication of their expected participation in these

² Preliminary year-end results for 2011, presented by the Massachusetts program administrators to the EEAC, February 2012.

programs over the next few years. The survey covers medium and large C&I customers across a variety of industry types, and across several regions of the state.

Finally, we evaluate the findings of the economic forecast and surveys, and discuss the implications of these findings for the 2013 – 2015 Massachusetts energy efficiency programs.

Appendix A of this report presents a more detailed discussion of the M&V study results. Appendix B provides the survey questionnaire and interview questions used by Synapse in this study, while important questionnaire responses and the complete interview notes for each customer are provided in Appendix C.

2. Economic Forecasts

2.1 Methodology

Data Source

Our economic forecast relies upon historic and forecast data from Moody's Analytics (formerly Economy.com). Moody's is a common source for economic projections, one that is used by utilities in Massachusetts and other planning agencies.³ Table 2.1 presents the data that are available for this study from Moody's. As indicated, some of the data are available for each county and for the state as a whole, while some of the data are available only for the state as a whole.

Table 1.1 Moody's Data by Source and Geography

Moody's Data	Geography	Primary Historical Source
Business Bankruptcies	State	Office of US District Courts
Construction Put-in-Place (non-residential)	State	US Census
Industry Employment (23 industries)	County, State	Bureau of Labor Statistics (BLS)
Gross State Product	County, State	Bureau of Economic Analysis (BEA)
Labor Force	County, State	Bureau of Labor Statistics (BLS)
Residential Permits (single and multi-family)	County, State	US Census
Rental Vacancy Rate	State	US Census
Retail Sales	County, State	US Census
Unemployment ⁴	County, State	Bureau of Labor Statistics (BLS)

In our results below, we present the actual data for these metrics for the years of 2006 through 2011, in order to provide some historical context. We then present Moody's forecast of this data for the years 2012 through 2015, in order to coincide with the planning horizon for the 2013 – 2015 Three-Year Energy Efficiency Plans.

Regional Definitions

In order to capture the regional differences in economic activity, we analyzed data for five different regions of the state. These regions are defined on the basis of county borders, in order to allow us to apply the Moody's county data to our five regions. We present economic forecast for the following regions: (1) Bristol County, (2) Greater Boston, (3) Central Massachusetts, (4) Cape Cod and the Islands, and (5) Western

³ It is important to note that forecasts of any kind are fallible, because unforeseen circumstances can always arise. While the Moody's forecasts are well respected and frequently used, they should be seen as estimates to be used for identifying trends but not to be used for providing precise predictions.

⁴ The unemployment rate is the percentage of individuals in the "labor force" (i.e. those who are working or actively looking for work) who have not found employment, as collected by the Bureau of Labor Statistics. Therefore, it does not include those who have stopped looking for work. Also, part-time employees are all considered "employed" even if they are looking for full-time work (BLS refers to this as "part time for economic reasons"). Monthly unemployment rates are typically "seasonally adjusted" to account for month-to-month variations from seasonal industries; however, annual unemployment is usually not adjusted in this manner.

Massachusetts. Table 2.2 indicates the five regions that we analyze and the counties that are within each region.

Table 2.2 Massachusetts Regions by County

Region	County
Bristol County	Bristol County
Greater Boston	Suffolk County Middlesex County Plymouth County Norfolk County Essex County
Central Massachusetts	Worcester County
Cape Cod/Islands	Barnstable County Dukes County Nantucket County
Western Massachusetts	Hampden County Hampshire County Berkshire County Franklin County

Industry Types

Moody's presents its economic forecasts by industry type, using the North American Industry Classification System (NAICS). We made two minor modifications to the industry types for our study. First, we aggregated the NAICS data into a slightly smaller list of industries, for presentation and simplicity purposes.

Second, we aligned the new Synapse aggregations with the industry types used in the Point380 study, which used slightly different labels and categories for its industry types.⁵ We have, to the best of our ability, mimicked the aggregations used in Moody's and Point380 studies. However, due to limited granularity in the Moody's data, we have had to combine categories (e.g., Warehouse/Industrial and Miscellaneous). Also, construction and wholesale trade were not presented in the Point380 studies, but are included in Moody's data. Lastly, Moody's categorizes government as large/small office, whereas the Point380 study spread this over many industry types.

Table 2.3 presents the industry types presented in the Moody's forecasts, as well as our version of the industry types.

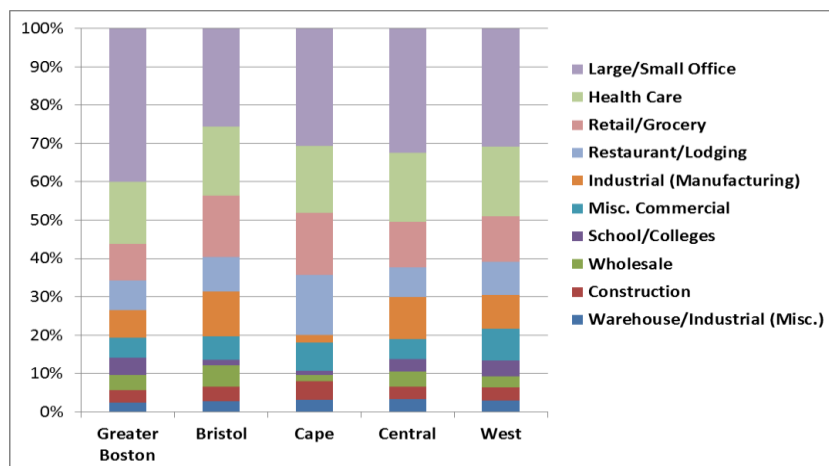
⁵ The Point380 study is described in more detail below.

Table 2.3 Industry Aggregation Scheme

Moody's Industry Types	Synapse Industry Types
Construction	Construction
Healthcare	Healthcare
Manufacturing	Industrial (manufacturing)
Admin/Waste Management Finance/Insurance Government Information Management of Companies Professional/Scientific Real Estate	Large/Small Office
Arts/Entertainment/Recreation Farms Other Services	Misc. Commercial
Food/Accommodation	Restaurant/Lodging
Retail Trade	Retail/Grocery
Education Services	School/College
Mining, Quarrying, etc. Utilities Warehouse and Transportation	Warehouse/Industrial (misc.)
Wholesale Trade	Wholesale

Figure 2.1 below shows the percent of total employment that each industry type represents, for each of the five regions in Massachusetts. As indicated, large and small offices dominate the employment in all regions, especially in the Boston region. Healthcare is a significant employer in all regions of the state, as is retail/grocery. Manufacturing is a dominant employer in Bristol County, Central Massachusetts and Western Massachusetts, and with fewer employees on Cape Cod and the Islands.

Figure 2.1 Massachusetts 2011 Industry Employment by Region



Other Sources of Economic Forecasts

We considered using other sources for economic forecasts, if only to provide a comparison or a check against the Moody's forecast. After a brief review of the other economic forecasts that are readily available, we decided not to use any of them, because they either relied upon the same Moody's forecast that we use, or they do not provide data and forecasts at the county level and therefore could not be used for our forecast of the five different regions of Massachusetts.

We asked several of the electric and gas program administrators for access to the economic forecasts that they use for their own purposes. One program administrator provided us its forecast, but noted that it is based on the Moody's forecast. Another program administrator declined to provide us with their economic forecast, because it is also based upon the Moody's forecast and would only be redundant. A third program administrator noted that they do use a different source for their economic forecasts, but they declined to provide us with their forecasts because they are proprietary.

The New England Economic Partnership (NEEP) is a member-supported, non-profit organization dedicated to providing objective economic analyses and forecasts. Twice a year the NEEP publishes macroeconomic forecasts of the New England region and its six individual states. Their most recent forecasts were published in November 2011 and are available to members. Upon investigation we learned that the NEEP forecasts also rely upon the Moody's forecasts, and do not provide forecasts at the county level.⁶ Therefore, we did not pursue this source any further.

2.2 Economic Forecast Results

As a whole, the Massachusetts economy has fared slightly better than the US economy throughout the recent economic downturn. In terms of unemployment, the state has tracked at one percent or more below the national unemployment rate. As of the close of 2011, the state was showing a 6.8 percent unemployment rate, compared to 8.5 percent for the U.S.⁷

The latest Business Confidence Index from the Associated Industries of Massachusetts (AIM) shows that business optimism in the state has been rising in recent months. This index takes a monthly survey of businesses' economic outlook for the current year compared to the prior year. As seen in Figure 1.2 below, the recently released index of 52.8 for January 2012 is the highest it has been since May 2011. An index level of 50 is deemed a neutral outlook.

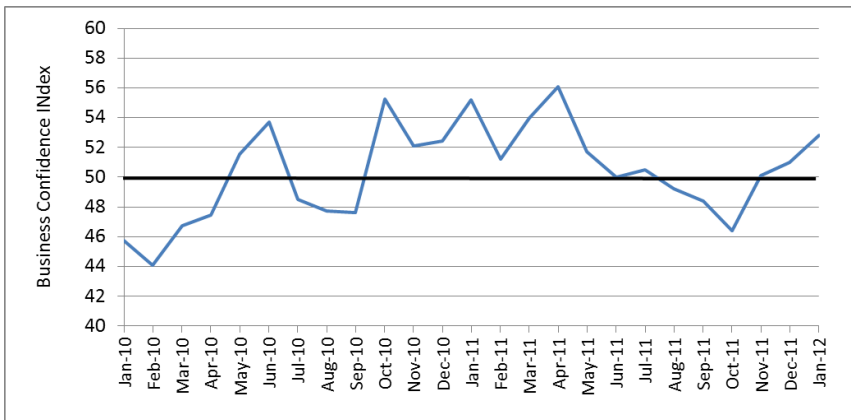
While optimism among the group has been rising since October 2011, expectations for a fast economic recovery have been mitigated somewhat by the crisis in Europe, especially since Massachusetts is reliant on export business with Europe.⁸

⁶ We contacted Mike Goodman (of UMass-Dartmouth) and Alan Clayton-Matthews (of Northeastern University) both of whom are part of New England Economic Partnership. They could only provide state-level forecasts and these were only available to NEEP members.

⁷ Based on December 2011 data from the Bureau of Labor Statistics.

⁸ Comment from Andre Mayer at AIM, see: http://www.aimnet.org/AM/Template.cfm?Section=Business_Confidence_Index

Figure 1.2 Business Confidence Index (December 2010 – January 2012)



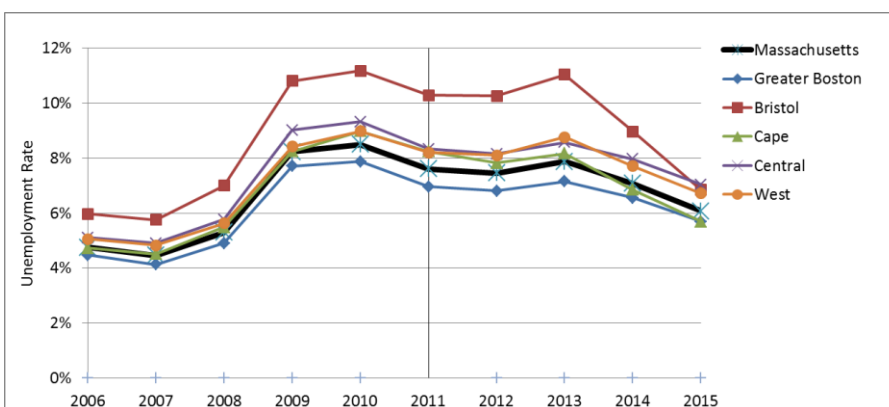
Source: Associated Industries of Massachusetts

Unemployment Rates

The Massachusetts economy is highly diverse by region. This means that parts of the state have been more insulated from the downturn than others. Bristol County has been hit the hardest of any region in recent years, in part due to its reliance on heavy industries (such as manufacturing) which has seen production downturns.

According to the economic forecast that we used, the unemployment picture is projected to improve in the state and its regions over the next few years. Typically, employment lags behind the economic performance, since some industries are only willing to hire once their business picks up significantly. This explains why, according to the Moody's forecasts, unemployment in Massachusetts is expected to increase slightly through 2013, then fall back below seven percent for the following two years.⁹ The unemployment rate is projected to fall precipitously for Bristol County (from 11 percent in 2013 to around seven percent in 2015), with the rate for all other regions (including the state as a whole) falling to between 5.5 percent and seven percent by 2015.

Figure 2.3 Current and Projected Unemployment Rate by Region (2011 – 2015)

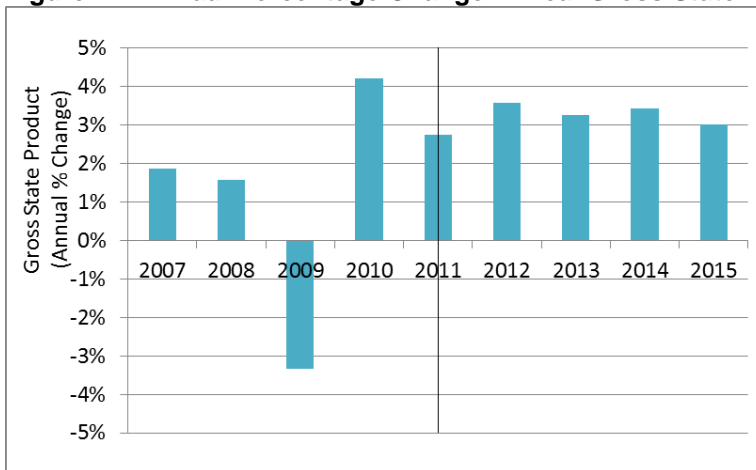


⁹ The Moody's forecast data lag behind the most recent data available on unemployment by two months. This explains the recent decreases in unemployment, which were more than expected but not accounted for in Figure 2.3.

Gross State Product

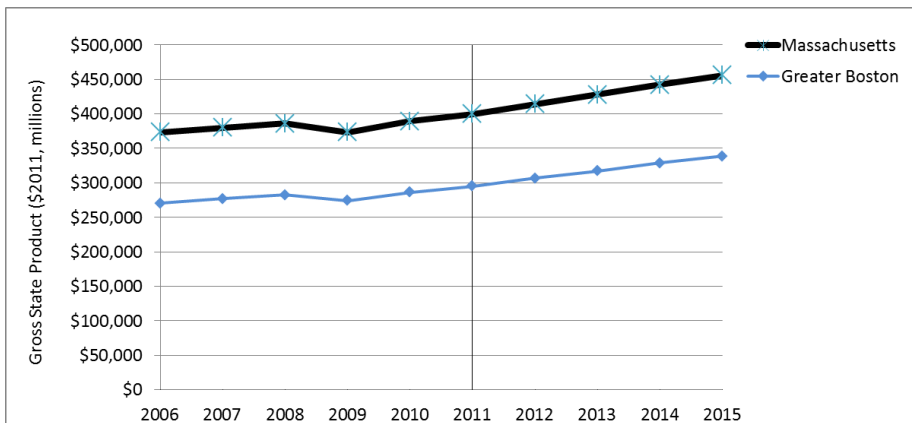
Figure 2.4 presents the annual percentage change in real (i.e., adjusted for inflation) gross state product for the historic years of 2007 – 2011, and forecasts for 2012 – 2015. This forecast suggests that gross state product will increase to annual growth rates higher than those that existed prior to the downturn in 2009.

Figure 2.4 Annual Percentage Change in Real Gross State Product: Massachusetts



Figures 2.5a and 2.5b (below) show the gross state product forecasts by region (in 2011 dollars).¹⁰ As indicated, steady growth in gross state product is expected over the next few years, except for the Cape and Islands region where gross state product remains essentially flat.

Figure 2.5a Gross State Product: Massachusetts and Greater Boston (million\$)



¹⁰ We use two charts to present the gross state product because the results for Boston and the state require a different scale than the results for the other regions.

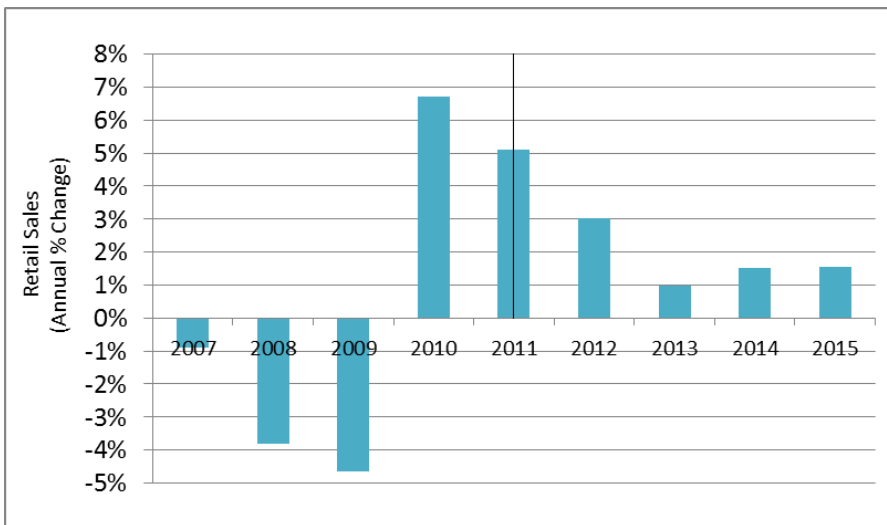
Figure 2.5b Gross State Product: Cape, West, Bristol, and Central Regions (million\$)



Retail Sales

Retail sales is a large component of gross state product—accounting for more than 26 percent of gross state product in Massachusetts. After a significant drop in 2007 through 2009, retail sales rose sharply in 2010 and 2011, and are predicted to rise modestly in the coming years. 2.6 presents the annual percentage change of real (i.e., adjusted for inflation) retail sales by year for the state.

Figure 2.6 Annual Percentage Change in Real Retail Sales: Massachusetts



Figures 2.7a and 2.7b show the retail sales forecasts by region (in 2011 dollars).¹¹ As indicated, steady growth in retail sales is expected over the next few years, except for the Cape and Islands region where retail sales remain essentially flat.

¹¹ We use two charts to present the retail sales because the results for Boston and the state require a different scale than the results for the other regions.

Figure 2.7a Retail Sales: Massachusetts and Greater Boston (millions\$)

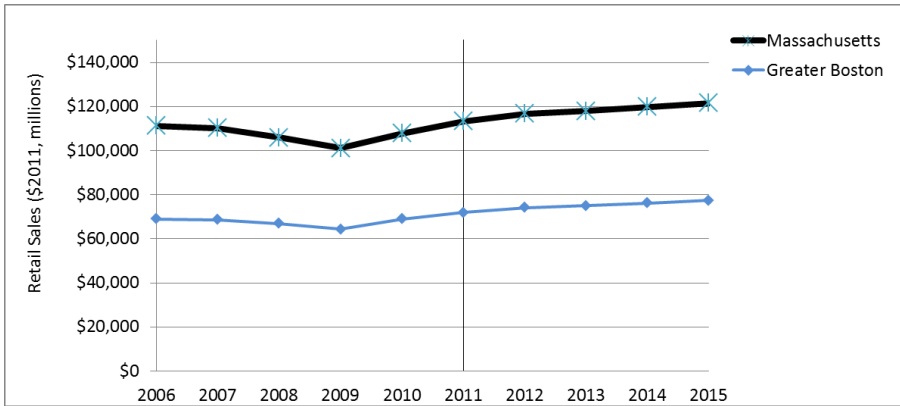
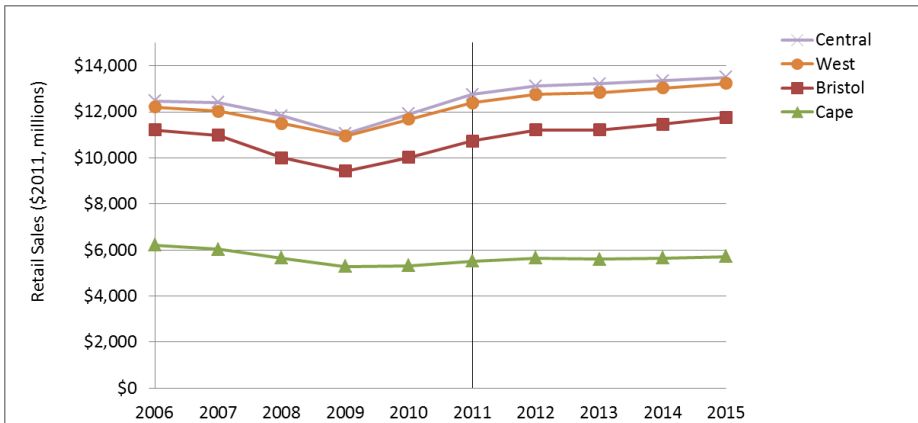


Figure 2.7b Retail Sales: Cape, West, Bristol, and Central Regions (millions\$)



Construction Activity

Construction activity has declined in recent years (during the economic downturn), but is expected to pick up in the coming years in Massachusetts. Figures 2.8 and 2.9 show the increases in business construction investments and residential permits, respectively. These indicators are important for the state’s economic outlook, and also offer a glimpse of the opportunities for residents and businesses to implement new efficiency measures—whether in a new building, an addition, or renovation of an old space.

Figure 2.8 Business Construction Activity in Massachusetts (2011 – 2015)

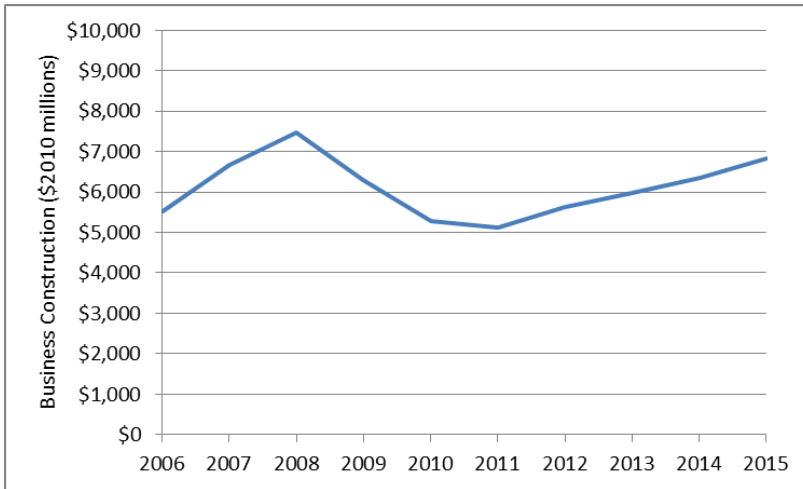
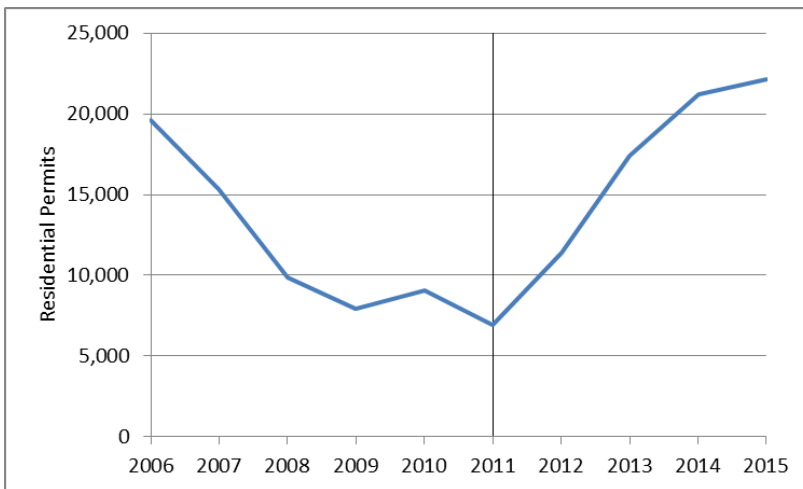


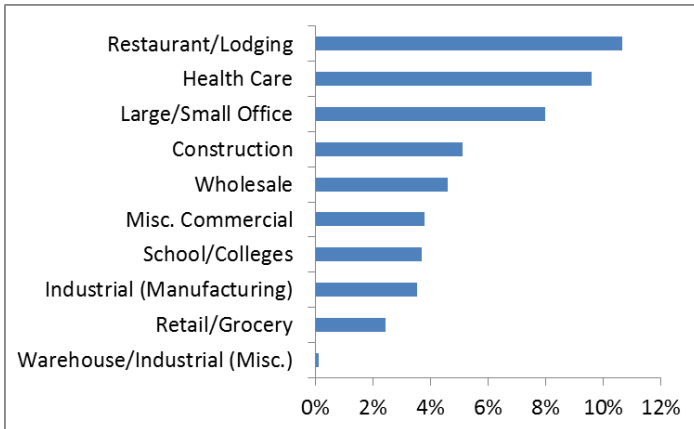
Figure 2.9 Residential Permits in Massachusetts (2011 – 2015)



Employment Growth by Industry

Most industries are projected to experience employment growth in Massachusetts in the period between 2011 and 2015, including manufacturing. Figure 2.10 shows the percentage increase in employment for each business type from 2011 to 2015. Restaurant/lodging, office, and healthcare industries are projected to experience employment growth of the most, with each industry projected to grow more than eight percent over the period. Industries such as industrial (manufacturing) and warehouse/industrial are expected to experience less employment growth.

Figure 2.10 Percentage Employment Growth in Massachusetts by Industry (2011 – 2015)



These results are presented below in Figures 2.11a-e, separately by region. Interestingly, healthcare and office industries are projected to grow strongly in every region of the state (and both are large components of every region’s employment); restaurant and lodging are projected to grow significantly in every region except the Cape/Islands; and construction is projected to have robust growth in Bristol, but little growth in other regions. This feeds into the large projected fall in unemployment in Bristol presented earlier; five industries in this region are expected to grow 9% or more in terms of employment.

Figure 2.11a Percentage Employment Growth in Greater Boston by Industry (2011 – 2015)

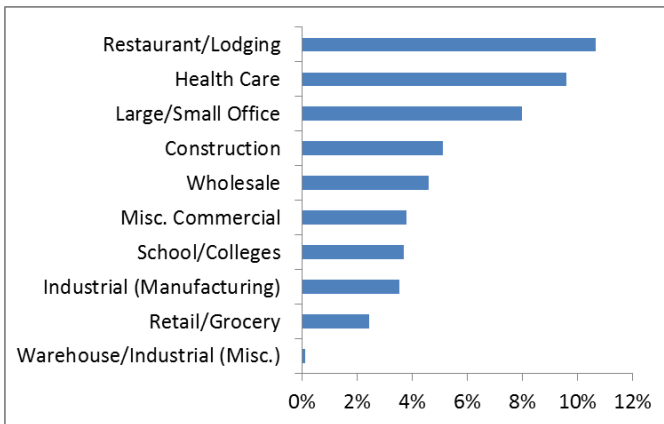


Figure 2.11b Percentage Employment Growth in Bristol County by Industry (2011 – 2015)

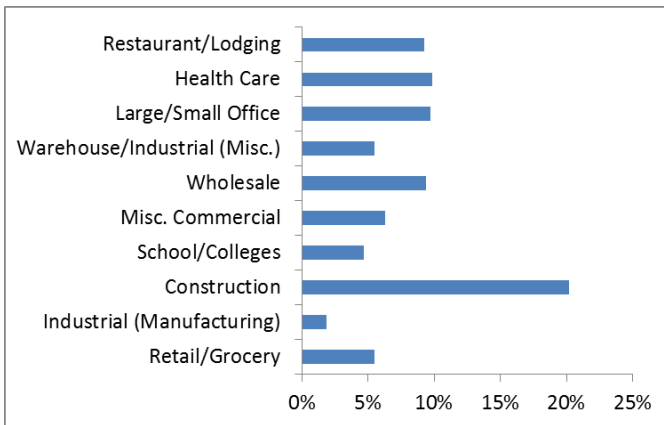


Figure 2.11c Percentage Employment Growth in Cape/Islands (2011 – 2015)

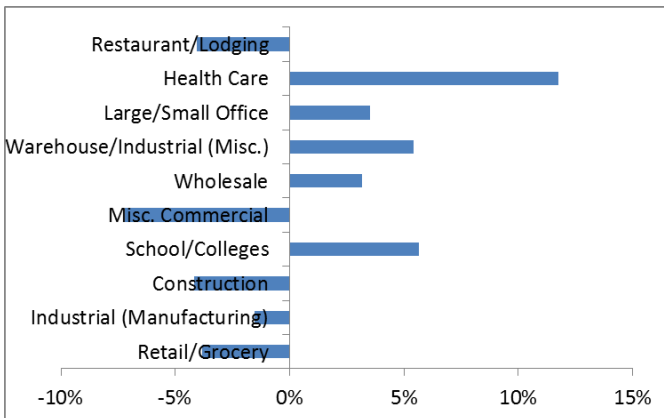


Figure 2.11d Percentage Employment Growth in Central Massachusetts (2011 – 2015)

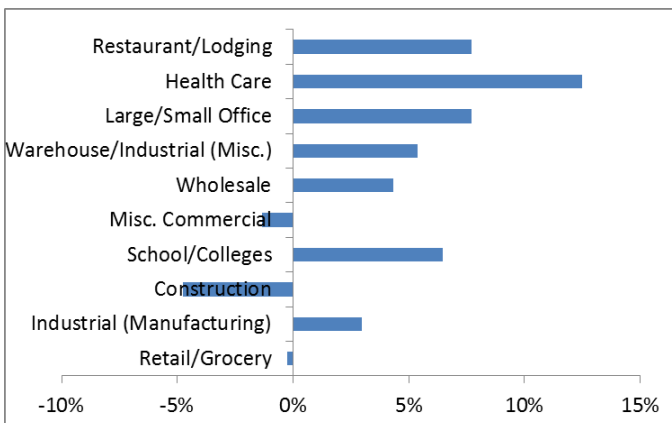
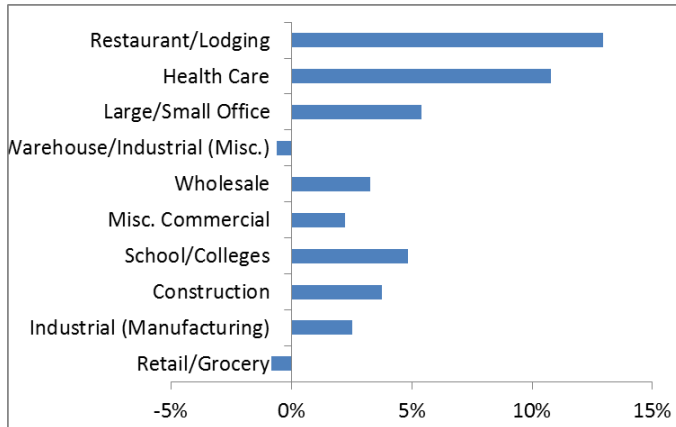


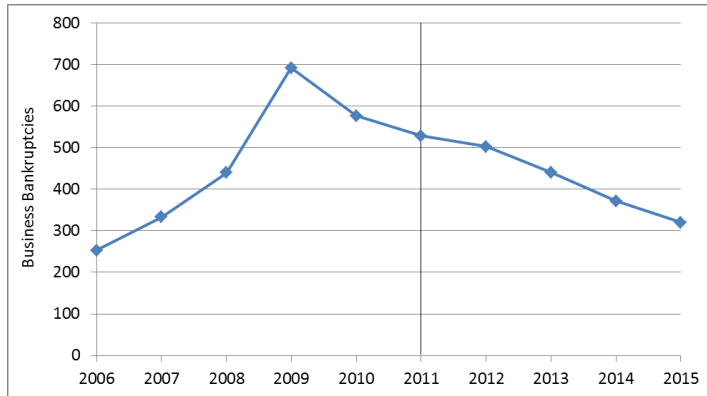
Figure 2.11e Percentage Employment Growth in Western Massachusetts (2011 – 2015)



Business Bankruptcies

Figure 2.12 presents historic and forecasted business bankruptcies in Massachusetts. Consistent with the positive trend in other economic indicators, bankruptcies are expected to decline over the next several years.

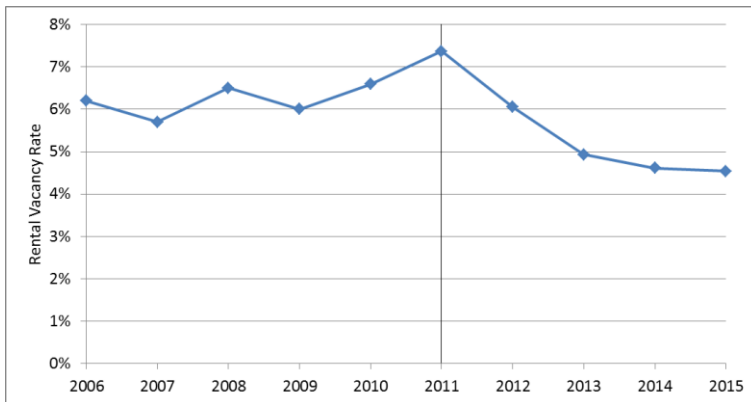
Figure 2.12 Business Bankruptcies: Massachusetts



Commercial Retail Vacancy Rate

Figure 2.13 presents the historic and forecasted commercial rental vacancy rate for Massachusetts. As indicated, the vacancy rates are expected to decline over the next few years.

Figure 2.13 Commercial Rental Vacancy Rate: Massachusetts



Summary

The economic forecast suggests that, in general, the state's economy will improve over the next several years. At the statewide level, gross state product, construction activity, residential construction permits, and retail sales are expected to grow, while unemployment rates, business bankruptcies, and commercial rental vacancy rates are expected to decline. The same overall trend of improvement can be seen within each region, as well. One exception to this trend is gross state product and retail sales in the Cape Cod/Islands region, which are expected to stay essentially flat between now and 2015.

Healthcare and office industries are projected to grow strongly in every region of the state, and both are large components of every region's employment. Restaurant/lodging is projected to grow significantly in every region except the Cape/Islands. Construction is projected to have robust growth in Bristol, but less growth in other regions. Bristol County, the region hit hardest by the economic downturn in Massachusetts, is expected to see a large fall in unemployment over the 2011 – 2015 period, in part due to construction growth.

3. Participation Barriers Identified From Other Sources

3.1 Measurement and Verification Studies

Massachusetts energy efficiency program administrators routinely conduct measurement and verification (M&V) studies of the commercial and industrial (C&I) energy efficiency programs. Among other things, these studies investigate customer perspectives regarding energy efficiency.

To inform our survey, we reviewed the results of recent M&V research, focusing on the C&I process evaluation and market characterization studies performed in the past two years. Based on our review, these studies suggest the following key barriers and, in some cases, potential solutions, to C&I participation in energy efficiency programs:

- Financial barriers. These include cost of efficiency investments, incentives and financing availability, capital availability, and payback periods associated with installing efficient equipment. Even with large financial incentives available, there are still instances when participants face significant upfront costs for the time and resources required to conduct technical assessments or lifecycle cost analyses. Additionally, companies often have a limited amount of capital available to spend on efficiency projects. Increased incentives related to technical assistance and increased availability of financing are often recommended as methods to overcome cost barriers, and are generally seen as an attractive and important component to participation.
- The recent economic downturn. This most notably impacts the new construction market, including lack of available capital, customers' apprehension toward capital investments, and efficiency investments competing against other capital projects within a company. For customers who participate in efficiency programs during an economic downturn, the amount of the incentive plays an increasingly important role in the decision to participate. Recommended methods to address the economic mindset of customers include increasing financial incentives, focusing on more cost-effective technologies and/or customers with stable financial conditions, and developing creative marketing programs.
- Customer awareness and program marketing barriers. This includes lack of customer awareness about efficiency programs, the advantages and drawbacks of different types of customer outreach methods (e.g., direct contact compared to marketing materials), and difficulty in reaching key decision makers and/or target markets. A key challenge for efficiency programs is reaching eligible customers with information about program offerings and the process for participation. Program Administrators typically market efficiency programs to C&I customers through account executives who serve as the main point of contact between customers and program administrators, and are therefore responsible for informing their customers of relevant energy efficiency opportunities. For this customer sector, personal relationships are particularly important in recruiting participants and the direct outreach conducted by program staff and vendors is central in reaching customers who ultimately chose to participate in programs. Furthermore, who the account executives or program managers contact influences program participation greatly. Recommendations include improving

marketing materials, hosting “lunch and learns,” and educating customers as well as Program Administrator staff.

- Program design and administration barriers. This includes burdensome and time-consuming processes for participation, Program Administrator staffs’ lack of available time and technical knowledge, customers’ lack of understanding regarding efficiency strategies and measures, availability of certain technologies, and lack of technical assistance. A number of studies suggested that participating in efficiency programs could be streamlined, especially the application process required for participation. Despite the relatively large incentives offered, program staff reported that some customers are reluctant to assume the additional time and cost required by participation. Additionally, account executives mentioned being too busy or lack of staff as an issue. Some studies suggested that program administrator’s skill sets could be more diverse, and that program administrators often lack technical knowledge. One recurring issue relates to the types of measures offered through the program administrators programs. One recommendation was that there should be something in between a straight forward prescriptive approach and full building modeling.
- Timing of participation as a barrier. This includes lack of early involvement by the program administrators in efficiency projects. For example, some projects require early involvement of the program administrators to ensure that all relevant energy efficiency improvements are incorporated into the customer’s building design.

Additional barriers to participation include: (a) the need to obtain corporate approval to participate; (b) customers’ hesitation to adopt new technology; and (c) customers already as efficient as is feasible, and (d) rapidly changing building codes. For some clients, who may operate their facilities on a 24/7 basis, the need for equipment reliability and ease of maintenance is paramount.

A more detailed discussion of the key barriers to efficiency program participation identified in the Massachusetts M&V studies is presented in Appendix A of this report.

As might be expected, our survey results discuss many of these same issues.

3.2 Comments at January 2012 EEAC Meeting

The majority of the EEAC’s January 10, 2012 monthly meeting was devoted to hearing comments from the public regarding the development of the 2013 through 2015 three-year energy efficiency plans. Summarized below are the written comments filed in follow up to the January 10, 2012 meeting, related to participation barriers.

Measures and Incentives Structures

A Better City (ABC) recommends increased flexibility in program offerings, as it finds that the current programs are too limited, with significant incentives for low-savings measures such as lighting, but comparatively little support for the major building infrastructure improvements that can substantially reduce energy consumption (ABC, 5). ABC states that many building owners feel that they have reached the limit of what can be accomplished under the current utility programs, but are certain that much deeper savings can be found in their properties (ABC, 5). More specifically, ABC argues that incentives to replace aging HVAC systems are inadequate to drive early retirement, and suggests that paybacks approach five years to incent owners to make the large-scale capital investments that drive deep energy savings (ABC, 6).

Medical Academic and Scientific Community Organization, Inc. (MASCO) and Health Care Without Harm note that once healthcare facilities move beyond installing “low-hanging fruit,” sophisticated energy conservation systems will need to be addressed in order to reap additional savings (MASCO, 1; Health Care Without Harm, 1-2). Such sophisticated systems do not function properly without certain synergistic sequences and/or behaviors, which the current incentive programs do not address (MASCO, 1). MASCO urges that prescriptive specifications and sequences be linked to operational and maintenance best practices (MASCO, 1).

MASCO also explains that as healthcare reimbursement rates decline, some hospitals lacking financial resources and/or depth in their facility departments may need a larger cost share from utilities to meet project costs (MASCO, 1; Health Care Without Harm, 1-2). Such support can be tied to conditions such as utility/client MOUs, institutional energy master plans, finances, and adjusted lifecycle savings, perhaps with utility payback coming from later energy savings (MASCO, 1-2).

Northeast Energy Efficiency Partnerships (NEEP) understands that an ongoing challenge and area of focus by the program administrators has been moving customers from initial assessment of energy saving opportunities to actually installing measures (NEEP, 5). NEEP recommends exploring the possibility of adapting for mid-size businesses the Memoranda of Understanding (MOUs) that have helped large C&I customers take a multi-year approach to efficiency investment (NEEP, 5). MASCO and Health Care Without Harm recommend that efficiency programs consider development of a joint strategic MOU as standard practice between all relevant utilities and large accounts (MASCO, 2; Health Care Without Harm, 1-2). MASCO suggests that such an approach would widen and deepen hospital participation, optimize projects, enable projects with longer returns on investment, and reduce barriers by minimizing the time needed to develop multiple MOUs (MASCO, 2). ABC also recommends negotiating a single, consolidated MOU, as it may have significant advantages and would allow building owners to effectively leverage time and personnel (ABC, 4).

Medium Sized Customers

ABC highlights that larger customers with dedicated utility account representatives are more satisfied with their program administrator program experience, while small and medium sized customers have a more challenging time navigating the programs (ABC, 3). ABC suggests that such a barrier could be addressed by having utility representatives offer a package of incentives and a single point of contact to assist during program participation (ABC, 3). ABC notes the gap in program offerings for customers between 300 kW and 700 kW, which could be removed by increasing the ceiling for the direct install program from 300 kW up to 500 kW and lowering the level for facilities to be appointed an Account Executive from 700 kW down to 500 kW (ABC, 3-4). Further, ABC recommends that the program administrators provide increased guidance on developing custom measure retrofits to small and medium sized customers (ABC, 4). ABC also notes that program application forms and marketing materials can be confusing, creating a barrier for smaller companies that do not have dedicated staff to manage energy projects (ABC, 4). ABC also notes that landlord-tenant split incentive issues are a well-known barrier in the commercial real estate market that could be overcome with focused utility efforts to bring both parties into the retrofit process in support of mutually beneficial building improvements (ABC, 5).

Better Data for Customers and About Customers

ABC suggests that the lack of easily accessible and transparent energy consumption data is a barrier to reducing energy use for office tenants, building owners, and other utility customers (ABC, 2). ABC recommends the development of a utility sub-metering program to help defray costs of metering equipment installations (ABC, 2). ABC also recommends that efficiency programs encourage widespread adoption of EPA's Energy Star Portfolio Manager, as such an approach could improve building energy use monitoring and significantly aid building owners in their efforts to evaluate energy savings investments (ABC, 2-3). Finally, ABC recommends allowing for better access to real-time or interval meter energy consumption data by providing commercial customers with web-based tools that better organize and present real-time data (ABC, 3).

MASCO and Health Care Without Harm argue that customers need data at a more granular level than currently is available so as to integrate energy management and clinical operations to target efforts, detect and correct aberrational usage, monitor and maintain conservation measures, and incent and track behavior change (MASCO, 1; Health Care Without Harm, 1-2). MASCO contends that standardized sub-metering, water and steam monitoring specifications, and protocols could be developed to push vendors for lower costs, and to widely deploy accurate systems (MASCO, 1).

Mass Energy Consumers Alliance (Mass Energy) recommends that the program administrators be required to collect and report data about who is served and how in ways that would provide for meaningful planning, monitoring and evaluation (Mass Energy, 3). Mass Energy argues that better data will lead to better, more cost-effective programing (Mass Energy, 3).

4. Customer Survey

4.1 Customer Survey Methodology

The purpose of the survey component of Synapse's investigation was to gather additional information about the perceived current and future barriers to C&I participation in Massachusetts's energy efficiency programs, with specific attention to the role of the economy. We use the language "perceived current and future barriers" because this information has been self-reported by C&I customers and, as such, represents their opinions about the barriers to participation that they face.

Survey Development

To determine the content and design of its surveys, Synapse worked with the EEAC, conducted interviews with EEAC members and consultants, reviewed recent studies related to C&I participation, and attended the January EEAC meeting, which was devoted to receiving input from residential and C&I customers to inform the upcoming three-year plans. Questions were developed both to compare directly with the results of existing research, and to delve deeper into areas of particular interest to the EEAC.

Each survey consisted of two parts: a questionnaire, followed by a one-on-one interview. The questionnaire collected information that could be easily provided in written format, including both quantitative and qualitative information. The same questionnaire was used for both participants and non-participants.

Interview questions (all qualitative) were developed to provide a framework for the one-on-one interviews; however, interviewers were given the freedom to "go off-script," in order to ask follow-up or clarifying questions, to allow for open dialogue with the customer, and to address specific issues brought up in the customer's responses to the questionnaire.

Two versions of the interview questions were prepared; one for participants and one for non-participants. Non-participants were defined as customers who had not participated in C&I energy efficiency programs within the past five years, or had never participated.

The questionnaires and interview questions, for participants and non-participants, are provided in Appendix B of this report.

Selection of the Targeted Survey Pool

We then identified a set of targets for customer types to interview. We planned to interview a total of 40 customers across the state. We identified a target set of customers to interview by first spreading the 40 interviews across the five state regions based on economic activity in those regions; and second by spreading the interviews in each region across the different industry types according to the level of economic activity by industry type. In addition, the EEAC Executive Committee asked Synapse to focus our interviews on:

- Non-participants, as this segment of the population may have more significant savings opportunities. Non-participants were defined as customers who had not participated in C&I energy efficiency programs within the past five years, or had never participated.

- Medium-to-large C&I customers, as these customers often have significant savings opportunities. Medium-to-large C&I customers were defined by electric Program Administrators (PAs) as customers with a demand of greater than 300 kW. Medium-to-large C&I customers are defined differently among gas PAs. However, one gas PA suggested that medium-to-large C&I customers can be characterized by a usage of 10,000 therms or more annually.
- Non-governmental customers, as the reasons for governmental customer non-participation are better understood, and a number of initiatives are ongoing to address barriers to participation by governmental customers.

The resulting targets by region and industry type are presented in Table 4.1, below.

Table 4.1 Survey Targets by Region and Industry Type

Region and Industry Type Targets						
Industry Type	Boston	Central Mass	Cape Cod	Western Mass	Bristol County	Total
Heavy industry	1	1	1	1	1	5
Warehouses & Distribution	0	1	0	1	1	3
Retail	1	1	1	1	1	5
Office	6	2	1	2	1	12
Schools & Colleges	1	1	0	1	0	3
Healthcare	3	1	1	1	1	7
Restaurants & Lodging	2	1	1	1	1	6
Miscellaneous	0	0	0	0	0	0
Total	13	8	5	8	6	40

Point380 Energy Efficiency Market Opportunity Study

National Grid and NSTAR recently hired Point380 to conduct an energy efficiency market opportunity assessment of their service territories. Synapse was provided a copy of the Point380 study, to help inform our survey design.¹²

The purpose of the Point380 study is to provide National Grid and NSTAR with a general framework for understanding where the greatest remaining energy efficiency program opportunities exist. The study provides a high-level projection of energy efficiency opportunities by end-use, customer type, building type, and energy use (electric and natural gas).

We used the Point380 study to inform which industries to focus on in our survey. We reviewed the results of the Point380 study to identify those industries that offer the greatest potential for energy efficiency savings.

The two figures below, taken directly from the Point380 study, illustrate how we used the study. The first chart indicates the opportunity for commercial electric efficiency savings,

¹² Point380, *Energy Efficiency Market Opportunity Model*, Final Deliverables/Report Deck, prepared for National Grid and NSTAR, January 17, 2012, The results were provided to Synapse in four slide decks: Overview, Slide Deck 1a, Slide Deck 1b, and Slide Deck 2.

according to the different industries and end-uses. It indicates that six industries—small office, large office, health, retail, college, and grocery—offer the majority of electric efficiency savings.

The second chart indicates the opportunity for commercial electric efficiency savings available per account, i.e., savings available for any one customer. From the perspective of an energy efficiency program administrator, it is much easier to achieve efficiency savings from those industries that have a high level of savings per account. This chart indicates that the largest amount of efficiency savings per account is available from four industries: large office, health, college, and grocery.

We reviewed this information to help us focus on those industries that offer the greatest opportunity for efficiency savings. In this case, for commercial electric opportunities, we concluded that we should attempt to give priority to the six industries that show the greatest potential in the two charts below: small office, large office, health, retail, college, and grocery.

Figure 4.1 Sample Result from Point380 Study: Commercial Electric Opportunity.

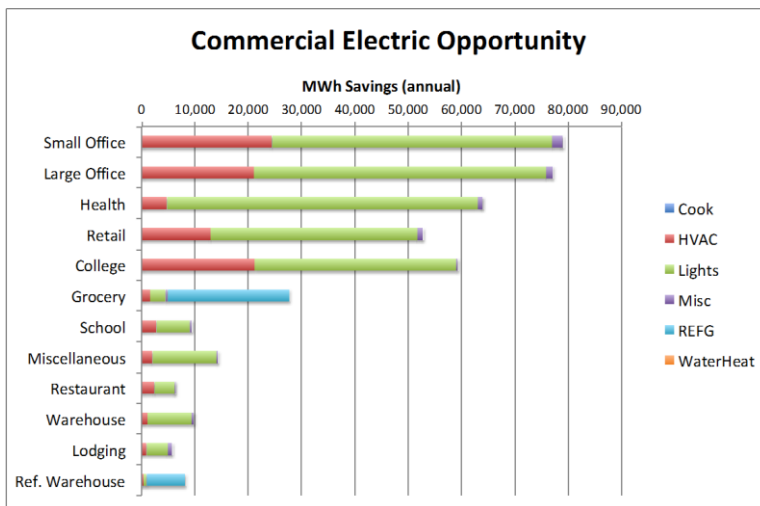
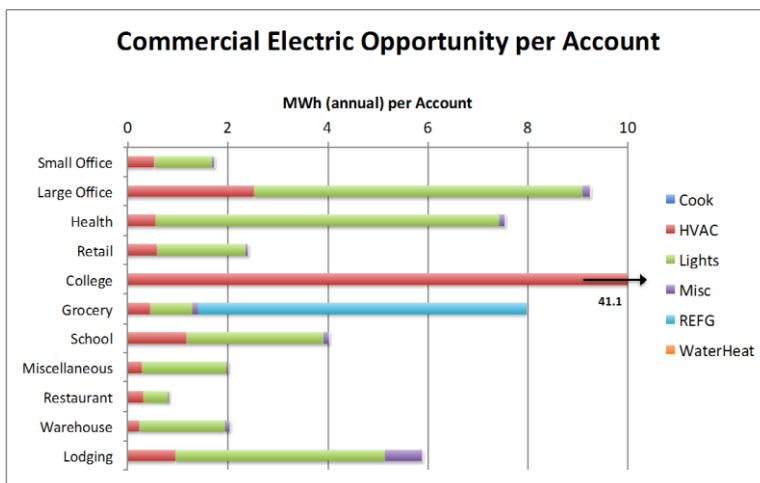


Figure 4.2 Sample Result from Point380 Study: Commercial Electric Opportunity/Account.



We also looked at the results for the industrial sector and for the gas end-uses. The following bullets summarize how we used the results of the Point380 study:

- As mentioned above, for the commercial electric customers we gave priority to interviewing customers from the following industries: small office, large office, health, retail, college, and grocery. This is based on the charts above, from slides 25 and 26 of the Point380 slide deck 1a.
- For the commercial gas customers, we gave priority to interviewing customers from the following industries: office, health, college, restaurant, and hotel. This is based on slides 32 and 33 of the Point380 slide deck 1a.
- For the industrial electric customers, we gave priority to interviewing customers from the following industries: industrial machinery, electronics, rubber/plastics, and chemicals. This is based on slides 13 and 14 of the Point380 slide deck 1b.
- For industrial gas customers, we gave priority to interviewing the following industries: food, chemicals, rubber / plastics, and paper. This is based on slides 20 and 21 of the Point380 slide deck 1b.

It is important to note that the Point380 results were used by Synapse simply for prioritizing which industries to invite for interviews. It was not intended to exclude industries, or limit survey participation by specific industries.

The Final Survey Pool

We then collected customer contact information from the Massachusetts energy efficiency program administrators and a few other stakeholders. We sent invitations to all 137 of the customer contacts that we received that were eligible and included contact information. Many of these customers did not respond to, or declined, our invitation. We conducted a total of 36 interviews. An additional four customers returned the questionnaire, but could not be reached to schedule an interview.¹³

The interviews that we conducted are presented by region and industry type in Table 4.2. Since a large number of customers did not respond to the survey invitations, the actual region and industry distribution was determined more by customer interest and availability than by the information and priorities that we used to determine the target region and industry distribution. Nonetheless, the set of interviews that we were able to conduct is close enough to the target region and industry distribution that we believe it will provide the geographic and industry diversity that we set out to survey.

The one example of where our customer set does not align with the intended target is that the vast majority of our interviews were with customers that have participated in the Massachusetts energy efficiency programs. We did not receive as many non-participant contacts from the stakeholders, and those that we did contact were much less likely to participate in our survey than the program participants.¹⁴ Additionally, some non-participant contacts that the stakeholders provided were actually program participants.

¹³ These four customers are not included in our discussion of the survey results. However, their responses to the questionnaire are included at the end of Appendix C.

¹⁴ The participation levels of the 137 customers to whom we sent invitations was approximately 31% participants and 41% non-participants, while 28% were not identified as either a participant or non-participant. The customers who responded to our invitation and participated in the survey were thought to comprise a roughly similar percentage of participation levels. In interviewing customers, 8 customers who were provided to us as

Table 4.2 Actual Surveys Completed, by Industry Type and Region

Industry Type	Boston	Central Mass	Cape Cod	Western Mass	Bristol County	Total
Heavy industry	2	1	0	5	1	9
Warehouses & Distribution	0	0	0	1	0	1
Retail	1	1	0	1	2	5
Office	5	1	0	3	0	9
Schools & Colleges	4	0	0	0	0	4
Healthcare	3	1	1	0	0	5
Restaurants & Lodging	1	1	0	0	0	2
Miscellaneous	0	0	0	0	1	1
Total	16	5	1	10	4	36

It is important to note that sample sizes this small will not provide results that can be considered statistically significant. In addition, because these customers were not chosen at random it is quite possible that the survey results suffer from “selection bias.” Nonetheless, we believe the results from these interviews provide useful anecdotes and insights for the EEAC and other stakeholders, consistent with the purpose of this study.

Survey Implementation

Using the contact information provided by the program administrators and EEAC members, Synapse sent invitations to the potential survey pool of 137 contacts via email.

The first part of the survey, the questionnaire, was attached to the email invitation. Once a customer completed the questionnaire, a one-on-one interview (approximately 30 – 40 minutes in length) was scheduled to delve deeper into specific interest areas, including any that were raised in the customer’s responses to the questionnaire. Most interviews were conducted over the phone; however, customers were given the option to be interviewed in person, and some did choose that option.

In order to encourage customers to be more forthright with Synapse, the survey was conducted confidentially. As such, while selected questionnaire responses and interview notes for each surveyed customer have been provided in Appendix C of this report, all customer- and interviewee-identifying information have been removed.¹⁵

4.2 Customer Survey Results

Overview of Common Themes

We noticed many common themes among the customers that we interviewed. For example, most customers that we interviewed were past program participants at some

non-participants revealed that they were actually program participants, and 14 customer that were originally unidentified revealed that they were program participants. Therefore, the participation levels of the final 36 customers surveyed is as follows: 6 customers were non-participants (17%) and 30 customers (83%) were participants.

¹⁵ The characterization of barriers evolved as we surveyed customers. Because of this, the “Barriers to Participation” section in the interview notes in Appendix C varies depending on when the customer was interviewed.

level and stated that they either will participate or are considering participating in programs in the next few years.¹⁶ In general, the customers we interviewed consider energy efficient equipment regularly when they make purchasing decisions.

Another theme we heard from most of our interviews was that payback period is the main criteria for evaluating energy efficiency investments and that energy efficiency investment payback periods compete with the payback periods for other capital investment projects. The payback threshold for moving forward with energy efficiency investments was remarkably consistent across industries and regions. Most customers require projects to have payback periods of four years or less. However, projects with payback periods of three to four years are rarely approved. Projects with payback periods of two to three years are sometimes considered, but approval is uncertain and depends largely on the economics of the other projects that are competing for capital in a given year. A project with a payback of two years or less is typically considered to be worthwhile and is approved.

A third theme we heard from many customers we interviewed was that capital constraints are a key barrier to moving forward with energy efficiency projects. All projects that are submitted (whether they are related to energy efficiency and energy consuming equipment replacement or not) compete for capital investment dollars using payback as the key criteria and taking into the account the nature of the need for the project. Energy efficiency investments are frequently categorized as discretionary, not required, expenditures.

A fourth theme is that the general process for vetting and approving energy efficiency investments is similar across many customers. Projects are scoped, analyzed, and proposed on an annual basis and submitted to a higher level team for review and approval.

A fifth theme is that financing mechanisms, such as loans, are seldom, if ever, used. Instead, customers primarily use available capital to pay for their energy efficiency investments, supplemented by the contributions from the energy efficiency programs. A sixth theme is that many customers were generally confused by the number of different energy efficiency program administrators in the market and what each provider could provide. Some customers had facilities served by both municipals and utilities. Also, some customers mentioned that they were also working directly with ESCOs, renewable installers, and manufacturers/distributors of lighting products, among other third parties.

It is clear from even our small sample that there are many different types of customers with different needs and barriers to participating in energy efficiency programs. For example, some customers are proactively looking for energy efficiency opportunities, prefer to scope an energy efficiency project using their own internal resources, and prefer to obtain program administrator resources with little technical support from the program administrators. Other customers do not have the resources to be proactive and scope projects, and prefer regular contact from program administrators on program offerings and savings opportunities. This diversity of customers creates a significant challenge for program administrators, because reaching additional customers and achieving deeper levels of savings per customer will likely require offering program technical and financial

¹⁶ Specifically, when asked whether a customer plans to participate in the efficiency programs within the next three years, 27 customers said "yes," 2 said "no," and 7 said "maybe." The four additional customers that completed the questionnaire but not the interview all indicated "maybe."

support that is more tailored to the unique needs of the many different types of electric and gas customers.

Positive Feedback

Many of the customers interviewed provided positive feedback on the programs. Some of the highlights include the following points, which are amplified with a few anecdotes.

Many customers were grateful for the sustained incentives and technical assistance provided by energy efficiency program administrators over the years and indicated that energy efficiency investments could not compete with other capital investments without the incentives and technical assistance received.

- One customer is a regular participant and is totally committed to energy efficiency, but cannot do efficiency projects without the program administrator's rebates. The efficiency savings from equipment installations does not allow the customer to reach its required payback on its own. The combination of energy savings, maintenance savings, and rebates allows the customer to meet its two years or less payback objective.
- Another customer has mostly focused on lighting opportunities and has been transitioning to new lighting over the past 10-13 years. The customer stated that every step the customer takes improves long run expenses and, even though they must do this in a phased approach to maximize incentives and manage the capital investment, they aim to eventually reach all of the lighting retrofit opportunities in the building.
- A third customer indicated that it has mostly tapped out its gas opportunities using incentives that the customer has accessed 2 or 3 times. The incentives have helped the customer achieve the payback criteria and helped energy efficiency projects compete with other capital investment projects that were on the table, resulting in project prioritization, approval, and implementation.

Several companies mentioned that they appreciate the level of outreach that they receive from energy efficiency program administrators and have had a long-standing, trusting relationship with their account executives.

- One customer stated that it has a true partnership with his energy efficiency program administrator and feels strongly that the energy efficiency program administrator is representing the customer's interests and needs. The customer appreciates the support provided by the energy efficiency program administrator to help the customer complete efficiency projects. The partnership is a win-win for both parties. The customer has national operations and acknowledges that Massachusetts energy efficiency programs are way ahead of most energy efficiency programs across the country and that Massachusetts has been very proactive in its approach to efficiency. The customer especially appreciates the ability to work with the energy efficiency program administrator to meet the customer's needs.
- Another customer stated that they appreciate and trust the energy efficiency program administrator's guidance on energy efficiency products and services.

Some companies recognized the variety of efforts and approaches that the energy efficiency program administrators are leveraging as well as the positive impacts of these efforts over time.

-
- One customer likes the concept of the upstream lighting program. The customer stated that this program shows that the energy efficiency program administrators are trying to help their customers get incentive dollars without having to submit a lot of paperwork.
 - One customer has worked closely with its energy efficiency program administrator to design a custom three-year efficiency plan for its property through a Memorandum of Understanding (MOU). Through the MOU, the customer set aggressive goals and has been successful in meeting those goals. The energy efficiency program administrator has been able to provide greater amounts of funding than in previous years of participation, which allowed the customer to design a significant efficiency investment plan.
 - Another customer felt strongly that the biggest benefit of these programs over time has been to accelerate energy efficient product development and manufacturing and make energy efficient solutions affordable options for companies.

Summary of Barriers Identified by Customers

The barriers to participation that have emerged from the interviews can be organized into two categories: customer barriers and program barriers. Customer barriers are barriers that stem from a customer's internal decision-making processes.¹⁷ Program barriers are barriers that stem from the way the programs are designed or administered.

Customer Barriers

The customer barriers consist of the following:

- Customer's capital constraints: this category addresses a customer's tight capital investment budgets, and efficiency projects competing against other investment projects that are more germane to a customer's core business.
- Economic climate: this category addresses economic issues that might influence a customer's decision to participate in programs, such as reduced capital availability because business is slow or there is not enough time to devote to efficiency because the customer has had layoffs, and responsibilities are divided among fewer employees.
- Unsupportive corporate review and approval process: this category addresses the difficulty in receiving corporate or management approval to spend on efficiency measures.
- Company is convinced it has done all it can : this category addresses the customer perception that it doesn't have any more efficiency measures it can implement within its facilities..
- Distrust of new technology: this category addresses whether a customer distrusts efficiency measures, including perceiving efficiency measures as requiring more maintenance and upkeep.

¹⁷ It is important to note that the efficiency programs, by their very nature, are designed to remove barriers to participation in efficiency projects. However, customers identified aspects of the programs that they perceive as barriers.

Program Barriers

The program barriers consist of the following:

- Insufficient marketing and outreach: this category addresses how aware customers are about efficiency programs and opportunities, and how regularly they hear from program administrators.
- High transaction costs: this category addresses the process required for program participation, including paperwork and time devoted to program participation.
- Inadequate responsiveness and timing: this category addresses how quickly the program administrators respond to a customer's needs (i.e., when equipment fails and needs immediate replacing), as well as the timeliness of program administrators outreach to customers about participation in programs, .
- Limited measures offered through the programs: this category addresses the appropriateness and adequateness of measures offered through the efficiency programs.
- Insufficient incentives: this category addresses the appropriateness and adequateness of incentive levels and rebates offered through the efficiency programs.
- Desire to opt out of the energy efficiency charge: this category tracks customer's mention of the energy efficiency charge or the system benefits charge as a barrier to greater efficiency savings. Some large customers would prefer to opt out of the charge and use the funds they would normally contribute to the charge within their business, with the stipulation that such funds can only be used for efficiency projects. While this is not necessarily a participation barrier created by the design or implementation of the efficiency programs, some customers argued that such a change would allow them to spend more on efficiency projects and achieve greater savings.
- Programs not tailored to unique needs: this category tracks customer's mention that the programs are not designed to meet their needs.

Figures 4.3 and 4.4 present a summary of the number of times each of the barriers was mentioned by customers in our interviews.¹⁸ In general, program barriers were mentioned about twice as frequently as customer barriers. Of the program barriers mentioned, insufficient marketing and outreach and transaction costs were the most frequently mentioned barrier.

¹⁸ Note that each customer mentioned more than one barrier, and not all customers identified the same number of barriers. We present these figures simply to provide a summary of the frequency with which the different barriers were identified.

Figure 4.3 Customer Barriers Mentioned in the Interviews

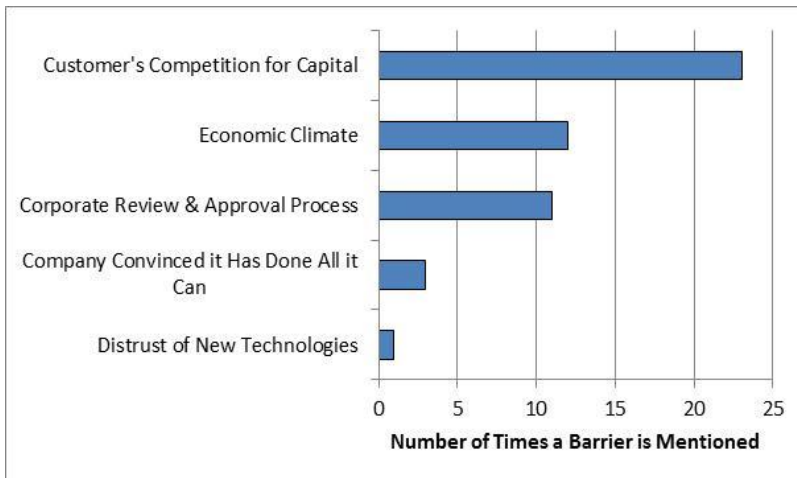
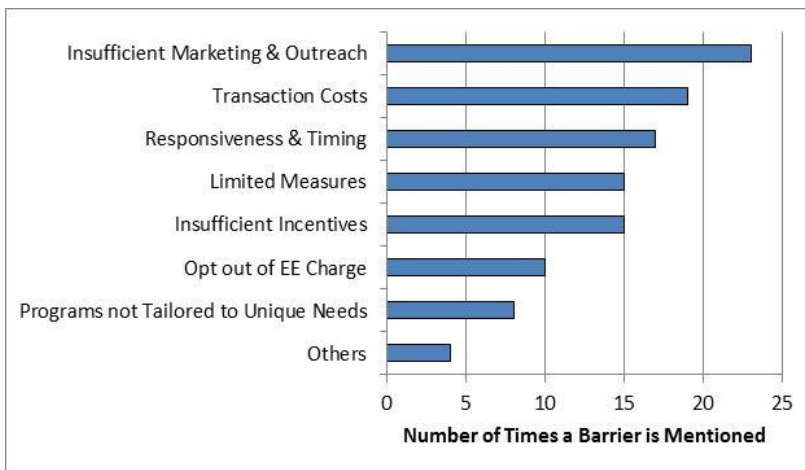


Figure 4.4 Program Barriers Mentioned in the Interviews



Tables 4.3 and 4.4 present a summary of the barriers identified by each customer during its individual interview.¹⁹ Each customer is identified by its region and industry. A “yes” in the table indicates that the barrier affects the customer, while a “maybe” indicates that the barrier could affect the customer depending on certain circumstances. For example, a “maybe” within the “corporate review and approval process” category could be because the customer is under new ownership and is uncertain how responsive the new ownership will be to energy efficiency projects.

¹⁹ Note that the number given to each surveyed customer in Tables 4.3 and 4.4 corresponds to the interview number identified in each customer’s interview notes included in Appendix C.

Table 4.3 Barriers Identified in Customer Interviews - Customer Barriers

Company Information				Expect to Participate in Next 3 Years?	Customer's Capital Constraints	Economic Climate	Corporate review & approval process	Company distrust of new technologies	Company convinced it has done all it can
#	Region	Industry	Participant						
1	Bristol County	Heavy Industry	Yes	Maybe	Yes				
2	Bristol County	Retail	Yes	Yes	Yes				
3	Bristol County	Miscellaneous	Yes	Yes	Yes	Yes	Yes		
4	Boston	Schools & Colleges	Yes	Yes			Yes		
5	Western Mass	Retail	Yes	Yes	Yes	Yes			
6	Boston	Healthcare	Yes	Yes	Yes				
7	Boston	Office	Yes	Yes		Yes	Yes		
8	Boston	Restaurants & Lodging	Yes	Yes					
9	Boston	Office	Yes	Yes	Yes				
10	Central Mass	Heavy Industry	Yes	Yes	Yes				Yes
11	Western Mass	Office	Yes	Maybe	Yes	Yes			
12	Boston	Office	Yes	Yes	Yes	Yes			
13	Central Mass	Healthcare	Yes	Yes	Yes	Yes	Yes		
14	Boston	Schools & Colleges	Yes	Yes	Yes				
15	Boston	Schools & Colleges	Yes	Yes					
16	Boston	Healthcare	Yes	Yes	Yes				
17	Boston	Schools & Colleges	Yes	Yes		Yes			
18	Western Mass	Heavy Industry	No	Yes	Yes		Maybe		
19	Central Mass	Retail	Yes	Yes					
20	Central Mass	Office	Yes	Yes	Maybe	Maybe			
21	Boston	Healthcare	Yes	Maybe	Yes	Yes			
22	Western Mass	Heavy Industry	Yes	Yes	Yes				
23	Western Mass	Heavy Industry	Yes	Yes	Yes				
24	Western Mass	Heavy Industry	Yes	Yes	Yes				
25	Western Mass	Heavy Industry	Yes	Yes	Yes				
26	Bristol County	Retail							
27	Central Mass	Restaurants & Lodging	Yes	Yes			Maybe		
28	Boston	Office	no	No			Yes		
29	Boston	Office	Yes	Yes			Maybe		
30	Boston	Heavy Industry	No	Maybe	Yes	Yes			
31	Western Mass	Heavy Industry	No	Yes			Yes		
32	Boston	Heavy Industry	Yes						Maybe
33	Western Mass	Office	no	Yes			Maybe		
34	Western Mass	Warehouses & Distribution	no	Maybe	Yes			Yes	Maybe
35	Cape Cod	Healthcare	Yes	No	Yes	Yes			
36	Boston	Retail	Yes	Yes	Maybe	Yes	Yes		

Table 4.4 Barriers Identified in Customer Interviews - Program Barriers

Company Information			Program Design & Administration Barriers							
#	Region	Industry	Insufficient Incentives	Insufficient Marketing & Outreach	Transaction Costs	Responsiveness & Timing	Limited Measures	Programs not Tailored to Unique Needs	Opt out of SBC	Others
1	Bristol County	Heavy Industry	Yes	Yes					Yes	Yes
2	Bristol County	Retail	Yes	Yes	Yes					
3	Bristol County	Miscellaneous		Yes	Yes	Maybe	Yes			
4	Boston	Schools & Colleges					Yes	Yes		Yes
5	Western Mass	Retail		Yes	Yes		Yes			
6	Boston	Healthcare				Yes	Yes			
7	Boston	Office	Yes	Yes	Yes					Yes
8	Boston	Restaurants & Lodging		Yes	Yes	Yes		Yes		
9	Boston	Office		Yes		Yes	Yes			
10	Central Mass	Heavy Industry					Yes		Yes	
11	Western Mass	Office		Yes						
12	Boston	Office	Yes	Yes		Yes				
13	Central Mass	Healthcare			Yes					
14	Boston	Schools & Colleges	Yes				Yes	Yes	Yes	
15	Boston	Schools & Colleges	Yes	Yes		Yes	Yes		Yes	Yes
16	Boston	Healthcare	Yes				Yes	Yes	Yes	
17	Boston	Schools & Colleges			Yes	Yes	Yes	Yes	Yes	
18	Western Mass	Heavy Industry		Yes						
19	Central Mass	Retail	Yes	Yes	Yes	Yes	Yes	Yes		
20	Central Mass	Office		Yes		Yes				
21	Boston	Healthcare	Yes	Yes			Yes	Yes		
22	Western Mass	Heavy Industry	Yes	Yes	Yes	Yes			Yes	
23	Western Mass	Heavy Industry	Yes	Yes	Yes	Yes			Yes	
24	Western Mass	Heavy Industry	Yes	Yes	Yes	Yes			Yes	
25	Western Mass	Heavy Industry	Yes	Yes	Yes	Yes			Yes	
26	Bristol County	Retail	Yes							
27	Central Mass	Restaurants & Lodging			Maybe		yes			
28	Boston	Office		Maybe				Yes		
29	Boston	Office			Maybe					
30	Boston	Heavy Industry		Yes	Yes					
31	Western Mass	Heavy Industry		Maybe	Yes		Maybe			
32	Boston	Heavy Industry		Maybe		Yes				
33	Western Mass	Office			Yes	Yes				
34	Western Mass	Warehouses & Distribution			Yes		Yes			
35	Cape Cod	Healthcare	Maybe			Yes				
36	Boston	Retail		Yes	Yes	Yes				

Customer Barriers

Each of the customer barriers summarized above is discussed in more detail below. It is worth noting that many of the customer barriers are not mutually exclusive, leading to the appearance of overlaps. For example, when asked whether the economy affected a customer's business, the person interviewed may have discussed reduced capital or reduced payback periods, which are addressed in both the customer's capital constraints and corporate review and approval barrier categories. When quantifying whether a customer considers a situation to pose a participation barrier, we adhered to the barrier definitions discussed above and only considered the situation a barrier when the customer explicitly identified it as such.

Customer's capital constraints. This is one of the most frequently cited and important barriers that customers face in energy efficiency program participation. Many customers, although not all, do not have a problem accessing capital.²⁰ Their chief problem is with the competition for capital between energy efficiency investments and other investments, especially those investments that are more germane to the core business of the customer. Some companies have global operations, and face competition for capital in Massachusetts, in the United States, and elsewhere in the world. This competition for capital is so important to customers that it results in greater adherence to payback period constraints, as that is often the criteria that is used to determine which project deserves the constrained capital. Further, some customers mentioned that the significant upfront cost of efficiency measures, especially larger projects beyond lighting upgrades, created a barrier to deeper participation.

Economic climate. The economy appears to have a relatively indirect impact on a customer's ability to participate in efficiency program, as many customers were not clear on the connection between economic conditions and efficiency program participation. When asked, customers held several views on the extent to which the economy affects their participation:

- Some customers do not see the economy as a barrier to participation.²¹
- Other customers were quick to mention that the economy has affected their employee base, profit, or capital availability, making it more difficult to undertake nonessential projects.
- Some customers see efficiency as even more important in tight economic conditions, as a means to better manage budgets and reduce costs with minimal capital outlay.
- For other customers, the downturn in the economy exacerbates the competition for capital problems discussed above, in that capital might be harder to access or payback periods may need to be shorter.
- Still other customers noted that in a tight economic context they are more likely to let existing equipment run through its useful life, rather than retrofit it early. This creates a barrier to implementing efficiency measures as there is often insufficient

²⁰ This may be partly a result of the fact that our survey was limited to medium and large C&I customers.

²¹ This may be partly a result of the fact that our survey primarily included those customers that have participated in the energy efficiency programs in recent years.

time and resources to identify and procure the most efficient option at the time of equipment failure.

Economic climate. The economy was a relatively intangible impact on customer's ability to participate in efficiency program, as many customers were not clear on the connection between economic conditions and efficiency program participation. Some customers were quick to mention that, over the past few years, the economy had impacted their employee base, profit, or capital availability. Many of these customers indicated that their business recently experienced improvements, consistent with upturn observed in the larger economy. However, the ways in which the ebbs and flows in the economy influence the customer's ability to participate in energy efficiency programs was unclear.

- Some customers see efficiency as even more important in tight economic conditions; a means to better manage budgets and reduce costs with minimal capital outlay.
- For other customers, the downturn in the economy exacerbated the competition for capital problems discussed above, in that capital might be harder to access or payback periods may need to be shorter.

Still other customers noted that in a tight economic context they are more likely to let existing equipment run through its useful life, rather than retrofit it early. This creates a barrier to implementing efficiency measures as there is often insufficient time and resources to identify and procure the most efficient option at the time of equipment failure. .

Unsupportive corporate review and approval process. Some customers noted that they have no problem getting support from corporate executives to implement energy efficiency projects. However, corporate decision-making practice often requires efficiency projects to compete for capital with investments that are more germane to a customer's business (see above), and sometimes corporate practices place very tight payback periods constraints on all investments, limiting the energy efficiency measures that can obtain corporate approval. Some customers noted that their corporate executives expect to see clear reductions in their energy bills as a result of energy efficiency, and when the bills increase (due to other factors such as rate cases) the corporate executives reach the conclusion that the energy efficiency has not been successful in reducing energy bills.

Customer is convinced it has done all it can. This was not a commonly identified barrier as only three customers identified this barrier. When mentioned, it was seen as a transient barrier that would disappear over time. Customers mentioned that they had done several efficiency projects, and that, while additional savings opportunities likely exist within their buildings, the savings are not likely to outweigh the transaction costs. One customer indicated that savings opportunities from the next generation of efficient equipment would likely propel them to participate in the future.

Distrust of new technology. Only one of the customers interviewed indicated that they were reluctant to implement energy efficiency measures because they did not trust or fully understand the efficiency technology.²² This customer was concerned that reducing energy consumption could reduce its production capability.

²² This may be partly a result of the fact that we primarily surveyed energy efficiency program participants.

Other barriers. A few customers mentioned barriers or topics that did not fit into the categories above. These include: people have been lulled into a sense of security with prices of electricity and natural gas being relatively low, and participants are distracted by other energy projects like solar or geothermal.

Program Barriers

Each of the program barriers summarized above is discussed in more detail below. It is important to note that the efficiency programs, by their very nature, are designed to remove barriers to participation in efficiency projects. However, customers identified issues that they see as “barriers” in the way programs are designed or administered, and recommended ways to enhance the programs to better remove barriers to efficiency implementation.

Insufficient marketing and outreach. Many of the customers feel that the program administrators could be more proactive in reaching out to and educating customers about efficiency opportunities. Some customers felt program administrators were inconsistent in their outreach, or had limited contact with their representative. Others thought that, while the program administrators do reach out to them, the customer was driving the process and had previously researched the opportunities. Several customers noted that their gas program administrator has not reached out to them with energy efficiency opportunities, or provided any technical or financial support. This is particularly troubling to several customers who are very active in the electric efficiency programs and who believe they have significant gas efficiency opportunities. Some customers have regular, annual cycles of budgeting and investing in energy efficiency equipment, and they would prefer that the program administrators coordinate their program services with the customer’s annual process.

High transaction costs. Many customers indicated that the paperwork and legwork involved in participation is too great, and that the overall process needs to be simplified. Some customers claimed that, for long lead-time projects, the time required to receive a financial incentive as well as the uncertainty about obtaining a financial incentive, especially across program years, create a barrier to their participation.

Inadequate responsiveness and timing. Several customers thought their program administrator was unresponsive to their needs, and a few customers attributed it to the program administrators being overworked. Others thought it was difficult to time their participation, such as when major equipment fails and needs to be replaced immediately, or during new construction when projects need to go forward and cannot be held up by program participation. One customer noted that the time required to get new lighting technologies approved for the Design Lights Consortium (DLC) list was so great that by the time a technology gets approved for the list it is out-of-date; that many of the technologies on the DLC list are out-of-date; and that the list does not include a lot of cost-effective emerging technologies.

Limited measures offered through the programs. Many customers expressed a desire for the programs to be more flexible and to allow the customers to recommend efficiency projects to undertake. Other customers suggested that specific equipment, such as elevators, should be incented through the programs. One customer put a lot of resources into working with a lighting manufacturer to develop a highly efficient LED lighting product to meet their exact needs, but the program administrators took a long time to review the product, and then rejected it because it did not meet the specifications of the lighting program.

Insufficient financial incentives. Many customers noted that they would implement additional efficiency measures if they were provided with greater financial incentives. Additional financial incentives would help overcome the competition for capital that many customers face, as well as reduce the payback periods needed to meet corporate requirements. Many companies indicated that there is not enough coverage of technical support costs or availability of technical support in general. Some customers wished the programs offered different incentive structures and better addressed upfront costs as well as costs over the life of the measure. Some customers mentioned that after completion of an efficiency project they were not provided with the full financial incentive that was originally anticipated from the program administrator.

Desire to opt out of the energy efficiency charge. Many customers claimed that they would be able to achieve much greater energy efficiency saving if they were able to keep all of the funds that they contribute to the Massachusetts energy efficiency programs and dedicate those funds to efficiency projects at their own facilities. This was especially true among the large customers, including those in the industrial, healthcare and schools/colleges industry types.

Programs not tailored to unique needs. Some customers thought that the program administrators did not make an effort to speak their industries' language, or that they did not understand the unique needs of their industry. This was especially true for customers in the healthcare industry, where the program emphasis on lighting and HVAC controls do not make as much sense.

Other barriers. A few customers mentioned barriers or topics that did not fit into the categories above. These include: (a) the lack of transparency with regard to the amount that the customer is providing to efficiency program funding is a barrier when employees try to convince management to take advantage of efficiency programs offered by the program administrators; and (b) customers appear to be confused by the number of energy efficiency providers in the market (i.e., ESCOs vs. renewable installers vs. lighting manufacturers/distributors vs. utilities/municipal aggregators/municipals).

Themes within Regions and Industries

The limited number of customers that participated in our survey by region and industry, and the wide variety of responses provided through the survey, made it difficult to identify themes regarding barriers to participation by region or industry. To demonstrate this point, Tables 4.5 through 4.8 provide the customer and program barriers by region and industry, as well as the number of interviews completed within the respective region or industry. We are reluctant to draw many conclusions about themes across regions or across industries from such a limited set of data.

One theme that did emerge was from the healthcare industry. Some members of the healthcare industry noted that the economic climate has had a big effect on them, given that revenues are declining due to government changes to the healthcare industry. They also felt that the efficiency programs were not tailored to their unique needs.

Table 4.5 Customer Barriers by Region

Regions	Interviews	Customer Barriers					Total
		Customer's Capital Constraints	Economic Climate	Corporate review & approval process	Distrust of new technologies	Company convinced it has done all it can	
Boston	16	8	6	5	0	1	20
Central Mass	5	3	2	2	0	1	8
Cape Cod	1	1	1	0	0	0	2
Western Mass	10	8	2	3	1	1	15
Bristol County	4	3	1	1	0	0	5
Total	36	23	12	11	1	3	50

Table 4.6 Program Barriers by Region

Regions	Interviews	Program Design & Administration Barriers								Total
		Insufficient Incentives	Insufficient Marketing & Outreach	Transaction Costs	Responsiveness & Timing	Limited Measures	Programs not Tailored to Unique Needs	Opt out of SBC	Others	
Boston	16	6	10	6	8	8	7	4	3	52
Central Mass	5	1	2	3	2	3	1	1	0	13
Cape Cod	1	1	0	0	1	0	0	0	0	2
Western Mass	10	4	8	8	5	3	0	4	0	32
Bristol County	4	3	3	2	1	1	0	1	1	12
Total	36	15	23	19	17	15	8	10	4	111

Table 4.7 Customer Barriers by Industry

Industry Types	Interviews	Customer Barriers					Total
		Customer's Capital Constraints	Economic Climate	Corporate Review & Approval Process	Distrust of New Technologies	Company Convinced it Has Done all it can	
Heavy industry	10	8	1	2	0	2	13
Warehouses & Distribution	1	1	0	0	1	1	3
Retail	5	3	2	1	0	0	6
Office	8	4	4	4	0	0	12
Schools & Colleges	4	1	1	1	0	0	3
Healthcare	5	5	3	1	0	0	9
Restaurants & Lodging	2	0	0	1	0	0	1
Miscellaneous	1	1	1	1	0	0	3
Total	36	23	12	11	1	3	50

Table 4.8 Program Barriers by Industry

Industry Types	Interviews	Program Barriers								Total
		Insufficient Incentives	Insufficient Marketing & Outreach	Transaction Costs	Responsiveness & Timing	Limited Measures	Programs not Tailored to Unique Needs	Opt out of SBC	Others	
Heavy industry	10	5	9	6	5	2	0	6	1	34
Warehouses & Distribution	1	0	0	1	0	1	0	0	0	2
Retail	5	3	4	4	2	2	1	0	0	16
Office	8	2	6	3	4	1	1	0	1	18
Schools & Colleges	4	2	1	1	2	4	3	3	2	18
Healthcare	5	3	1	1	2	3	2	1	0	13
Restaurants & Lodging	2	0	1	2	1	1	1	0	0	6
Miscellaneous	1	0	1	1	1	1	0	0	0	4
Total	36	15	23	19	17	15	8	10	4	111



Customer Anecdotes

Some customer comments and stories have struck us as important and interesting. A summary of such themes and stories are provided below.

- The interviewee feels that the program administrators do not understand healthcare at all. An assessment was conducted at the customer's business that (1) identified projects that had already been implemented (2) identified measures that are not able to be implemented in a healthcare environment (i.e., occupancy sensors and programmable thermostats with setback) and (3) did not identify opportunities that the customer was interested in (the assessment focused entirely on short term quick fixes and ignored projects with larger capital outlays). They looked at lighting in healthcare the same as for an office building, which does not work.
- If the customer does participate in the next three-years, the person interviewed stressed that gas savings needed to become a stronger focus for the customer, whether or not the program administrator's efficiency program allow opportunities and incentives for gas savings. The person interviewed felt that gas incentives were not as generous as on the electric side, and that the gas programs were not as well structured as, and even appeared disconnected from, the electric programs.
- The customer has made some effort to get up to speed on the program administrator's terminology, but it has taken special time and effort. The language is overly technical and very specific to the program administrator's process. Also, if the customer asks the program administrator a general question it is frequently directed to fill out an application before it can get this question answered. As it is too early in the process for an application to be submitted, the discussion usually stops there and efficiency opportunities are not captured.
- The program administrators are not up to speed on new developments. It can take a long time for them to come to grips with some of the possibilities of new products or projects.
- Program administrators do not treat the customer like it knows anything. Most large customers are pretty sophisticated. It would be nice if the program administrators treated them with that sophistication and understood that they are not babes in the woods.
- The customer has limited contact with its program administrators, and was not informed by its program administrators about efficiency programs. The customer was generally aware that the program administrators offer efficiency programs because it has locations in Connecticut, and has retrofitted lighting in all of its Connecticut locations through Connecticut Light and Power. However, the customer has a limited understanding of the Massachusetts efficiency programs.
- Some lighting upgrades received pushback from the customer's ownership, particularly because the color and brightness of the light was not quite right and it was changing the aesthetics of the building. The customer was not able to buy the light bulbs with the correct aesthetics right off a shelf. They had to special order them because the one that was on the approved list for program administrators rebates was not readily available. The customer had to find a light that was qualified for a rebate and then test the aesthetics of it in its building. The special order took many weeks to a couple months to arrive. It would have been easier to purchase the light bulb that was more readily available. The bulb the customer ultimately ended up buying was more expensive, so the initial cost of the program

was greater than if they had been able to use the light bulbs that were more readily available. However the rebates offered through the program made the overall cost less than the initial bulbs.

- The customer knew of the local incentives and brought in an energy consultant that helped shape the program and to get the process streamlined through the program administrator. The consultants helped the customer from start to finish doing the reporting back to the program administrator on the fixtures installed, any other controls, what the kWh saved were. Hiring the consultant was something that just made sense to the customer, knowing that, by working through the consultants, they would handle all the applications and processing and calculations. It just made sense to give the customer time to focus on what they were doing day-to-day but also to give leverage to make sure they were capitalizing on the programs to the best of the customer's ability. It was well worth the investment in time having the consultants. The customer was able to achieve the maximum benefits and rebate.
- The customer has seen a reduction in inpatients and elective healthcare services that would normally generate revenue, which the person interviewed attributes to the economy and lack of spending. Elective surgeries such as cosmetic surgeries are not taking place. This could change once the economy gets better. Notably, pregnancies are down from previous years, which also decreases future projections of revenue. This is because if a baby is delivered at the customer's facilities, ultimately the baby is likely to become a user of the facilities due to the history and familiarity.
- It would be great if the customer's building was sub-metered and would likely help their ability to participate. The customer is an office tenant in a building set up for retail. There is one meter for the entire building with six floors. The overall energy consumption of the building is divided up to each tenant by square footage, not based off usage. The first floor is going to use more energy because they are retail establishments with restaurants and kitchens, which use more energy than an office. The customer was not even aware that this was the billing arrangement until about two years ago when the person interviewed looked into it. Now as the company considers new office spaces, sub-metering is a huge consideration.
- One customer stated that "the economy itself is not good. We're extremely slow right now. I'm laying people off tomorrow because there isn't enough work for them. There's no sense bringing them in and turning the lights on if I can't make enough money to pay for it." However, energy efficiency is seen by the customer as an opportunity to save money, so long as the payback is high, such as lighting measures. "When times are slow you have to cut back spending every place you can. Spending a few dollars to put in new light fixtures which is going to save us thousands of dollars over the long run makes sense to do it. It helps the environment and it helps your costs. It's a no brainer."
- Overall, the interviewee was very unclear as to the distinction between the incentives offered by the program administrators versus other third parties versus federal tax credits, etc. The interviewee considered them all one in the same and seemed willing to work with any party that could provide an incentive.
- The customer's relationship with their gas provider is new, but they were very satisfied with the process. They recently converted from oil to gas and received incentives towards a new gas boiler. They said their rep was excellent and eager to help.

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- Most of the customer's energy efficiency activity has been in new construction, for which the customer received no rebates. The customer estimates they have achieved low savings to date for renovations/retrofits of existing equipment and space.
 - The gas program administrator does not reach out to them much on efficiency issues. The gas program administrator representative is more of an account rep for billing than for efficiency. They met with the gas program administrator representative about two years ago, but have not seen him since.
 - The customer makes energy efficiency decisions for their entire chain, which extends well beyond Massachusetts. They make decisions about what to purchase regardless of whether they will be getting rebates. They also did a lot of lighting upgrades to their office building without any rebates. However, they can do more efficiency investments with the funds provided by the rebates. Also, there is often a lot of deeper efficiency measures that they could adopt but that they do not adopt because of the paperwork necessary for the rebates. They build a lot of new buildings, and they are all alike; cookie-cutter. But every time they want to get rebates from the new construction program they have to re-apply from scratch. They often do not bother. Also, they typically lease the buildings and pay the energy bills. They do not bother to apply for the new construction program because of the paperwork, and because they have to chase the builder down for all the invoices. It is not worth it. They do not know if the builder goes after the new construction program rebates.
 - Of course budget limitations pose a barrier. The person interviewed could think of \$10 to spend for every \$1 available. The customer would always like to do more efficiency, but budgets do not always allow for it.
 - The economic downturn did not strongly affect the customer. To some degree the customer was tight on money, and so obtaining funding for energy efficiency was a little bit difficult prior to the program administrator's involvement in developing the long-term efficiency plan with the customer. The customer returned to a healthy financial state relatively quickly and does not expect its financial health to change going forward.
 - Over the past 4 or 5 years, the customer has been pretty aggressive with energy conservation, and the person interviewed thinks they received back about 10 percent to 20 percent of what they put in. They wonder where the other 80 percent of money is going and how it is being distributed. Not sure if what that 80 percent is used for offsets the savings that the customer would get if it had been allowed to use it for efficiency.
 - At the end of the last two years, the program administrator has practically doubled incentive levels for certain measures. This tells the person interviewed that the program administrators are over collecting the funds, and are literally looking to burn money by end of year.
 - The cost with incentives was not the problem. The physical space prohibited the customer from being able to install more efficient equipment. The customer was presented with discounts or incentives that would largely cover the cost of the measures, but the customer was not convinced that they were going to be able to take advantage of them anyway. Most of the time the systems are running wide open. To turn the system back would potentially reduce the customer's ability to operate the system successfully with lower electricity flows.

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- The last time the customer participated, they found the process much easier. They could submit to the program administrator receipts from efficiency equipment and related paperwork. Now, everything needs to be preapproved by the program administrator before the equipment can be purchased. While this adds an extra step to the participation process, the real issue is that if you need new equipment you need it now, and cannot wait for preapproval.
 - The customer is working with, and still working with the program administrator, and are making “damn little progress and damn slow progress for rebates and stuff, and as far as I know I won’t be getting a nickel. I put a lot of time and effort into it.” The customer has not heard anything from the people that would be giving them the incentive, primarily because the engineering firm has not provided the engineering study. The customer started the audit process in the middle of summer 2011, and as of March 2012, had not received the engineering study.

Customer Recommendations

A few customers made specific recommendations for improving the efficiency programs that are not addressed above. These suggestions are summarized below, similar to the anecdotal themes and stories summarized above.

- Several of the customers we interviewed indicated that they would be interested in financing options provided by the program administrators, such as pay-as-you-save or on-bill financing, primarily to mitigate the competition for capital and to reduce the payback period of efficiency measures. One person interviewed recommended allowing customers to pay off efficiency investments on their bill, but in such a way that the monthly payment does not exceed the monthly savings. This would also relieve him of having to ask management for capital to invest in efficiency projects.
- One customer suggested that the program administrators provide a program mentor responsible for introducing efficiency projects to the customer and to go through the energy audit and stick with the customer as a contact throughout the process. It’s not like the program administrators just comes into your building, screws in CFLs, and walk away. You actually have to do something. You have to revise the operating strategy of the systems, and that requires a lot of time and effort. Working with someone to understand what it is actually going to take to participate would be useful.
- The customer suggested that the program administrators revisit customers who were at one point interested in efficiency but did not follow through to see why they may have been put on hold. If he were trying to see why customers are not participating in programs, then that is where he would start asking questions. If there are open applications where things never came through to fruition that could be a good area to explore and follow up.
- Sometimes the customer would like to do a custom project that requires technical and engineering support. That money would have to come out of another expense budget, and with the economy the way it is, that pool of money can be very tight. Program administrators will offer to partially fund technical support, but it would help if the program administrators were more aggressive in helping customers clearly identify a project in terms of what it will save and cost the customer to implement it. This creates a clear picture on what project would look like, which would be beneficial. Some projects have stalled for years because they are just concepts that have not been fully developed. Technical support could clearly define

the best projects and opportunities, which would be a good use of money. The person interviewed recommended that the program administrators pay the full amount of the technical study. As currently structured, the customer could do a study, but would have to pay for half of it while the program administrators pay the other half. If the project does not get built, the money spent on the technical study is seen by management as a waste of money. This is a hard step for the customer to get past.

- The customer experienced delays during its initial enrollment in the program. A lot of data was required from the customer regarding its energy use, which pushed back the installation process. The person interviewed recommended simplifying the logistical process for participation.
- The person interviewed recommended that the program administrators divide the amount of funding available by their MW or kWh goals as a way of allocating incentive dollars. Reward or incent each kWh saved by customers in the same way. Sometimes program administrators cannot fund a project because it does not meet the program requirements. If a customer cannot do a project with the program administrators funding, it would be hard to convince that customer to do any more efficiency if they were already turned down by the program administrator. If a customer can prove that a project saved energy, they should be rewarded with the incentive. Large customers should have incentives for being aggressive as it is getting harder and harder to find efficiency projects.

5. Implications for Energy Efficiency Programs

The results of our economic forecast and customer survey lead us to draw the following conclusions with regard to energy efficiency program planning.

1. The Three-Year Energy Efficiency Plans should include savings goals that recognize that (1) the Massachusetts economy is forecasted to improve steadily over the next few years, (2) many customers do not see the state of the economy as a barrier to participation in the energy efficiency programs, (3) many customers have additional efficiency opportunities in their facilities and (4) many customers have an interest in participating in the programs again. In fact, several customers noted that in a tight economy they might be more likely to participate in energy efficiency programs as one of the few options they have to cut costs (as long as the payback periods are short enough).
2. The Three-Year Energy Efficiency Plans should recognize the potential savings available from the C&I New Construction programs, given that the economic forecast indicates that business construction activity is expected to steadily increase over the next few years. Several customers noted that they find efficiency measures easier to implement at the time of renovation and new construction, relative to their retrofit opportunities.
3. Encouraging customers to adopt a deeper level of efficiency measures will likely require additional efforts to overcome some of the key barriers identified above, particularly customer budget limits and competition for capital, burdensome transaction costs of participating in the efficiency programs, and limited efficiency measures available by the efficiency programs.
4. Encouraging customers to adopt a deeper level of efficiency measures will also likely require increased engagement from the program administrators' account executives and efficiency support staff. This will be important both to reduce the transaction costs associated with the energy efficiency programs and to better serve the unique needs of the different customers.
5. The Three-Year Energy Efficiency Plans should recognize that many customers have apparently not received much outreach regarding gas efficiency opportunities, and that additional outreach and support from gas program administrators might lead to increased gas efficiency savings.
6. Program administrators should be required to collect and report more comprehensive data regarding the customers who participate in their energy efficiency programs. A better understanding of customer participation would provide the program administrators with very useful information about where the untapped efficiency opportunities lie and how to pursue them. It would also be very useful to identify and track the different types of participation, including: active participants (i.e., recent participants), inactive participants (i.e., past participants), non-participants, and proactive participants (where the customer prefers to take the lead with assistance from the program administrator) versus reactive participants (where the customer prefers the program administrator to take the lead).

Recommendations for Further Research

Our survey indicates that there are several areas where additional research might help to increase the participation of C&I customers over the next few years.

1. Most importantly, it would be helpful to continue efforts to better assess the perspectives of the C&I customers who have not participated in the Massachusetts energy efficiency programs to date.
2. It may be helpful to conduct statewide research into opportunities for reducing the transaction costs (including timing concerns) associated with participation in the energy efficiency programs. This could include a statewide effort to identify best practices within the state and from other parts of the country.
3. It may be helpful to conduct statewide research into training the program administrators' account representatives and support staff so that they have a better understanding of the needs of different customer types and different industries. This could include a statewide effort to train account executives and support staff and to share knowledge and experience across the program administrators.
4. It may be helpful to conduct statewide research into ways to expand the types of efficiency measures eligible for financial support, reduce the time required to accept measures for eligibility, and streamline the process that is used in deciding measure eligibility.
5. It may be helpful to conduct statewide research into opportunities for the gas program administrators to better coordinate their outreach and support services with electric program administrators.
6. It may be helpful to conduct statewide research into practices for spending the efficiency budgets more evenly over the course of a year, in order to avoid the year-end blitz that sometimes occurs in order to meet annual targets.

Appendix A – Massachusetts M&V Studies

Over the past two years, numerous measurement and verification (M&V) studies have been conducted on the Massachusetts C&I programs. We reviewed recent M&V studies in an effort to better understand the current customer perspectives regarding energy efficiency. Our review focused on the following process evaluation and market characterization studies:²³

- Study 1: Small Business Direct Install program KEMA and NMR Group, Inc. *Project 7 General Process Evaluation - Final Report; MA EE Programs Large C&I Evaluation*, February 16, 2011.
- Study 2: The Cadmus Group, Inc. and Opinion Dynamics Corporation. *Massachusetts Non-Residential Small Business Direct Install Program: Multi-Tier Program Structure Assessment - 2010 Process Evaluation*, July 7, 2011.
- Study 3: Tetra Tech. *Industry Practices and Policies on EE Program Rebates/Incentives – Final Report*, January 25, 2011.
- Study 4: KEMA. *Supply Chain Profile Project 1A New Construction Market Characterization*, June 8, 2011.
- Study 5: KEMA and Itron. *Project 6B: Comprehensive Design Approach Process Evaluation Final Report*, May 17, 2011.
- Study 6: KEMA and NMR Group, Inc. *Final Report Project 1B Chain & Franchise Market Characterization*, June 7, 2011.

Below, we summarize the key barriers to efficiency program participation as well as the suggested approaches to overcome these barriers, as detailed in the above mentioned studies.

Financial Barriers

Cost of Energy Efficiency and Financing Availability

Customers' principal objection to using energy efficient equipment or design is financial constraints, particularly the higher first capital costs associated with efficiency (Study 2, at 22, 26; Study 4, at 4-3, 4-19; Study 6, at 7-6, 7-21 through 7-24, 7-39). While the upfront costs are a concern for most customers, other customers weigh the full cost of efficient equipment during system selection (Study 4, at 4-23). For example, in a study that interviewed architects, design engineers and construction managers as part of the evaluation of the large C&I programs offered by Massachusetts Program Administrators, market actors generally agreed that clients who own and operate buildings are more willing to consider increased first costs in a trade-off for lower operating costs (Study 4, at 1-1, 4-23). Consequently, owner/operators are more likely to pursue incentives (Study 4, at 4-23). Respondents reported that more sophisticated clients, such as colleges and universities, biotechnology firms, and laboratory facilities raise additional concerns that "higher service type [equipment] requires more mechanics, more controls and more oversight to run them properly as opposed to just starting them up and running the system" (Study 4, at 4-3, 4-23). They consider the ability of their staff to control and

²³ The studies are available on the EEAC website: <http://www.ma-eeac.org/EM&V%20Studies.htm>

maintain equipment, the cost of maintenance and replacement, and the risk of equipment failure (Study 4, at 4-23). In these cases, it appears that incentives may not offset the risks of unfamiliar equipment and unknown maintenance reliability (Study 4, at 4-23; See also Study 4, at 4-8, 4-11, 4-19 through 4-20).

Even with large financial incentives available, there are still instances when participants face upfront costs that they would not necessarily face if an alternative approach to energy efficiency were used (Study 5, at 4-15 through 4-18). For example, with the Comprehensive Design Approach (CDA) program, the upfront costs of completing a TA study -- a model of energy efficiency measures that maximizes the energy savings of the entire project -- creates a financial constraint for customers (Study 5, at 4-15 through 4-18). One architect noted that “not every client is willing to put up the money for a technical study. Sometimes it’s a cash-flow issue or the customer just isn’t convinced that putting up the additional money is justified. More of our customers would do the program if they didn’t have to pay this money up-front” (Study 5, at 4-15 through 4-18).

Increased financing, and incentives as further discussed below, is often recommended as a method to overcome cost barriers, and is generally seen as an attractive and important component to participation²⁴ (Study 1, at 9-3 through 9-4; Study 2, at 1, 22; Study 6, at 6-17 through 6-18, 7-7 through 7-8). A respondent in one study stressed the importance of further developing financing options, explaining that, “just like we have an industry set up and working for ESCOs, we need an industry on the financial end that is set up and can respond in the same way. We don’t have the same market as, [for example] a customer says, ‘I want to do some energy efficiency. How do I start?’ ... ‘Here’s a whole list of people you can go to. They’ll hand-hold you through the entire process.’ I don’t have the same thing on the financial side” (Study 1, at 6-16). Program Administrators could also consider expanding financial or technical assistance offerings for life cycle cost analysis to demonstrate the longer term value of accepting higher first costs (Study 4, at 5-6).

Program Financial Incentives and Payback Periods

Financial incentives offered through the Massachusetts Program Administrators’ C&I programs²⁵ are a strong motivation for customer participation²⁶ (Study 1, at 6-8; Study 2,

24 One study stated that, among all participants who received financing, more than half report that it was extremely important in their decision to install equipment (Study 2, at 22-23). In addition, nearly half of participants who received financing off-bill would have been unlikely to install the energy efficient equipment if financing had not been available (Study 2, at 22-23). Offering zero interest on-bill financing for 24 months is a program modification that has the potential to encourage those customers not motivated by interest free financing alone to install energy efficient equipment (Study 2, at 27-30).

25 A study that reviewed rebate and incentive programs in key states attempted to make comparisons of incentive levels for similar programs (Study 3, at 1-1). The study found that Massachusetts commercial rebates examined for lighting were on the low end of lighting rebates offered in other states (Study 3, at 3-1; see 3-14 through 3-21). Custom rebates comparisons are less straightforward, but Massachusetts rebates appear moderate relative to the other similar programs (Study 3, at 3-1). One California program rebates a lower percentage of costs but has a higher maximum amount that will be covered (Study 3, at 3-1). Massachusetts is somewhat unique in offering a separate program for small business customers that includes incentives covering 70 percent of installed cost (Study 3, at 3-1). These are identical to many of the surrounding states, but they are often offered by the same program administrators as Massachusetts (Study 3, at 3-1). Finally, Massachusetts rebates appear to be at the high end of offerings in other states for hot-air furnaces. (Study 3, at 3-1; see 3-14 through 3-21).

26 One customer interviewed during a study of the Comprehensive Design Approach (CDA) program stated that “the main motivator is the incentive paid to include certain technologies. That is the trump card” (Study 5 at 4-20). “While the lower operational costs are a selling point, the major motivator is defraying the upfront capital

at 1, 22, 32; Study 5 at 4-20, 4-28; Study 6, at 7-7 through 7-8, 7-21 through 7-24). While financial incentives promote participation and are important in the decision-making process of customers, customers often feel that the incentive is not high enough (Study 2, at 26, 31). Equipment costs and monetary constraints are commonly cited as reasons customers chose not to participate in efficiency programs, despite the financial incentive available (Study 2, at 22, 26; Study 4, at 4-3, 4-19; Study 5, at 5-1). The manager of a program stated, “unless a customer is branding themselves as a green building or constructing as a demonstration buildings, the energy savings and incentive amounts are just not enough” (Study 5 at 6-31). Even customers that participate in the program would prefer higher incentives, as even higher incentive levels would allow them to install more energy efficiency technologies, thus further reducing the energy usage of their facilities or buildings (Study 2, at 25-26, 31; Study 5, at 4-20, 4-28). Therefore, offering higher incentives is one of the most common suggestions for improving program participation (Study 1, at 6-13, 6-18; Study 2, at 25; Study 3, at 4-1; Study 5, at 5-1).

However, incentive levels can be difficult to set accurately for each program and within each Program Administrator’s service territory (Study 2, at 13; Study 5, at 5-4 through 5-5). For example, beginning in 2010, the Program Administrators began transitioning to a uniform statewide delivery model for the Small Business Direct Install program (see, Study 2). As part of this transition, the Program Administrators established a statewide 70 percent incentive level for the program, which meant a significant increase for one PA, a slight increase for another, and consistency with existing levels for two other PAs (Study 2, at 13). There are different views among the Program Administrator staff on the preferred incentive level (Study 2, at 13). While there has been an effort to align incentive levels, some Program Administrators would like to raise the incentive level in the future (Study 2, at 13). In contrast, other Program Administrator representatives commented that the 70% incentive may be too high (Study 2, at 13). Further, implementing the new incentive level caused some challenges for vendors promoting the program and recruiting customers in the field (Study 2, at 13). As an obvious rule, the better the incentive, the more people participate (Study 2, at 13). Further, another study suggests that, to address the first-cost barrier, Program Administrators consider alternative incentive approaches such as tiered incentives for higher levels of efficiency (Study 4, at 5-6).

Additionally, the payback period of an efficiency investment is directly linked to financial incentives. Incentives help reduce the payback period for a project and this provides the impetus to use energy efficient measures (Study 5 at 4-20, 4-28; Study 1, at 6-6). In one study a customer was quoted to say, “As a client, you’re going to want to get the most value for your dollar, and you’re going to want to implement the measure that’s going to give you the best paybacks. In order to entice a customer to do more than that, the incentives would have to be larger because the client needs better payback in order to push it through management. If I’m a client, and if I have a corporate policy that says I don’t do anything [with] less than a two-year payback, well, that might be something you can do for the first measure, maybe that second measure that you’ve identified. But that

costs of construction” (Study 5 at 4-20; 4-27). Often times, the incentive is a precursor to participation. For example, one architect noted that he is not able to get daylight dimming systems into his K-12 school projects unless the first cost is subsidized by a utility incentive (Study 4 at 4-7). A CDA participant summed up his satisfaction with the level of financial incentive received by stating: “it essentially allowed me to internally get optimal systems over the lifecycle of the facility to run at the cheapest cost. So anytime I can put some money in upfront to get those systems, it helps the sustaining operational team to provide the lowest price of our product (Study 5, at 4-20).”

third, fourth, and fifth measure, even with the incentive that you're offering, is not going to get it within his restrictions" (Study 1, at 6-13).

In a weakened economic environment, customers are not going to be able to do a project that has a long payback period, and instead are looking for quick savings with paybacks as short as six-months (Study 1, at 5-3, 6-13). One technical staff respondent said that in their experience when programs "buy down the project to a one-year payback" more companies moved forward with projects (Study 1, at 6-18). He went on to say that they currently do that for some special cases but that customers rarely see a one-year payback because of stipulations or incentive caps (Study 1, at 6-18). In addition, this respondent noted that "every time we have specials and we offer more money for the customers then everybody comes flocking to the door" (Study 1, at 6-18; see also Study 1, at 9-5).

Economic Conditions

The recent economic downturn is commonly cited as a barrier to efficiency investments (Study 3, at 4-1; Study 5, at 4-15 through 4-18; Study 6, at 6-5, 6-12 through 6-17). One study quoted a number of program staff members on the economic climate:

"In order to achieve the ambitious goals that we have I think the barrier is the availability of capital. You can have the best program in the world ... and you can have some great information about the energy savings or the impact to production. If a client does not have the access to capital, they're not going to implement anything. It's the most critical piece of the equation. You can get them to do that first measure that's really attractive, and it can save a bunch of dollars. But they're not going to implement that third, fourth, fifth measure without realizing those energy savings first, because they need access to capital" (Study 1, at 6-12 through 6-13).

"Right now, it's not only the actual state of the economy, but the general conception that now is not the time to act for any capital investment. It's just I got to keep the doors open. I got to attract new business. I cannot focus on saving energy. Even when I have a facilities manager in front of me who says, I agree with this, I'm ready to pull the trigger. It's just if I go to my senior management and say the utility company is willing to make a very attractive funding offer, their response is going to be, do we have orders in the hopper to support a capital investment? Unless the answer is absolutely yes, we're going to limp along with what's there. Now it's improved over the last year, but that's still a major barrier" (Study 1, at 6-12 through 6-13; see also Study 6, at 7-21 through 7-24).

"There's a number of companies around here that have money and want to invest the money, but because they're not sure where things are going, they're sitting on the cash. They're not putting it back into the business yet. They will do what they need to do for

maintenance, but when it comes to expansion or improvement, unless they're feeling very secure about the economy, it becomes a real struggle" (Study 1, at 6-11).

"In a good economy, I could sell ice to an Eskimo, literally. You walk in, the project costs X amount of dollars, we're going to give you 15 percent to 20 percent. It all has to do with economics. And we're in a horrible economy, and there is little or no capital funds available" (Study 1, at 6-16 through 6-17).

"The issue seems to be that the incentive levels, in some areas, [do not reflect the] economic straits our customers are in. Formerly, if you showed someone there was an investment with a three-year payback, you could tell by the body language right away: "Yes, I'm all over this". Whereas, now, customers we work with over the years who have always done a nice project a year are now saying it doesn't matter how good the payback is. I need to confirm my doors are going to be open next month and I'm meeting payroll. I'm not in a position to make capital investments" (Study 1, at 6-12 through 6-13).

"The feedback we get from facilities managers is ... when I do an efficiency project, I'm competing with capital projects with the rest of my company. So literally, I walk in with an efficiency project, and one of the manufacturing managers walks in with a request to do something else. And you know, we have to compete to say which is of greater benefit? It's not like I have an open door to the management committee that says keep bringing me more efficiency projects. I have to sell it as an attractive investment. We'll get some tools to help us present that to the facilities manager, which he could then use to present to his management team, which in many cases are out of state. I guess what I'm getting at is a package of technical and marketing tools that help us promote going deeper. Right now, I have a mandate [to achieve deeper savings] and it's kind of up to me to figure out what that is, how to do it" (Study 1, at 9-9 through 9-10; see also Study 6, at 7-21 through 7-24).

The market for new construction is particularly impacted by the economic downturn (Study 5, at 4-15 through 4-18, 4-29, 6-28, 7-46). Even with the availability of incentives, the ability of builders to pursue energy efficient design is challenged (Study 5, at 6-28). One PA staff member said that "over the last couple years, a lot of [the issue] has been that people aren't building buildings. So now there are not enough buildings being built, and the ones that are being built are on such a shoestring budget that they can't proceed with putting efficiency measures in (Study 5, at 4-15 through 4-18)." National Grid estimated that new construction projects had declined by 50 percent in the past several years (Study 5, at 6-28). "With the current economic conditions, there is no new

construction at all,” said one WMECO representative (Study 5, at 6-28). The existence of this barrier is also supported by comments made by several of the CDA participants that were interviewed (Study 5, at 4-15 through 4-18). “There has been less new construction and a renewed focus on looking at existing facilities and how to retrofit all the systems,” said one (Study 5, at 4-15 through 4-18).

For customers who participate in efficiency programs during an economic downturn, the amount of the incentive plays an increasingly important role in the decision to participate (Study 5, at 4-29). One customer noted that market conditions made them focus on their energy efficiency budget and as a result, incentives became very critical in their decision to install energy efficiency equipment in several projects in 2009 (Study, 5 at 4-29).

Increasing incentives is one approach to overcome the economic downturn. In one study, a respondent said “given the economy, if the incentives were a little bit higher, where you could bring down that payback period for the customer” (Study 1, at 6-11). Other approaches used by multiple programs to overcome the economic downturn were to focus on specialty lighting and other emerging technologies with significant market potential, and emphasize comprehensive approaches to energy efficiency at customer sites (Study 3, at 4-1). Another approach to overcome the economic downturn was to find more creative ways of marketing the programs (Study 3, at 4-1). Other AEs said that they focus on customers with stable financial conditions who have capital available that they are willing to invest in projects (Study 1, at 5-3).

One study stated that, while there is no remedy for the downturn in new construction, it is possible to mitigate the budgetary concerns of customers (Study 5, at 6-28). A successful program design may benefit from shifting the emphasis from incentives to long-term savings (Study 5, at 6-28). Sometimes, incentives are not enough for a customer to assume the additional time and responsibility required to participate (Study 5, at 6-28). Incentives, while substantial in dollar terms, may not have the desired influence if the incentive is weak relative to the entire cost of the project (Study 5, at 6-28).

Customer Awareness and Program Marketing

A key challenge for efficiency programs is reaching eligible customers with information about program offerings and the process for participation (Study 1 at 6-14, 9-4; Study 2, at 32; Study 5, at 6-26; Study 6, at 6-5, 6-16 through 6-17). One architect noted that smaller clients “usually don’t have a clue” about incentive programs (Study 4, at 4-22; Study 6, at 6-5). In some instances, customers are aware that their PA offers programs to help customers save energy, however, after being read a description of specific programs, respondents said they had not heard anything about it (Study 2, at 21; Study 1, at 6-5). Customer awareness of more specialized programs, such as the CDA program, is particularly low²⁷ (Study, 5 at 4-13, 5-1, 6-26).

27 Conversely, one study noted that design teams did not believe customers were unaware of the CDA track and therefore did not view it as a barrier to participation (Study, 5 at 4-13). Architects expressed the viewpoint that large customers with a local presence have already had past experiences with efficiency programs and were typically already aware of incentive opportunities (Study, 5 at 4-13). “Given the emphasis on LEED, green buildings design, and energy efficiency regulations, most organizations are already familiar with such programs,” said the representative of one architectural firm (Study, 5 at 4-13; 6-26). On the other hand, design firms considered new building developers from outside the region to be in need of more education regarding program opportunities (Study, 5 at 4-13).

Program Administrators typically market efficiency programs to C&I customers through account executives or word of mouth, instead of through marketing materials²⁸ (Study 5, at 4-29, 5-1 through 5-4). Account executives serve as the main point of contact between customers and PAs, and are therefore responsible for informing their customers of relevant energy efficiency opportunities (Study 5, at 5-1 through 5-4). One technical consultant felt that the PAs are somewhat responsible for the level of participation in programs (Study 5 at 4-20 through 4-21). He explained: “Utility program staff drives the decision to participate in a certain track, not the customers” (Study 5 at 4-20 through 4-21). One study noted that personal relationships are important in recruiting participants (Study 1 at 6-3). Based on survey results in another study, the direct outreach conducted by program staff and vendors is central in reaching customers who ultimately chose to participate in the program (Study 2, at 32; Study 1 at 6-9).

Marketing efficiency programs to customers through account executives or word of mouth successfully increases participation for some programs, but may not reach all potential participants. In some instances, account executives have a general understanding of the programs, but are not familiar enough with the details to fully describe the benefits of the programs to potential participants (Study 5, at 5-1 through 5-4). One study noted that, given the program’s use of in-person contact and the fact that information about the program is often disseminated by word of mouth, it is not surprising that marketing messages have not reached a larger proportion of non-participating customers (Study 2, at 21).

Using education materials and brochures to market to potential participants has its advantages and drawbacks as well (Study 2, at 21). According to program staff and their customers, few, if any, marketing materials are available to inform customers about the CDA track (Study 5 at 4-23). Design team members and a majority of participants that the study team interviewed noted few or no instances of receiving advertisements, brochures, or flyers describing the CDA (Study 5 at 4-23). Without such materials describing the program, it places the responsibility on the PAs to keep a look out for potential customers (Study 5 at 4-24). The PA cannot expect customers to be cognizant of the program and to seek out information (Study 5 at 4-24).

When marketing material is available, AEs reported that customers may not read mail or email, therefore these methods generally garner a low response rate (Study 1 at 6-10). Further, while many partial participants note that direct mail is a good way to reach them about program opportunities, this type of outreach may not always reach the key decision-makers at customer facilities (Study 2, at 21). In one study an account executive was concerned whether they are reaching the appropriate decision-maker. “Are those e-mails getting out to the right people within that facility that are familiar with energy efficiency and can make those decisions?” he/she wondered (Study 1 at 6-6; See also Study 1 at 6-17).

Who the account executives or program managers contact influences program participation. For example, a common sentiment among architects, engineers, and construction managers is that “more awareness and outreach is needed to the architectural and engineering community” (Study 4, at 5-5). On the other hand, several respondents suggested that the program managers currently focus more outreach and

28 Roughly 75 percent of the participants interviewed in one study did not recall receiving any marketing materials but noted that they were in contact with account executives (Study 5, at 4-29).

attention on engineers, and therefore the architectural community is less informed (Study 4, at 4-22). They also recommend distribution of mailers to the design firms - not just architects²⁹ but also to electrical engineers (Study 4, at 4-25).

Further, identifying a program's target market can be difficult for Program Administrators. National Grid indicated that it has been difficult for the program to gain traction because "it is very hard to determine who the players are" (Study 5, at 6-30). The program manager identified this issue as one of the most significant barriers faced by the program (Study 5, at 6-30). "A customer could be anyone from a dentist to a national firm," he noted (Study 5, at 6-30). If the program cannot clearly identify the target market, it is difficult to target outreach efforts and as a result the core message suffers (Study 5, at 6-30). One technical staff member mentioned a need to identify remaining opportunities and concentrate marketing efforts on those opportunities (Study 1 at 6-18). He went on to say: "We offer all of our programs to all of our customers all the time. What I'm hoping is that with the vast information base that we've built, we can now turn that into more of a market penetration-type study. We've got a lot of customers who have gone through our programs for lighting. The measure life for lighting can be 10 to 20 years and once you do the lighting once you know that facility is pretty much shut down for offering lighting opportunities for a substantial amount of time" (Study 1 at 6-18).

While it is important to extend the reach of the program, the Program Administrators are challenged by the need to maintain a balance of resource allocations (Study 5, at 6-26). "Of course, there are always improvements to be made in marketing, but marketing is so expensive that you don't want to spend so much that you have less incentive money to give to the customers," said one program manager (Study 5, at 6-26). "Ideally, the message has to be not only effective, but also communicated in a way that doesn't cost a lot of money" (Study 5, at 6-26).

The studies we reviewed recommended a number of ways to improve customer outreach and marketing,³⁰ which are summarized as follows:

- It is generally recommended that the PAs aggressively utilize both direct communication and printed marketing material to advertise programs and educate customers about programs (Study 2, at 21, 32; Study 4, at 5-8; Study, 5 at 4-34, 5-1).
- Marketing materials and tools could be improved by: making them more informative, simple, easy to understand, possibly including a checklist of ways to reduce energy costs; including more customer testimonials or case studies; and introducing technical concepts to customers (Study 1 at 1-10, 6-1, 6-17 through 6-18; Study 4, at 4-25).
- The Program Administrators should engage state and local government, the design and construction community, academic institutions, real estate associations to increase participation (Study 4 at 5-7, 5-8).

29 In the same study, the study team hypothesizes that architects do not fully recognize their roles as key contacts and drivers to engage clients/projects with the energy efficiency programs (Study 4, at 4-23). Architects are juggling multiple tasks and typically doing so under the pressure of project deadlines (Study 4, at 4-23). Consequently, many architects view energy efficiency as one of many competing objectives and do not recognize, as design team leaders, their potential influence in engaging their clients and the PA's to optimize efficiency (Study 4, at 4-23).

30 See Study 4, at 4-22, 5-8; Study 5, at 4-34, 5-1; Study 6, at 6-17 through 6-18.

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- An effective implementation plan should take advantage of the favorable environment of “green building” (Study 5, at 6-27).
 - Since account executives are usually the first to hear about new construction projects, the PAs should ensure that they are well informed about the programs so that they can explain the program requirements and benefits to customers when they are first in contact about a potentially qualifying project (Study 5, at 5-1 through 5-4, 6-27).
 - Educate potential design team members about programs through “lunch and learn” events and making presentations at professional meetings attended by architects and engineers (Study 4, at 4-25, 5-7, 5-8; Study 5, at 5-1 through 5-4, 4-14).
 - Lunch and learns should be combined with direct communications (Study 5, at 6-28 through 6-30).³¹
 - Regarding deep savings, one program staff member noted the importance of developing long-term efficiency plans with customers³² (Study 1, at 9-1).
 - One study suggests that, for the Small Business Direct Install program, the facility audits associated with this program presents an opportunity both to document the condition of existing facility equipment and educate customers about the PA program offering that may suit their energy efficiency needs in the future (Study 2, at 2, 21, 32-33).

One AE emphasized the importance of persistence, saying “just be persistent and get in front of these people. Sometimes you have to beat it over their heads, because I’ve worked very closely with facility managers throughout my career, and if what you can offer them isn’t spelled out clearly in front of them, and you don’t follow up and be diligent, then they may not participate” (Study 1, at 6-17; see also Study 1 at 6-10; Study 5, at 6-28 through 6-30). There is a fine line, however, between maintaining follow-up communication and pestering the customer or design team (Study 5, at 6-28 through 6-30). Program reminders should be brief and merely serve to remind the design team of their options (Study 5, at 6-28 through 6-30). Another study suggested that a cohesive system of documenting and monitoring the status of program leads is important to the success of program implementation (Study 5, at 6-30).

31 This study that suggest combining education events with direct communication further states that one of the greatest barriers to participation is “turning intentions into action” (Study 5, at 6-28 through 6-30). While presentations to customers and the design community is a reliable method of program outreach, the impression of these presentations is often short-lived (Study 5, at 6-28 through 6-30). The evaluation team found that program outreach was ineffective in the long-term without consistent program interaction (Study 5, at 6-28 through 6-30). One program manager explained further: “We did a round of lunch-and-learns, but later the architects forget about it. This incentive program is at the bottom of the designer’s priority list because it does not provide them any revenue but only more work for the same amount of money. Our staff calls them every few months just to check in and remind them that the program is there” (Study 5, at 6-28 through 6-30).

32 This study elaborated on this point to say that: “Instead of just going in and saying ‘what do you need today, what would you like to look at today?’ we’re trying to put in a long-term plan with the customer, to say, ‘let’s talk about all your opportunities, and let’s make a list of them, and let’s prioritize that list, and let’s do the things that you can do now this year and then which things you want to plan to do next year. ‘Try and get them to look more long term and holistically about doing energy efficiency. There’s a lot more emphasis on that” (Study 1, at 9-1).

Program Design and Administration Barriers

Process for Participation

A number of studies suggested that participating in efficiency programs could be streamlined, especially the application process required for participation (Study 4 at 5-5 through 5-6; Study 5 at 4-33, 6-37; Study 6, at 6-17 through 6-18). Since vendors provide a crucial service to the programs - creation of projects - it is not surprising that two technical staff respondents suggested streamlining program processes so that they do not, as one respondent put it, “impede the sales process” (Study 1 at 6-18). Moving to one application and consolidating programs across the state were generally thought to be good steps towards creating a program free from such impediments (Study 1 at 6-18).

One study suggested streamlining the application process by reducing the amount of paperwork that is required for participation³³ (Study 4 at 5-7). In one study, interviewees chose not to participate in programs due to the perception that program participation is a difficult process and that the paperwork requirements are burdensome (Study 6, at 6-5, 6-16 through 6-17, 7-21 through 7-24). One architect stated that “gathering all the information and filling out the forms can take 40 hours or more for which we don’t charge the client” (Study 5 at 4-1 through 4-14). In order to resolve this burden, this architect suggested placing the paperwork burden on the PA staff and the technical consultants³⁴ (Study 5 at 4-1 through 4-14).

Additionally, the time required to participate is a potential barrier or drawback for customers (Study 1 at 9-6; Study 4 at 4-19 through 4-20; 5-7). Despite the relatively large incentives offered, program staff reported that some customers are reluctant to assume the additional time and cost required by participation (Study 5 at 6-31). Since technical staff respondents are keenly aware that time is a barrier for customers, nearly all of them mentioned working closely with customers and other stakeholders to provide results as quickly as possible (Study 1 at 9-6). One respondent said that although “sometimes [we] take longer than expected; sometimes it is [due] to the customer” (Study 1 at 9-6).

Finally, design firms reported that confusion regarding eligibility requirements was a barrier (Study 5 at 4-18 through 4-19). One participant complained that he received conflicting information about eligibility requirements from a single Sponsor depending on if he was speaking to the account executive or PA staff (Study 5 at 4-18 through 4-19). Further, in another study, interviewees suggested various reasons for not participating, including a customer’s proposed project doesn’t qualify (Study 6, at 6-16 through 6-17).

Program Administrators’ Staffing Skills and Availability

Studies suggested that PA’s skill sets could be more diverse, and that PAs often lack technical knowledge. “Probably the biggest thing that would get better savings is making sure that the reps are aware of the broad technologies that are available, that you don’t have somebody who’s got a background in variable frequency drives and that’s all they know. The reps have to have a broad range of what’s available and be able to talk intelligently about that with customers” (Study 1 at 9-4). Some studies suggested

33 Respondents mentioned burdensome paperwork as an impediment to participation (Study 2, at 26).

34 The same study cited Efficiency Maine as an example, stating that the Efficiency Maine program makes it clear to prospective customers that the burden of paperwork will not fall upon them but upon program staff (Study 5 at 6-31). “No additional work is required,” explained the program manager (Study 5 at 6-31).

increasing the number of architects, engineers, and lighting designers on the PA's efficiency staff (Study 4 at 5-7, 5-8; Study 5 at 4-1 through 4-14). The PA's staff seem to be in agreement, with one saying "I always wish my knowledge base is greater than it is to offer more to customers. We're being asked to dive deeper with customers and find complex offerings" (Study 1, at 6-1 through 6-2).

Additionally, AEs mentioned being too busy or lack of staff as an issue³⁵ (Study 1, at 6-1 through 6-2, 9-6). Another said that "It's just that [applications are] coming in large amounts, whether it's a small job or a big job. And like I said, until just recently, we've gotten some more bodies over there to help those people out, so it's starting to get better. But for a while, some projects just sat there" (Study 1, at 6-10). Several AEs noted the staff shortages as an impediment to identifying projects (Study 1, at 5-4). One respondent said we need "some more people just to be able to take the time and really explain to the customers, do some more analysis for [customers], and let them see why they should [proceed with project]" (Study 1, at 6-4, 6-10).

Customers' Lack of Understanding regarding Efficiency Strategies and Measures

One study found that architects', design engineers', and construction managers' understanding of best practices for efficient equipment, including lighting, HVAC, and building shell technologies, varied considerably (Study 4 at 4-6 through 4-13). For example, the study found no consistent trends in respondents' views on what constitutes best practices in regard to HVAC equipment (Study 4 at 4-10). Further, optimal envelope design continues to be a source of debate among architects and construction professionals, while confusion persists about how to piece together the different components of the wall and roof assemblies (Study 4, at 4-12, 4-13). One architect asked that the utilities provide a description of an energy efficient wall assembly (Study 4, at 4-13; see also Study 4 at 5-6). One architect suggested that the programs should be made "more understandable to architects, and maybe provide examples of good lighting practices" (Study 4 at 5-5 through 5-6).

Technologies

One recurring issue relates to the types of measures offered through the PAs programs (Study 1 at 9-7). In one study, the most common suggestion for improving the program included offering additional qualifying equipment, which could entail more equipment within a specific end-use as well as a wider range of end-uses (Study 2, at 25). Additionally, one architecture firm complained that the prescriptive programs were a little too prescriptive and had had an issue with a certain lighting specification (Study 4, at 4-25). Their suggestion was that there should be something in between a straight forward prescriptive approach and full building modeling (Study 4, at 4-25). One chain respondent mentioned that they are not in agreement with the PAs on the type of products specified for LED lighting (Study 6, at 7-39). According to this respondent, their locations use a type of LED lighting that is not approved for installation by the PAs (Study 6, at 7-39).

35 "I think it does come down to a personnel issue in house. Maybe if we had more program managers [and] engineering staff [to] do projects a little faster to prove the benefits to the customers. Sometimes we have the applications from the customer, they are looking to do a project, and we have put it through the steps of what the savings are going to be and what the incentive is going to be. And that can sometimes take a little while to get done because we have so many jobs. And so sometimes a customer gets a little discouraged because of the time it takes. And if we had more personnel working on that end, I think, we could get these jobs out the door a little faster" (Study 1, at 5-4; see also Study 1, at 9-6).

Additionally, the technical support staff respondents cited the lack of low-cost high-savings projects because they have been done already or due to the type of customers enrolled in the programs (Study 1 at 9-7). One respondent said we're "limited by what types of facilities and what's going on in those facilities" (Study 1 at 9-7). They went on to elaborate, "once you do the lighting and lighting controls, you could probably do some HVAC controls... but HVAC equipment typically doesn't have an incentive that induces people to retrofit it so you wait until that stuff dies to replace [it]" (Study 1 at 9-7). Another respondent commented on working with customers to "see beyond lighting" saying that "there are certainly more things that a customer can do. Maybe just take advantage of more prescriptive measures or get into their HVAC equipment... refrigeration measures, the more complex measures" (Study 1 at 9-7). However, this respondent was quick to follow-up their comment that more complex measures "come at a price. And that's where sometimes it's in conflict with what our goals are" (Study 1 at 9-7).

Lack of Technical Assistance

In one study, few respondents indicated that they received technical assistance from the program (Study 4, at 4-24). Most architects we spoke with indicated that they either have not received any services, have received services but couldn't identify what they were, or have received energy modeling assistance (indirectly) or lighting design assistance (Study 4, at 4-24).

Timing of Participation

Another great challenge of program implementation is establishing participation in the earliest stages of the design process (Study 5, at 6-32). For example, the CDA requires early involvement of the PAs to ensure that all relevant energy efficiency improvements are incorporated into the customer's building design (Study 5, at 4-15 through 4-18). Unfortunately, customers do not always make contact with the PAs during the conceptual design stage and therefore the opportunity to use the CDA is often lost (Study 5, at 4-15 through 4-18). As one non-participant said, "timing was the major issue for us. We were a little slow in getting the local utility involved in the beginning of the project" (Study 5 at 4-32; see also Study 5, at 4-29, 5-1 through 5-4). One major developer and construction management firm noted that in the past they haven't received feedback from the utilities in a timely manner (Study 4, at 4-24). Further, architects and engineers are not able to consistently identify the most appropriate point during the design process to contact PA's (Study 4, at 4-24). Others reported that certain customers, such as hospitals, have long-term budgeting processes, and therefore AEs have to reach out to them far in advance of project initiation (Study 1, at 5-3).

Ideally, program staff should intercept the customer and design team during the of conceptual design phase of the project, if not earlier (Study 5, at 6-32). In order to have an impact on the project design, utilities must engage the customers early, be consistently engaged throughout the course of a project, and meet project milestones (Study 4, at 4-24).

Other Barriers

A number of other reasons were cited by the various studies as barriers to participation. For example, the need to obtain corporate approval to participate is seen by customers as a barrier to participation (Study 2, at 22, 26).

Other perceived barriers related to customer hesitation to use new technology. For some clients, who may operate their facilities on a 24/7 basis, the need for equipment reliability and ease of maintenance is paramount (Study 4, at 4-3; Study 6, at 7-6, 7-21 through 7-24). Furthermore, they don't want to be "guinea pigs" for new technologies, and they cannot afford to be "embarrassed" by a system failure (Study 4, at 4-3; Study 6, at 7-6). Other cited challenges related to new technologies include convincing clients to use unproven technologies, specifying and coordinating more sophisticated equipment and controls (i.e. constructability of the design), and communications between different types of equipment (Study 4 at 4-19 through 4-20; Study 1, at 6-15; Study 6, at 7-6, 7-21 through 7-24).

Efficiency saturation was also cited as a barrier to further participation. Because of the length of time that C&I programs have been running in Massachusetts some of the technical staff reported that they are beginning to circle back around to customers they have already done projects with (Study 1 at 9-7). One respondent commented "we've been doing energy efficiency programs for 20 years and we've done projects at every one of these customers more than two or three times"³⁶ (Study 1 at 9-7).

One respondent stated that the rapid code changes have made things difficult for his staff (Study 4 at 4-17). The implication is that the extra time needed to master the code changes is eating into A&E firms' project fees (Study 4 at 4-17). A few architects stated they "have to pay more attention" to their designs because of new code requirements and that they now implement measures that would have before been considered alternative energy efficiency measures (Study 4 at 4-17).

36 An account executive was quoted to say that "unfortunately, you reach a saturation point, and I'm at that point now with the biggest customers. There's only so efficient that you can be. Unless there is a change in technology, then you can only change so much lighting, you can only change so many motors. It comes to a point where you've hit all the biggest customers. And then you start moving down to the next quartile of size of customers that are within the realm of the programs that we are responsible for" (Study 1, at 5-4; see also Study 1, at 6-14).

Appendix B – Survey Tools

Questionnaire Sent Out With Invitations



Synapse Energy Economics, Inc.
485 Massachusetts Ave., Suite 2
Cambridge, MA 02139
617-661-3248

Survey of Commercial & Industrial Customer Perspectives on Massachusetts Energy Efficiency Programs

On behalf of the Massachusetts Energy Efficiency Advisory Council, Synapse Energy Economics is currently investigating incentives and barriers to commercial- and industrial-sector participation in the Massachusetts energy efficiency programs. This survey represents the first phase of our study, and will be followed up by a phone or in-person interview with respondents to discuss pertinent details. A staff member at Synapse will be in touch to schedule this interview.

The answers you provide to this survey will be shared as part of a Synapse report to the Advisory Council. All information that could be used to identify you or your company will be kept strictly confidential, and will not be presented in our report.

Thank you for participating, and for helping to inform the development of the Massachusetts energy efficiency programs.

If you have any questions about this survey, please contact Janice Conyers at Synapse: 617-453-7020 or JConyers@Synapse-Energy.com. Please SUBMIT using the button at the top right, or email as an attachment.

Company Information

1) **Company name:**

2) **Company address:**

3) **Company product(s) / service(s):**

4) **Approximate number of company employees located in Massachusetts:**

- 1 to 4.
- 5 to 9.
- 10 to 19.
- 20 to 50.
- Greater than 50.

5) **Building ownership:**

- Owned.
- Leased.

6) **Electricity provider:**

7) **Natural gas provider:**



Information about the Person(s) Being Interviewed

8) Name(s):

9) Title(s):

10) General responsibilities:

11) Which specific responsibilities does your job include? (Choose all that apply.)

- Administration
- Building operations/maintenance management
- Property management
- Construction management
- Engineering
- Purchasing and procurement
- Financial management
- Environmental management
- Owner/Founder/President/CEO
- Other (please specify)

Information about Energy Usage

12) Average monthly electric bill.

(Please provide what information you have readily available. Please explain whether the information is for a particular building, a facility, a division within the company, the company as a whole, or some other grouping.)

Electricity consumption (in kWh):

Electricity cost (in dollars):

13) Annual electric costs as a percent of annual operating expenses.

(Please choose one of the following, based upon your best estimate.)

- One percent or less.
- Between five and one percent.
- Between ten and five percent.
- Between twenty and ten percent.
- Twenty percent or greater.

14) Average monthly natural gas bill.

(Please provide whatever information you have readily available. Please explain whether the information is for a particular building, a facility, a division within the company, the company as a whole, or some other grouping.)

Gas consumption (in therms):

Gas cost (in dollars):

15) Annual natural gas costs as a percent of annual operating expenses.

(Please choose one of the following, based upon your best estimate.)

- One percent or less.
- Between five and one percent.
- Between ten and five percent.
- Between twenty and ten percent.
- Twenty percent or greater.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

17) If the answer to the question above is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities? (Choose all that apply.)

- Internal rate of return.
- Payback period.
- Benefit-cost ratio.
- Energy bill savings.
- Other. (Please describe.)
- The company has not specified criteria regarding efficiency measures.

Information about Awareness of the Mass. Energy Efficiency Programs

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

- Yes.
- No.

19) Have you ever been solicited to participate in any energy efficiency program? (Choose all that apply.)

- By your gas company.
- By your electric company.
- By someone else. (Please specify.)

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility? (Choose all that apply.)

- Yes, within the past three years.
 Yes, prior to the past three years.
 No.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company.

Please name one or two things about the program that did not work well for your company.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate these programs within the next three years?

- Yes.
 Maybe.
 No.

If not, why not.

Scheduling a Follow-Up Interview

As mentioned above, you will be contacted by a staff member at Synapse to schedule a phone or in-person interview as a follow-up to this survey. During the interview, you will be asked a series of specific questions designed to address the following overarching topics:

- How well do the Massachusetts energy efficiency programs address your company's needs?
- What are the primary barriers that your company faces in participating in the Massachusetts energy efficiency programs?
- How can the programs be changed to provide greater value to your company? How can they be changed to help overcome the barriers?
- What is the likelihood that your company will participate in the Massachusetts energy efficiency programs in the next three years?

Thank you for taking the time to fill out this survey; your input is greatly appreciated! Please save your answers and return the completed survey to Synapse as an attachment to an email. Please address the email to JConyers@Synapse-Energy.com

You may also submit your completed survey using the submit button at the top right.

Interview Questions for Program Participants

Specific follow-up questions to be asked in person of respondents who completed Synapse's survey for program participants.

These questions are not provided to the interviewee in advance.

General questions:

1. How important are energy costs to your company?
 - a. What level of priority do you give energy costs? High, medium, low?
 - b. Who sets the priority?
 - c. How is the priority communicated? What is it based on?
2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.
 - a. Who makes the request? What department of the company?
 - b. How is a request communicated?
 - c. Who makes the decision? What department of the company?
 - d. How is the decision made? Which metrics are used (e.g., hurdle rates, payback periods, age of equipment)?
 - e. How is the decision communicated?
3. Please expand upon your answer to question 17 in Synapse's survey for program participants. (What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?)
4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.
 - a. Reduced costs?
 - b. Improved services?
 - c. Improved operations?
 - d. Environmental benefits?
 - e. Other?
5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?
 - a. What could the representative have done differently to address your company's interests and needs better?
6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?
 - a. If yes, please explain why not.

-
7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?
 - a. If yes, what factors are motivating you to participate again?
 - b. If no, why not?
 - i. What is the most significant barrier to your participation?
 - ii. What are the other barriers to your participation?
 - iii. What could be done differently to help motivate you to participate?

Specific Questions: (to be asked if the respondent has not provided sufficient detail to the general questions above)

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?
 - a. Who in your company sets the budgets?
 - b. Where do energy costs and energy efficiency investments fit within the company's budget structure?
9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?
 - a. Who in your company makes the decisions about financing opportunities and limitations?
 - b. What sort of financing opportunities does your company provide with regard to energy efficiency investments.
10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?
- 7.

If time allows:

11. What type of support did your company receive through the Massachusetts energy efficiency programs? (Choose all that apply.)
 - Equipment rebates.
 - Technical support.
 - Energy audit or technical assessment.
 - Loans or other forms of financing.
 - Other. (Please describe.)
12. Approximately how much are you expecting to save as a result of participating in the Massachusetts energy efficiency programs? (Please provide whatever information you have readily available.)
 - Energy savings (kWh, therms) per month.

Bill savings (dollars) per month.

Percent reduction in overall energy consumption.

Payback period.

Other. (Please describe.)



Interview Questions for Program NON-Participants

Specific follow-up questions to be asked in person of respondents who completed Synapse's survey for program non-participants.

These questions are not provided to the interviewee in advance.

General questions:

1. How important are energy costs to your company?
 - a. What level of priority do you give energy costs? High, medium, low?
 - b. Who sets the priority?
 - c. How is the priority communicated? What is it based on?
2. Has your company purchased or installed equipment in the past three years that consumes a significant amount of electricity, gas or oil?
 - d. In purchasing this equipment, did your company consider the implications of your energy bills?
 - e. Did your company consider purchasing equipment that is more efficient than standard practice?
3. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.
 - f. Who makes the request? What department of the company?
 - g. How is a request communicated?
 - h. Who makes the decision? What department of the company?
 - i. How is the decision made? Which metrics are used (e.g., hurdle rates, payback periods, age of equipment)?
 - j. How is the decision communicated?
4. Please expand upon your answer to question 17 in Synapse's survey for program non-participants. (What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?)
5. For those customers that were aware of the Massachusetts energy efficiency programs prior to this interview (answered yes to question 18 in Synapse's survey for program non-participants): How did you become aware?
6. If you were aware of the Massachusetts energy efficiency programs prior to this interview, why has the company not participated in them to date?
 - k. What is the most significant barrier to your participation?
 - l. What are the other barriers to your participation?
 - m. What could be done differently to help motivate you to participate?
7. Have you communicated with a representative of the Massachusetts energy efficiency program administrators?

-
- n. How well did the representative understand your company's interests and needs?
 - o. What could the representative have done differently to better address your company's interests and needs?
8. For those customers that were not aware of the Massachusetts energy efficiency programs prior to this interview (answered no to question 18 in Synapse's survey for program non-participants): Do you plan to purchase equipment in the next three years that consumes a significant amount of energy? If so, would you be interested in participating in a program that offers you financial incentives and technical support for installing energy efficiency equipment?
- p. If yes, what are the main reasons for doing so?
 - q. If no, why not?
 - i. What is the most significant barrier to your participation?
 - ii. What are the other barriers to your participation?
 - iii. What could be done differently to help motivate you to participate?

Specific Questions: (to be asked if the respondent has not provided sufficient detail to the general questions above)

9. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?
- r. Who in your company sets the budgets?
 - s. Where do energy costs and energy efficiency investments fit within the company's budget structure?
10. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?
- t. Who in your company makes the decisions about financing opportunities and limitations?
 - u. What sort of financing opportunities does your company provide with regard to energy efficiency investments.
11. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

Appendix C – Survey Responses

Survey of Commercial and Industrial Customer Perspectives of Massachusetts Energy Efficiency Programs

Interview Notes

Region: Bristol County
Industry: Heavy Industry
Person(s) Interviewed: Energy Systems Program Manager
Interview Number: 1

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

- 4) Approximate number of company employees located in Massachusetts:
Greater than 50.
- 5) Building ownership:
Owned.
- 13) Annual electric costs as a percent of annual operating expenses:
Declined to respond.
- 15) Annual natural gas costs as a percent of annual operating expenses:
Declined to respond.
- 16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?
Yes.
- 17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?
Internal rate of return; Payback period; Benefit-cost ratio; Energy bill savings.
- 18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?
Yes.
- 20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?
Yes, within the past three years, and prior to the past three years.
- 21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Being allowed to pass the rebate on to the contractors so I did not need to ask for as much capital.

Please name one or two things about the program that did not work well for your company:

Engineering support to help move projects along.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe. Capital is very tight. Changes in financing options might help move projects forward.

Predetermined Interview Questions

1. How important are energy costs to your company?

The customer preferred not to disclose its energy use as a percentage of annual operating expenses through the questionnaire, but stated during the interview that energy costs comprise a large enough percentage to be a motivating factor. Partly because Massachusetts has some of the highest energy rates in the United States, the customer recently took steps to reduce costs by opening a location overseas and is considering opening a location in a southern state. The customer has tried to lower consumption, and program participation is important to the customer for staying competitive.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The customer annually considers capital investment projects. Projects that are presented to management as absolutely necessary to business operations and sales are prioritized as Tier 1 projects, and receive the requested capital. Capital projects not absolutely necessary for business operations are categorized as Tier 2 projects, and receive financing based on the value (i.e., savings potential or improved quality) the project can bring to the customer. Energy projects are never prioritized as Tier 1 projects because the person interviewed could never say that the business cannot continue without an energy efficiency project. Efficiency projects then compete with other capital investment projects on a value added basis, and may take a number of years to receive the required capital.

The customer's annual review of capital investments can differ from year to year. The annual review depends on the amount of capital the customer has available to allocate to the proposed projects, and the projects that have been proposed in a given year. In some years efficiency projects have received a lot of capital, and other years only small projects are completed (including 2012).

Efficiency is seen as non-essential, although something the customer would like to do. Goes in cycles: some years more capital spending on other big projects, followed by a lull where efficiency can fit into.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

Efficiency equipment combined with the utility incentive generally needs to provide a payback between 2 and 3 years for the company to install the efficient equipment. The customer generally does not consider a payback beyond 5 years.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The customer stated that it has participated in efficiency programs a number of times. The person interviewed indicated that, in the past, either he would contact the utility company directly to enquire about rebates when the customer was considering an efficiency project, or the utility would contact him. When the utility contacted him, it was usually at the end of the year, and the utility explained that it was short of meeting its goals and would offer him a higher incentive than normal if the customer participated that year. In recent years, the utility has reached out to the customer more in the middle of the year than at the end of the year. Sometimes the customer would be in the process of considering an efficiency project when the utility called, and the additional incentive allowed the customer to move forward with the efficiency project. The person interviewed found that having the utility contact him at the end of the year aligned well with the customer's internal capital planning schedule (see response to question 2).

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The person interviewed indicated that experiences with account representatives have been generally positive and did not have anything negative to say about the representatives.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

n/a – see description of company's decision making process in question 2.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Maybe. The person interviewed recommended making a number of program design changes that would better allow the customer to participate in the future. First, the customer strongly recommended greater transparency in program spending and funding. The customer noted that it puts a lot of money towards efficiency programs through its utility bills, but cannot track how much it is actually spending because rates are not transparent. Further, the customer feels that it is putting a lot of money towards efficiency projects, without getting the full advantage of the programs. The person interviewed recommend that, instead of charging the customer the amount collected through its utility bills, allow the customer to retain the money, with the understanding that that exact amount of money would have to spent on efficiency projects at the customer. That money could only be used for efficiency projects at the customer, and could not be used for other capital investments within the customer. This would relieve the person interviewed from having to ask management for capital to invest in efficiency projects. Such a change would help tremendously in moving projects forward. This may require a policy change before it can happen, but it does need to happen.

Second, the person interviewed recommended considering on-bill financing for large commercial customers, similar to the program offered to small commercial customers. He recommended allowing customers to pay off efficiency investments on their bill, but in

such a way that the monthly payment does not exceed the monthly savings. This would also relieve him of having to ask management for capital to invest in efficiency projects.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

See description of company's decision making process in question 2.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

See description of company's decision making process in question 2.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

See description of company's decision making process in question 2. Because the customer's annual review of capital projects can vary from year to year, every year it can be difficult to count on capital availability for efficiency projects. It depends not only on economy but also on business model and company's business cycle.

The person interviewed also stated that the economy has definitely been very tight for the past 2 or 3 years. Also, the customer is recently under new ownership, and the person interviewed is unsure how that will change the customer's long-term operations.

People have been lulled into a sense of security with prices of electricity and natural gas being suppressed. Back in 2008, everyone was through the roof trying to figure out how to conserve because budgets were getting out of control. Now with this long period of sustained pricing, efficiency is not on the top of people's mind, so that definitely plays into companies' decision making.

Barriers to Participation

A. Financial limits

B. Economic downturn

Maybe.

C. Customer awareness and marketing

D. Program design and administration

At the end of the last two years, the utility has practically doubled incentive levels for certain measures. This tells the person interviewed that the utilities are over collecting the funds, and are literally looking to burn money by end of year.

The customer indicated that greater engineering support from the Program Administrators would allow it to convince management that efficiency projects are worthwhile. The customer does not have the man power to do a study that would determine whether an efficiency project could benefit the customer. Energy efficiency is only a portion of a person's job at the customer, and when a potential efficiency project is identified, it can sit in a database waiting for someone to fully define the project. Management won't consider projects that are not fully developed. The person interviewed indicated that they have reached out to the utility to see if they would fund such an engineering analysis for a potential project, but found that the assistance offered

by the utility was not compelling to participate. According to the person interviewed, the utility would only offer to pay a certain amount for evaluations, but only after the customer decided to go ahead with the project, whereas the customer needed the assistance before it could go ahead with a project.

Sometimes the customer would like to do a custom project that requires technical and engineering support. That money would have to come out of another expense budget, and with the economy the way it is, that pool of money can be very tight. Utilities will offer to partially fund technical support, but if the utilities were more aggressive in helping companies clearly identify a project in terms of what it will save and cost the company to implement it. This creates a clear picture on what project would look like, which would be beneficial. Some projects have stalled for years because they're just concepts that haven't been fully developed. Technical support could clearly define the best projects and opportunities, which would be a good use of money. Help get projects in front of management and identify rebate opportunities. Person interviewed recommended that the utility pay the full amount of the technical study. As currently structured, the customer could do a study and would have to pay for half of it, but then the project doesn't get built so it's seen as a waste of money. This is a hard step for the customer to get past. Don't have expense money to spend on reports. Expense money has been really tight in the past few years.

E. Corporate review and approval process

Yes – see description of company's decision making process in question 2.

F. Timing of program administrators

G. Customer distrust of new technologies

H. Customer convinced it has done all it can.

I. Others

People have been lulled into a sense of security with prices of electricity and natural gas being suppressed. Back in 2008, everyone was through the roof trying to figure out how to conserve because budgets were getting out of control. Now with this long period of sustained pricing, efficiency is not on the top of people's mind, so that definitely plays into companies' decision making.

Other Comments

The person interviewed noted that it has a CHP system, and would like to install another system as it is a tremendous efficiency project, but that standby rates hurt its full potential.

The person interviewed stated that MOU agreements between large customers and utility company has value, but would prefer it were a more open process and allow others to see what incentives work for other customers.

Survey of Commercial and Industrial Customer Perspectives of Massachusetts Energy Efficiency Programs

Interview Notes

Region: Bristol County
Industry: Retail
Person(s) Interviewed: n/a
Interview Number: 2

Key Questionnaire Responses

The Company did not provide the questionnaire.

Predetermined Interview Questions

1. How important are energy costs to your company?

n/a

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The persons interviewed prepare a proposal regarding an efficiency project for the CFO to review. If acceptable, the CFO approves the project and provides the capital investment.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

An efficiency measure's ROI needs to be between 2 and 3 years in order for the customer to install the measures. The CFO of the customer is receptive to and generally will approve efficiency projects with a low payback period.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

A third-party energy company approached the customer about two years ago and surveyed its locations for efficiency opportunities. The third-party energy company offered rebates from the utility combined with on-bill financing structured so that the monthly on-bill repayment charge would break even with the monthly savings. As a result, the customer upgraded lighting in 5 or 6 of its 12 locations in Massachusetts. The zero dollars out of pocket and a 2 to 2.5 year payback allowed the customer to easily go forward with the efficiency projects.

The customer was always interested in efficiency but was not actively seeking projects when the third-party energy company approached it. Previously, the customer looked for efficiency projects and was told there were no opportunities available in its locations.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The customer has limited contact with its utility, and was not informed by its utility about efficiency programs. The customer was generally aware that the utility's offer efficiency

programs because it has locations in Connecticut, and has retrofitted lighting in all of its Connecticut locations through Connecticut Light and Power. However, the customer had a limited understanding of the Massachusetts efficiency programs.

Competitive suppliers regularly contact the customer, some of which offer efficiency measures. Lighting efficiency is being aggressively pushed by third parties at the moment. The customer was indifferent as to whether its utility or a third party provided efficiency services and incentives, so long as the financial incentives offered are in line with the customer's goals.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

The customer has looked into HVAC equipment, but the ROI is usually 5 to 10 years which is not worth the investment to the customer. The customer would love to do more than lighting retrofits.

The customer has locations in Connecticut, and is aware that CL&P packages lighting with HVAC incentives. The customer is more likely to consider such a packaged offering if the ROI stays within 2 to 3 years.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes, although likely not directly through the utility. The customer plans to upgrade lighting in a couple of its Massachusetts locations in the next few years through the third-party energy company.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

The customer has a set number of capital dollars available for investment. Efficiency projects may compete against other investment projects depending on the projects proposed in a given year. If the project has a 2 to 3 year payback, then it will likely receive approval along with the other proposed 2 to 3 year payback projects.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

The customer favors an on-bill repayment structure. The customer feels like there is a lot of legwork involved in accessing federal and state incentives for efficiency. If the financial incentives were research and packaged together, the customer would be more likely to participate.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The customer was not very affected by the economy and has been doing alright. 2008 and 2009 were a little slow, but the customer has been pleased since then.

Barriers to Participation

A. Financial limits

The customer is very receptive to on-bill repayment.

B. Economic downturn

C. Customer awareness and marketing

Yes. The customer was unaware of the utility's program offerings, and had not been in touch with its utility.

D. Program design and administration

Legwork involved in accessing incentives.

E. Corporate review and approval process

no so long as short payback period.

F. Timing of program administrators

G. customer distrust of new technologies

H. customer convinced it has done all it can.

Yes, to some degree. The customer previously thought they had done all they could until a third party approached them to conduct an audit. While the customer has only done lighting projects, they are unwilling to install measures with a longer payback.

I. Others

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Bristol County
Industry: Miscellaneous
Person(s) Interviewed: Executive Director
Interview Number: 3

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

n/a

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

One percent or less.

15) Annual natural gas costs as a percent of annual operating expenses:

Between five and one percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, with the past three years and prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Energy efficient common hallway lighting, bulb replacement with CFL's, replace torchiere lamps.

Please name one or two things about the program that did not work well for your company:

Greater focus on gas/heating measures.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Energy costs are very important to the customer. The person interviewed oversees housing complexes, but each housing unit does not pay for its own utilities. Energy is one of the major line items on the budget for this customer.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The Executive Director is the decision maker. If there's a way to save money, she will take advantage of it.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

The shorter payback the better. If a decent, favorable return was expected from an efficiency project, it would certainly be considered.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The a certain state department assertively recommended taking advantage of the efficiency programs, and the person interviewed wanted to get the audit taken care of so that the customer could consider what else could look to do in the future.

Bill savings was another motivating factor. Energy is a huge line item on the budget for this customer. The customer does not have a lot of money available beyond paying for its energy bill, so they have to save money everywhere they can.

The customer seemed to have trouble bringing all the pieces together for funding, scheduling, logistics, and participation in the utility programs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The person interviewed could not recall whether they participated through the utility program or a third party like CSG.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

Some projects were considered, but the utility company informed them that it would not have produced enough savings so it was eliminated from the list because the utility was

not willing to do it. The person interviewed found this to be an unfavorable aspect of the program.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

The customer will participate anytime there is anything you can offer. The customer can only participate when equipment needs replacing, and is not likely to proactively retire equipment early.

When asked how the program could be improved going forward, the person interviewed indicated that they would participate again, although anything that simplified the process would be good.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Yes. The customer's budgets are very controlled. It won't have the money on hand to upgrade equipment until the equipment needs to be replaced. Efficiency has not been factored into the customer's capital investment plan as it's not high on the priority list.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

The person interviewed was not well informed about financing opportunities but may have been interested if given more information.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The customer's income has been relatively stagnant for the past few years – not decreasing but definitely not increasing. The customer recently developed a capital investment plan that should consistently provide annual funds for improvements, but very few dollars will be put towards efficiency upgrades. If the economy improves, the customer does not expect it would start doing efficiency projects immediately – there's just too many other things. The customer just needs to pay its bills.

Barriers to Participation

A. Financial limits

Yes. Budget and capital are very tight for the customer. Efficiency is not considered a priority, although energy costs are very important to the customer.

B. Economic downturn

Yes. Less income available for capital improvements.

C. Customer awareness and marketing

To some degree. The person interviewed was not well informed about financing opportunities.

D. Program design and administration

The customer experienced delays during its initial enrollment in the program. A lot of data was required from the customer regarding its energy use, which pushed back the

installation process. The person interviewed recommended simplifying the logistical process for participation.

Some projects were considered, but the utility company informed them that the project would not have produced enough savings so it was eliminated from the list because the utility was not willing to do it.

The person interviewed felt that there was a bigger push towards electric measures, and would have liked to see more heating measures.

E. Corporate review and approval process

F. Timing of program administrators

Yes. customer can only participate when equipment needs to be replaced.

G. customer distrust of new technologies

H. customer convinced it has done all it can.

No. customer would like to do more but does not have the budget available.

I. Others

Other Comments

The customer has received favorable feedback on common lighting upgrades, which the person interviewed found encouraging.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston

Industry: Schools & Colleges

Person(s) Interviewed: Manager of Sustainable Engineering and Utility Planning

Interview Number: 4

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

One percent or less.

15) Annual natural gas costs as a percent of annual operating expenses:

One percent or less.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years, and prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Customized MOU, 3 year program, generous incentives.

Please name one or two things about the program that did not work well for your company:

Nothing for gas/thermal.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Energy costs are not a significant consideration for the customer, especially compared to a large manufacturer. The customer would not need to lay off employees if energy costs increased. Energy costs are not going to change the customer's competitiveness. The customer is going to be able to obtain the energy it needs to operate its facilities.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

An engineer at the customer needs to ask a number of division or department directors for approval for an energy efficiency project. This process of approval can be long and slow, sometimes taking years for approval. Management needs to be convinced through reasonable justification that the potential savings are worth moving internal funds from the designated energy cost bucket, to the capital project budget bucket.

As further discussed in question 4, the increased amount of efficiency funding beginning in 2010 caught management's attention and made management more receptive to approving efficiency projects, which made for a more efficient internal approval process. It took the increase in available utility funding and a large efficiency investment plan for management to see the value in efficiency.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

n/a

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Beginning in 2010, the customer worked closely with its utility to design a custom three-year efficiency plan for its property through a Memorandum of Understanding (MOU). Through the MOU, the customer set aggressive goals and has been successful in meeting those goals. The utility provided greater amounts of funding than in previous years of participation, which allowed the customer to design a large efficiency investment plan. The customer's efficiency plan was funded in roughly equal amounts by the utility MOU, internal capital, and the reinvestment of savings resulting from efficiency projects.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The relationship between the customer and utility is generally positive, and the two parties are in regular contact. The customer found that the utility's engineers and technical assistance were improved during this period of participation from previous experiences with the utility.

-
6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

n/a

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

The customer hopes to extend the efficiency plan it currently has with its utility for the next three-years, but has not yet discussed the opportunities and plan with the utility or internally with management. The customer expects to reference the success with its current three-year plan to receive approval from management.

If the customer does participate in the next three-years, the person interviewed stressed that gas savings needed to become a stronger focus for the customer, whether or not the utility's efficiency program allow opportunities and incentives for gas savings. The person interviewed felt that gas incentives were not as generous as on the electric side, and that the gas programs were not as well structured as and even appeared disconnected from the electric programs. The customer acknowledged that it is not a typical gas customer in that it has in place a co-generation facility and has a number of labs that require chilled water and steam. To address gas efficiency projects, the customer needs to spend a significant amount of time developing an engineering analysis. In the past, the potential savings were not worth this effort. The person interviewed indicated that the utility is getting better at providing this service and has employed more people, but greater improvement is needed.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

The customer is hopeful that there will not be budget limitations for efficiency program participation in future years. However, the customer has not yet begun to plan for next year or future years, so is not yet fully aware of its budget availability.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

The person interviewed indicated that greater transparency with regard to the amount that the customer is providing to program funding would better allow him to convince management to take advantage of efficiency programs offered by the utilities. He said that he is aware of the amount the customer pays through the system benefits charge, but cannot see its full contribution via other charges on the bill. He understood that by reducing consumption he would pay less into the efficiency pool of funds, and considered aggressive participation the only way to keep the energy budget in control. Going forward, if he could show management the amount of money they're contributing to efficiency, that would allow him to convince management that they need to go up to the trough and get their share of program funding, or else they would be subsidizing someone else's program participation.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The economic downturn did not strongly affect the customer. To some degree the customer was tight on money, and so obtaining funding for energy efficiency was a little bit difficult prior to the utility's involvement in developing the long-term efficiency plan with

the customer. The customer returned to a healthy financial state relatively quickly and does not expect its financial health to change going forward.

Barriers to Participation

J. Financial limits

K. Economic downturn

L. Customer awareness and marketing

M. Program design and administration

Gas programs need improvement

N. Corporate review and approval process

Potentially – depends on size of funding and potential savings.

O. Timing of program administrators

P. Customer distrust of new technologies

Q. Customer convinced it has done all it can.

R. Others

The person interviewed indicated that greater transparency with regard to the amount that the customer is providing to program funding would better allow him to convince management to take advantage of efficiency programs offered by the utilities.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Western Massachusetts

Industry: Retail

Person(s) Interviewed: Corporate Energy - Retail Facilities Mgr.

Interview Number: 5

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

3,000 employees.

5) Building ownership:

Both owned and leased.

13) Annual electric costs as a percent of annual operating expenses:

Unsure.

15) Annual natural gas costs as a percent of annual operating expenses:

Unsure.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Absolutely. Efficiency is one of the main factors in consideration.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

n/a

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Flexibility and creativeness in allowing custom programs that are unique.
Resources provided by utility to develop projects. Overall MassSAVE program is very easy to work with.

Please name one or two things about the program that did not work well for your company:

Nothing.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Extremely important. Energy is the only controllable cost in the customer's operations. The use of more efficient equipment has a dramatic impact on the customer's bottom line and its profitability. The lower the customer can keep those costs, either through the commodity itself or reducing the consumption, the more dramatic an impact it will have on the customer's bottom line.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

Upper management is supportive of efficiency. The person interviewed submits a project proposal to upper management for approval after the utility has approved the project. However, as discussed in question 3, the ROI has to be within 2 years for management to approve an efficiency project.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

The customer looks at the ROI. While the customer considers the equipment's expected life and the specific building and area that the building is in, the bottom line is that the project needs to have a 2 year ROI. The equipment also has to be a quality piece of equipment and meet the customer's need.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The customer is a regular participant. Sometimes the person interviewed seeks out the utility rebates, while at other times the utility approaches the customer. The customer has a national reach and works closely with utilities around the country.

The customer's headquarters are located in Massachusetts, which includes its manufacturing facility, distribution center, corporate offices, flagship store, as well as a number of retail stores. The customer is totally committed to energy efficiency, so both types of facilities have participated extensively in efficiency programs.

The customer cannot do efficiency projects without the utility's rebates. The efficiency savings from equipment installations does not allow the customer to reach its required ROI on its own. The combination of energy savings, maintenance savings, and rebates allows the customer to meet its 2 years or less ROI objective.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The customer works very closely with its utilities and has so for the last five or six years. The customer has a true partnership with its utility and feels that the utility is absolutely representing its interests and needs.

MassSAVE has been a key partner to the customer in achieving efficiency goals for its facilities. By far Massachusetts utilities are extremely ahead of most utility companies across the country and have been proactive in their approach to efficiency. The person interviewed has had a lot of input and involvement in program development, especially lighting for the retail sector. The utility has tailored its efficiency programs to meet the customer's needs and far exceed anyone across the country. The Massachusetts utilities are head and shoulders above everybody. At first the customer planned for efficiency projects that did not qualify for rebates from the utility. The person interviewed finally met the right people at the utility and worked with them on what the customer was trying to accomplish. The utility agreed that they should be incentivizing the type of projects the customer was looking into, and provided the rebate to the customer.

The person interviewed is very appreciative of the support provided by the utilities to help the customer complete the efficiency projects. It's a win-win for both of them.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

The customer was unable to pursue an LED lighting upgrade project for exterior lighting primarily because the ROI was about 3 years. The LED technology is still quite expensive and the savings did not allow for a low enough ROI. The utility was flexible and tried to lower the ROI. The customer likely would have gone with the project if the ROI had been 2.5 years.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes. Likely within the next 2 months.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Although blessed with the financial and professional support of upper management, budget limitations may pose a challenging barrier beginning this year. The customer is looking very closely at projects, and the ROI requirement may even come down to 1.5 years. The primary reason for the budget constraint is the state of the economy.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

The customer does not elect to take the offered financing options. This is a corporate decision. The customer would prefer to purchase the equipment out right to take advantage of any tax opportunities or depreciation, or the ability to claim the equipment as an asset.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The customer does not have a lot of capital to spend at the moment. The customer has done a lot of projects and has hit most of its efficiency objectives, but right now upper management is looking to spend money in other places. There are different priorities for

the limited funds that are available at this time, and efficiency projects are competing with those projects for the limited capital available. It's not that the customer wouldn't consider efficiency and wouldn't look to fund projects through another way in the future, but at the moment the customer is not taking such actions.

Barriers to Participation

A. Financial limits

n/a, so long as ROI is within 2 years.

B. Economic downturn

Yes. The customer has limited capital available and efficiency projects are now competing against other capital investments.

C. Customer awareness and marketing

n/a

D. Program design and administration

There are a couple areas for which the utility has eliminated rebates (some lighting measures for example). This may prevent some companies from participating in efficiency programs because they may not have the capital available that the rebate would have otherwise provided. There are some programs where the utility does not allow a company to receive rebates for using more efficient equipment (motors and drives for example). That may not eliminate a company's ability to upgrade equipment but it may make the more efficient equipment less attractive to a company.

The utilities could provide more technical support to companies. It's not as if the utilities do not provide technical support, but they could adopt a more proactive approach. The utilities do not do enough to promote energy conservation or access to funds that are available to a company. The customer felt like it had to do more leg work to participate in the program than should have been required. The person interviewed was coming up with the efficiency ideas, because he had the experience and knowledge to know what projects to look for. He searches out projects to bring to the utility's attention and doesn't think the utility does a good enough job bringing efficiency opportunities to the customer. He has not had a utility representative recommend looking into specific equipment for potential efficiency opportunities. The utilities promote energy conservation but they do not promote specific technology. The utilities do promote efficient technology at their annual forums which are beneficial, but if the person interviewed did not attend those forums he likely would not have been made aware of the projects and technology that is available.

E. Corporate review and approval process

No, so long as ROI is within 2 years.

F. Timing of program administrators

G. Customer distrust of new technologies

H. Customer convinced it has done all it can

I. Others

Other Comments

The person interviewed feels that going forward efficiency opportunities will get better because the cost of efficiency products and materials has dropped. The customer will be better able to meet its objectives as technology changes and as more affordable projects and materials become available.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston
Industry: Healthcare
Person(s) Interviewed: Energy Manager
Interview Number: 6

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

One percent or less.

15) Annual natural gas costs as a percent of annual operating expenses:

One percent or less.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

n/a

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period; Energy bill savings; The customer has not specified criteria regarding efficiency measures.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Provided needed funds to continue efficiency efforts.

Please name one or two things about the program that did not work well for your company:

Processing of applications was painfully slow and inconsistent.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

If equipment is not working, needs replacing, or inefficient, then the person interviewed will find funding through the customer's capital process. The capital process usually takes 3-12 months.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

The customer takes each equipment purchase on a case-by-case basis. Payback plays a part. The average payback the customer looks for is 3 years. Overall costs and benefits of the equipment are considered, such as reduction in utility bills. Availability of funds to purchase equipment is also considered.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Program participation helped the customer fund efficiency projects. The person interviewed conducted a building assessment to learn which efficiency projects could qualify for incentives or rebates, and then approached the utility. During site visits, the utility recommended other projects that the customer could do that would qualify for additional funding. The customer found this helpful as it gave them more money. The program incentives offered were about what the customer expected prior to contacting the utility. The incentives are helpful and can help the customer spend more on future projects. Sometimes the incentives can determine whether a project goes forward, other times it does not. The incentive is not the only determinant.

The customer tries to participate every year. The customer is currently working on an MOU with its utility that would provide for a three year efficiency incentive program. The person interviewed likes the idea of the MOU, but is in the early phases of discussion and so it is too early to provide feedback on the MOU and negotiation process. It looks promising so far.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

Pretty well. However, the participation process was not smooth as there were delays in communication. There was a lot of inconsistency. Sometimes the person interviewed would receive five calls in one week from the utility, and then the utility wouldn't return calls for months (i.e., feast then famine). There does not seem to be a particular time of year that this happens.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

No. The customer knew ahead of time which projects were going to be completed.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Definitely. There are still opportunities in HVAC and other areas that the customer hopes to implement.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Of course budget limitations pose a barrier. The person interviewed could think of \$10 to spend for every \$1 available. The customer would always like to do more efficiency, but budgets do not always allow for it.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

customer has not considered financing.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

Yes. Two or three years ago the amount of money available to spend on projects was reduced. The customer is slowly improving, just like the economy.

Barriers to Participation

A. Financial limits

Always a constraint for consideration.

B. Economic downturn

Is a consideration but does not seem like a barrier for the customer.

C. Customer awareness and marketing

D. Program design and administration

The person interviewed wished that the utility programs were less stringent and rigid. He wished the programs would let customers be more creative and employ alternative ways to be more efficient. Other products could be incentivized that customers should be allowed to submit for incentives.

The utility company doesn't seem to have enough people to do the work that's needed. Delays in communication make completing projects difficult. It's not that the people are not doing a good job, it's that they have too much workload.

-
- E. Corporate review and approval process
 - F. Timing of program administrators
 - G. Customer distrust of new technologies
 - H. Customer convinced it has done all it can.
 - I. Others

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston

Industry: Office

Person(s) Interviewed: Assistant Property Manager

Interview Number: 7

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

5 to 9.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between five and one percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between five and one percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period; Benefit-cost ratio; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years and prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

VFDs; re-lamping for energy savings; light sensors.

Please name one or two things about the program that did not work well for your company:

n/a

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Hugely important. Only controllable cost. The customer can control the quantity of use by controlling load through controls, as well as improve the quality of equipment by improving its longevity. The customer reviews its energy budgets very thoroughly each year.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The customer manages properties and brings efficiency projects to the attention of the building owner. The owner can then decide whether to make the capital investment, or pass the cost of the project onto the tenants. Property owners typically chose to make the investment as it makes the property more attractive and allows equipment to last longer.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

The customer focuses on the largest area of consumption, which is usually HVAC and elevators. The customer also looks into the low-hanging fruit such as lighting and timers.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The property management customer works with a third party engineering company to audit properties and put together a program for the property owner. Every property is audited annually.

At the end of last year, the utility approached the customer and offered significantly larger program incentives than in previous years. The customer found this surprising because normally it finds that there is not enough money available at the end of each year.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?



-
8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?
 9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?
 10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

New construction has the most opportunity for savings, and building owners will usually try to include as much efficiency as possible during new construction projects. However, the downturn in the economy has reduced the amount of new construction activities. More renovations have taken place as the focus is on getting savings.

Since March 2009, the customer has seen improvements each year, and improvements increase from year to year.

Efficiency products seem cheaper and more available since the downturn in the economy.

Barriers to Participation

A. Financial limits

B. Economic downturn

Economy and participation rates have been getting better each year. Expect efficiency program participation to continue improving.

C. Customer awareness and marketing

The property management customer works with owners and tenants. Often the amount of time required to work with individual tenants to participate in efficiency programs is not worth the time and potential savings to the customer, especially because the response rate for tenants is not great.

The person interviewed identified three barriers: timing, education, and familiarity. The time commitment needed to participate is too great. "Analysis paralysis" could be overcome by greater education on behalf of the utility. Familiarity with the participation process and efficiency products could improve participation.

D. Program design and administration

Upfront incentives are a bigger motivator than rebates. With rebates, the amount you expect to receive could differ from the amount you actually get, and sometimes the rebate arrives much later than anticipated, making it hard to plan for.

E. Corporate review and approval process

Building owners normally have interest in efficiency, but don't normally have the time and don't prioritize or commit to projects. Because there is no deadline for action, projects won't get the appropriate attention and action.

-
- F. Timing of program administrators
 - G. Customer distrust of new technologies
 - H. Customer convinced it has done all it can.
 - I. Others

Participants are distracted by other energy projects like solar or geothermal. It's not clear what project can give you the biggest bang for your buck and provide largest savings. Customers often cannot participate in every activity at the same time.

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston

Industry: Office

Person(s) Interviewed: Environmental Program Manager

Interview Number: 8

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between five and one percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between five and one percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes. We look for Energy Star equipment, and consider the lifecycle costs.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period; Energy bill savings; Other.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Product cost after the incentives.

Please name one or two things about the program that did not work well for your company:

Timing is always an issue, along with communications along the way.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

It is a medium priority for company as a whole. It is a top priority for the division in which the interviewee works. This division has formalized GHG emissions reduction goals recently and backed out specific kWh and therm reductions that need to be met in order to accomplish the GHG emissions reduction goal.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The division in which the interviewee works is very active in planning for equipment upgrades. The division generates a list of ideas that are converted into capital expenditure projects which is then shared with and considered by the company. The interviewee is typically well integrated in the process and is aware of equipment upgrades that the company needs to make and the timeframe of those upgrades. As long as there is enough advance notice, the interviewee is in a good position to recommend whether more efficient equipment should be considered when making these upgrades. However, the interviewee is not the only decision maker and energy efficiency and environmental footprint are not the only priorities. For example, if new products (such as bed linens) and services for customers are required, these usually take precedence over other capital expenditures.

In the event of an equipment failure, there isn't always time for consideration and coordination of energy efficiency. Past experience seems to stop the company from reaching out to its utility in the event of an equipment failure, as the interviewee indicated that the response has not been as timely as is required. For example, rooftop HVAC units had to be replaced without due diligence on efficiency due to the timeframe involved.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

In addition to payback period and energy bill savings, the company is conscious of its environmental footprint and has goals to reduce its footprint. However, the need to provide top quality products and services, which is a priority, also interferes with the goal of energy efficiency. For example, some energy efficiency products are lower quality than conventional products or do not meet the needs of the company's customers.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Their efforts on energy efficiency are important marketing and reputational/branding tools that the company leverages in differentiating itself from other players in the market.

-
5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The utilities are not consistent in how they connect with customers. Some utilities are more proactive than others in terms of reaching out to the company. The interviewee's primary critique is that the utility does not make enough effort to speak the company's language. The company has made some effort to get up to speed on the utilities terminology, but it has taken special time and effort. The language is overly technical and very specific to the utilities process. Also, if the company asks the utility a general question it is frequently directed to fill out an application before it can get this question answered. As it is too early in the process for an application to be submitted, the discussion usually stops there and efficiency opportunities are not captured.

Also, the utilities are not the only entity the company has had contact with. There are third party implementation vendors and lighting distributors as well. For example, an LED distributor recently came to one or more of the properties, did a walk through, and installed free LEDs through the utility upstream buy down initiative.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

Yes, there have been cases where this has occurred. The utility did a walk through and suggested upgrades to walk-in refrigerators and freezers and additional areas where occupancy sensors could be effective. Some of these recommendations have not been implemented to date due to the need to focus on other equipment upgrades and other capital expenditure priorities.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes, the customer needs to replace some equipment and energy efficiency will be a consideration.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

The impact of budget limitations on participation differs by company property. However, energy efficient equipment has been installed in the past without utility incentives, when coordination with the utility was not possible, indicating that budget is not a key barrier. Also, generally, budget has been made available for participation since a core goal of the company is to reduce its environmental footprint.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

The company generally does not finance energy efficiency investments. The company prefers to pay off the costs upfront.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

Like any company, reductions to the capital budget tend to put the company focus on upgrades that are deemed absolute necessities. Currently, there is more money in the bank and more of an opportunity to get things done. In general though, the economy is

not a major driver. The company does these projects because they are great business opportunities.

Barriers to Participation

A. Financial limits

Not really.

B. Economic downturn

Not really.

C. Customer awareness and marketing

Yes. It sounds like more opportunity to integrate utility- and company-initiated ideas would be beneficial to both parties.

D. Program design and administration

Yes. More targeted discussions of program offerings tailored to the industry would be more productive.

E. Corporate review and approval process

No. The company has integrated energy efficiency into its corporate goals and prioritization process for equipment upgrades.

F. Timing of program administrators

Yes. Not able to serve company in a timely manner in the event of a major equipment failure. This is compounded by the fact that company impressions from past interactions limit the company's interest in reaching out to the utility at the time of the failure.

G. Company distrust of new technologies

No.

H. Company convinced it has done all it can.

No. The company views its commitment to energy efficiency as a long term effort.

I. Others

Other Comments

The division that the interviewee has worked for was started in 1991. The company has a long history of staying ahead of green opportunities.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston
Industry: Office
Person(s) Interviewed: Property Owner
Interview Number: 9

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

n/a

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

n/a

15) Annual natural gas costs as a percent of annual operating expenses:

n/a

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

n/a

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes – through two different third party companies.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Please name one or two things about the program that did not work well for your company:

The subcontractors did not clean up the old lighting fixtures once the new ones were installed.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Energy is a huge cost to this condo property owner and manager. Forty-two percent of the condo's fees are for utilities. The person interviewed disagrees with the mindset that energy costs are fixed and are therefore not controllable. He takes efficiency very seriously and is very involved in efficiency projects.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The person interviewed is the final gate keeper for decision making. There is also a board of trustees.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

A three year payback is required for any capital investment.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The bill savings and free lighting. The person interviewed also received risk management savings in that higher efficiency lighting reduces the risk of fires, which resulted in insurance savings.

More generally, the person interviewed indicated that people participate in efficiency programs not just for the savings, but for other reasons including health improvements and marketing ability.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The person interviewed had very little contact with his utility. He has called 1-800 numbers on his bills to participate in the utility programs, but found the people he dealt with under sophisticated and not action oriented, and considered the process useless and endless. He called 2 or 3 times over the course of 5 to 6 weeks before he reached out to the two third party companies. He was pleased with one of the third party companies because he found that the things got done and people quickly put him in touch with the right people.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

n/a

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes, plenty of buildings that still need to be upgraded.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

None, so long as incentives continue to reduce costs and provide free upgrades.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

The person interviewed was not aware of condo owners taking up the financing or loan options, as he had not heard a lot of buzz about the options. He thinks that the offerings should be better marketed through contractors that are working with small and medium sized businesses.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The person interviewed felt that the economy can affect efficiency both positively and negatively. A down economy can make people fearful, as well as more cognizant of their costs. People are more sympathetic to savings opportunities in a down economy.

Barriers to Participation

A. Financial limits

Upfront costs are a huge barrier to participation, which is why financing is key component of efficiency programs.

B. Economic downturn

Not specifically for this Company, although the person interviewed felt that the economy can both increase and decrease savings potential.

C. Customer awareness and marketing

The person interviewed thought that information about the programs needs to get out there as knowledge is the number one barrier. Information needs to be better presented for the lay person who doesn't have the time to research efficiency opportunities.

D. Program design and administration

The person interviewed felt that certain measures that save substantial amounts of energy should be included in the programs (elevator equipment, for example).

E. Corporate review and approval process

F. Timing of program administrators

G. Company distrust of new technologies

H. Company convinced it has done all it can.

I. Others



**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Central Massachusetts

Industry: Heavy Industry

Person(s) Interviewed: Purchasing and Energy Procurement; Engineering Manager; Facilities Manager; Finance Manager

Interview Number: 10

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between five and one percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between five and one percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes, energy efficiency is one of many criteria.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period; Benefit-cost ratio; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years, and prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

We were able to cost justify the project with the help of EEI funds.

Please name one or two things about the program that did not work well for your company:

We did not have enough energy savings projects to recoup our contribution.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe. Yes - we would like to so that we get our contribution back, this will be dependent upon capital spend money available.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important. If energy costs go up too much, then their facilities will be moved to other states or countries.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

NA.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

IRR and payback periods. Payback must be less than 3 or 4 years.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Lower their costs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The electric company representative is very engaged, and provides the technical support that they need. They are available to help when called upon. The electric company representative would give them an audit if they asked for it. The last time the electric company offered an audit was about two years ago.

The gas company does not reach out to them much on efficiency issues. The gas company representative is more of an account rep for billing than for efficiency. They met with the gas company representative about two years ago, but have not seen him since. The challenge is finding the right projects for EE improvements. The gas EE presentation was limited to space heating.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

They typically implement all that is eligible for financial support.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Maybe. If they can find more efficiency measures to implement.

They would like the utilities to open up the criteria for what qualifies for the EE programs; e.g., they would like to get rebates for changing out windows.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

NA

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

Capital is tight in their company, but they are able to come up with enough to combine with what the utilities offer.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

This is not so much of a factor. However, if they do not remain economical and cost-effective, then their owners would re-locate them to other states or even other countries.

Barriers to Participation

A. Financial limits

No.

B. Economic downturn

Not really.

C. Customer awareness and marketing

This is only a barrier in that the customer is convinced that they do not have a lot of efficiency opportunities left.

D. Program design and administration

No.

E. Corporate review and approval process

No.

F. Company distrust of new technologies

Maybe.

G. Company convinced it has done all it can.

Yes.

H. Others

Not in contact with the gas company much.

Other Comments

This company is well aware of the benefits of energy efficiency investments, and does not seem to have any clear internal barriers to participating in the programs and adopting EE measures.

The biggest hurdle for them is finding new EE opportunities. They believe that they have already picked the low-hanging fruit, and there is not much more to pick.

They have gas-fired kilns that use a lot of gas. They are not planning to replace the kilns soon, but when they do they will call the gas company for financial support to buy smaller, more efficient kilns. There may be an opportunity to install more efficient burners.

They have some roof-top heating elements. Their plan is to wait until the elements die, and then get a rebate for efficient equipment from the gas company. If the rebates were higher, e.g., 80% or more, then they would replace the equipment before it dies.

One example of how the electric company really helped them out: At the end of one year the company called to tell them that they had a lot of money to spend by the end of the year. The electric company identified air leaks and sealed them up, all for free. The customer would welcome more of this on a regular basis.

However, based on this experience the customer believes that the company has too much EE money; and that they should either collect less from all customers or they should offer better deals to EE participants. "The utilities do not know what to do with all of the money that they have."

When asked how the utilities can serve them better, the response was that they would better served if they could fund the efficiency projects themselves, without putting their money into the EE funds.

They mentioned many times that they pay much more into the EE funds than they get out in rebates, and they are not happy about this. They think it makes no sense to pay more money into the fund each year than what they get back in rebates. They do not have enough EE projects to use up all the funds they put in.

They would like the electric and gas companies to be more creative with their funding options, e.g., to offer an industrial customer EE opt-out option.

They believe that the large customers subsidize the EE programs for the small and residential customers.

They believe that the utilities "mismanage" the EE funds. They did not provide specific anecdotal evidence of this belief. It was based on the view that as regulated companies the utilities do not have the competitive pressure to help them manage the programs well. They also have a guaranteed rate of return, which reduces the incentive for good management.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Western Massachusetts
Industry: Office
Person(s) Interviewed: Electrical Manager
Interview Number: 11

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Not indicated.

15) Annual natural gas costs as a percent of annual operating expenses:

Not indicated.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

No comment.

Please name one or two things about the program that did not work well for your company:

No comment.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important. They look at them every month. The production director, facility operators and electrical manager determine this priority.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The electric program administrator has been in frequent contact with the company (6-7 times a year) and had 4-5 audits conducted in the past 17 years. The electrical manager and operations director review these audits and use payback as the key criteria to establish if they will move forward. The company requires a payback of 1.5 years or less to proceed with a payback of 1.0 being a 'no brainer'. This is established at the corporate level. If energy efficiency were to be implemented, the publisher would need to approve it. The company has not moved forward on any of the opportunities identified in the audits due to the fact that the payback requirement was not met, not even on lighting measures (which showed a 20 month payback).

The company's perception is that the natural gas program administrator has not been active in the market. The natural gas program administrator has never contacted the company to pursue efficiency. Natural gas energy efficiency opportunities have never been examined by the company.

A third party has been in touch with the company and made a proposal regarding efficiency which the company has also not acted on. They proposed a plan whereby the company would pay for the upfront costs using the savings, but the company did not act on this proposal.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

Payback period primarily. The interviewee believes that the company uses stingy criteria to evaluate efficiency opportunities but does not seem to be in a position to change it. Also, the interviewee feels that the building that he is in charge of is probably not the most inefficient facility that the company owns and operates, which could be making it harder to get improvements done at this building. The money could be better spent at other buildings.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The company's most recent audit was conducted on lighting and air compressor opportunities in 2008. The payback requirement was not met so no action was taken but limited improvements to the air system were made afterwards.

-
5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

Well. She keeps them up to date as to the opportunities and is frequently in contact with them regarding the low hanging fruit that they should be addressing. The interviewee feels that the company is wasting her time and has said this to her, but she has assured them that this effort is not a waste of her time.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

Yes. The payback requirement was not met. Also, the building is undergoing some changes to usage (i.e., changes in occupied space vs. unoccupied space), which is an additional barrier to moving forward.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Possibly. There is one opportunity that the interviewee is looking at now. Since the interviewee did not seem to have reviewed the proposal, he was not in a position to speak about it in more detail. If the payback is there, then the interviewee will look to see if the capital is there to move forward. This could occur within the first half of 2012.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

None. If the payback is there, the company will move forward.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

None. Financing has not been considered in the past and all costs would have been paid upfront. However, there is some new management now so this might change.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The bottom line is being watched month to month. If there is money available, it's there to use. But, the economy, especially being in the newspaper business, has made it a lot more difficult.

The interviewee has authorized Synapse to quote him on the statements made in response to this question, including: "[We are] definitely dotting our I's and crossing our T's on everything we do – everything."

Barriers to Participation

- A. Financial limits

Not really.

- B. Economic downturn

Yes.

- C. Customer awareness and marketing

For electric, no. for gas, yes.

D. Program design and administration

No.

E. Corporate review and approval process

Yes, specifically the company's payback criteria in order to get approval.

F. Timing of program administrators

No.

G. Company distrust of new technologies

No.

H. Company convinced it has done all it can.

No.

I. Others

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston

Industry: Office

Person(s) Interviewed: Global Director of Facilities & Engineering

Interview Number: 12

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between twenty and ten percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between twenty and ten percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years and yes, prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Decreased payback period

Please name one or two things about the program that did not work well for your company:

Minimal programs for municipality.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

It is important. They are a for profit company, so any reduction in energy costs improves their bottom line.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

Business unit leaders submit capital improvement proposals to an executive committee comprised of the CEO, CFO and VPs of the various business units (6-7 members total). This committee determines which projects get approved based on each proposals impact to the bottom line. There is no mandate on EE – it is weighted using the same considerations as other projects such as expanding operations, etc. The metric for approval of these projects is simple payback. The threshold for approval is 4 years or less. Anything with a payback of 3 years or less will likely be approved. Anything with a payback of 3-4 years will be considered, but may not get approved, depending on what other projects are on the table for a given year.

After projects are approved, there is a kick off meeting with the site leaders and facility managers. These folks would have been involved in the proposal upfront, so they are already very knowledgeable about the project and supportive of it. Early buy in from these folks is critical for scientific reasons – there are risks in this industry to savings energy such as risks to equipment, products and experiments conducted in laboratories that, if compromised, could hurt the bottom line. Also, a procurement specialist is included in discussions to ensure the equipment is being procured at the best price.

Each year, this interviewee submits 2-3 significant energy savings proposals. His hit rate is one for every three proposals submitted.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

Mid-sized projects are based on payback. Larger projects (i.e., over \$100M) require lifecycle cost analysis and other analyses and may be approved even with a payback that is longer than 4 years.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Simple economics – to reduce cost.

The interviewee would like to note that not all equipment offered improves operations. Some technologies make operations more complex and therefore expensive. For example, the company looked at a centralized boiler plant vs. distributed gas fired furnaces. The company found that MA regulations require more expensive staff and extra

dedicated staff for a centralized boiler plant, offsetting the energy savings that could have been realized. The interviewee states that one fault of the programs is that they don't account for the full operations impacts over the life of the system including any changes in staff costs required to run the equipment.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

Neither the municipal electric utilities nor the gas companies have reached out to this company. The company has reached out to the appropriate administrators at various times to determine what incentives were available for specific projects.

At one location, the company has leveraged the amount offered annually for electric upgrades for many years. However, this only allows a small bit of lighting renovations to occur in a given year. The gas opportunities have been mostly tapped out using the amount available annually in incentives, which the company has leveraged 2 or 3 times. The company would renovate their entire campus if more electric incentives were available. They have an air handler that is 50 years old and a lot of lighting. This is a big space.

At another location, the company has not applied any rebates. The company looked at a cogeneration plant for this location, but abandoned the project after the site was temporarily closed. If the site comes back online, they would revisit efficiency opportunities.

The company has received one off rebates for specific equipment only; no technical support, audits or assessments have been provided by the PA.

Most of the company's energy efficiency activity has been in new construction, for which the company received no rebates. The company estimates they have achieved low savings to date for renovations/retrofits of existing equipment and space.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

No efficiency measures have been proactively offered. Of the measures the company has identified, all that were approved as economically sound were implemented.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

The company could continue to replace lighting fixtures for the next 10 years using the incentive amount available annually to one of its locations.

The company anticipates participating in other ways too, but no projects have been proposed or approved for this timeframe yet. In Sept/Oct before the year in which measures would be implemented, proposals are submitted. In December, the capital funds that are available are known and allocated. There are at least three projects approved and in process for 2012, but none are in Massachusetts.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

If the payback is there, budget is likely not an issue.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

The company generates a lot of cash, so financing has not been considered. If the project were large enough, the company would consider a shared savings approach through a third party.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

[He can be quoted if it is anonymous, meaning Synapse cannot attribute this quote to the company or the interviewee]

"What it has caused is, it has caused us to want to spend less capital, spend less money to increase shareholder returns. So don't spend any money and maintain your existing clients and improve profitability at the same time somehow.

We are a public company and the impact of that cannot really be understated. We have to present numbers to shareholders quarterly, on a quarterly basis, and the big grand finale at the end of the year. And you know they are not so much concerned with, you know did you reduce your energy consumption. They are looking at the amount of impact you made in that quarter and that year on the profitability so in some cases we will even though you have something that pays for itself in 3 years, if the savings isn't going to be realized until year 4, then the climate might not be right with the downturn to implement all of the measures that we come up with."

The straight answer to the question is that economic downturns do slow down energy efficiency initiatives.

Barriers to Participation

A. Financial limits

Yes

B. Economic downturn

Yes

C. Customer awareness and marketing

Possibly – it is not clear whether increased communication from the PA to the company would result in more/deeper projects

D. Program design and administration

No

E. Corporate review and approval process

Yes, specifically competition with other projects on payback

F. Timing of program administrators

Yes, outreach should coincide with planning cycle

G. Company distrust of new technologies

Yes, somewhat. The company is wary that the full operational costs are often not represented correctly.

H. Company convinced it has done all it can.

No

I. Others

Other Comments

The interviewee stated that the biggest benefit of these programs has been to impact product development and manufacturing, that results in reduced cost of leading technologies. Provided one example of VFDs where cost was \$50,000 and now is \$5,000 due to program promotion/acceleration of this technology.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Central Massachusetts

Industry: Healthcare

Person(s) Interviewed: Facilities

Interview Number: 13

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Twenty percent or great.

15) Annual natural gas costs as a percent of annual operating expenses:

Between twenty and ten percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years and prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

The reduction in energy consumption and the rebate check.

Please name one or two things about the program that did not work well for your company:

The paperwork required.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Energy costs are extremely important. The customer spends a large amount of its budget on electric and natural gas use.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

If the measure has no cost, then it's implemented. If costs are required, the project needs to be approved by the capital planning department. The approval process can take a few weeks to a month depending on the numbers. It could take up to 6 months to implement a project after it has been approved. Combined with budget limitations, internal approval of a project is the customer's biggest barriers to efficiency participation. Efficiency projects are often turned down in favor of other projects more germane to the customer's core business.

Sometimes the person interviewed will try to work around the capital approval process. When equipment fails it becomes an emergency capital replacement project. The person interviewed is aware of equipment that could be perceived as an emergency replacement, and does the homework to find out what would be the most efficient replacement. Once the equipment fails, capital approval is received for the most efficient equipment. The customer pursues the utility rebate after the fact.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

Return on investment is considered during the capital planning process. Capital approval usually requires a 2 year or less payback period. Whenever the customer replaces equipment they always look for the most efficient model.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The customer primarily participates for the bill/budget savings. The customer regularly installs or replaces lighting and HVAC related measures. The person interviewed is obligated to maintain a budget, the more energy efficient equipment that can be installed and automated cost controls, than the budget can be maintained better. By reducing the operational budget, the customer can spend more on other projects, both efficiency related and other facilities management projects.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The utility understands the customer very well. The customer has had no issues. The utility has been helpful and supportive and keeps the person interviewed well informed.

If the utility has something new to offer they will contact the customer. If the customer has an efficiency project it wants to do, then the person interviewed will contact the utility. The paperwork doesn't usually take that long, and it's not that bad of a process. The availability of money is beneficial because the customer has been paying into the state efficiency funds for years. The turnaround is pretty quick. The documentation isn't that hard to fill out; relatively straight forward.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

Only if the project does not receive capital approval internally.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

The customer would like to participate going forward. No barriers from utility side. Only barrier would be getting capital approval.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

There is only a certain number of dollars that can go around. If a capital investment project is proposed that is more in line with the customer's core business, that project will likely receive funding over the efficiency project. Efficiency projects are often turned down because of the limited capital available. Have to spend dollars wisely to keep customer up-to-date on current technology.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

n/a

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The economic environment is causing the customer to require payback periods less than 2 years, which is the customer's normal payback standard.

The customer is in the healthcare industry, and is concerned about the effect of the political environment on its budget and planning. Specifically the customer is concerned about the reimbursements they will receive from Medicare or Medicaid, Obamacare or whatever the next president will offer. The customer has concerns as to the amount of dollars that will be available for operations, expansion or new programs, and are getting much more frugal with money.

The customer has seen a reduction in inpatients and elective healthcare services that would normally generate revenue, which the person interviewed attributes to the economy and lack of spending. Elective surgeries such as cosmetic surgeries are not taking place. This could change once the economy gets better. Notably, pregnancies are down from previous years, which also decreases future projections of revenue. This is because if a baby is delivered at the customer's facilities, ultimately the baby is likely to become a user of the facilities due to the history and familiarity.

The customer has also seen an increase in emergency care services, especially for uninsured patients. If someone is out of a job and has used up any health benefits they may have, then they become uninsured and use emergency care as they would normally

use a primary care provider. Because they are uninsured, the customer essentially gives away the medical services for free and is not likely to be reimbursed by the insurance company. The person interviewed thinks this will change as soon as unemployment decreases to 4-6 percent.

Barriers to Participation

A. Financial limits

Yes. Capital is tight and efficiency competes against projects that are more closely related to the customer's core business.

B. Economic downturn

Definitely.

C. Customer awareness and marketing

no

D. Program design and administration

no

E. Corporate review and approval process

Yes. Largest barrier for the customer.

F. Timing of program administrators

no

G. Customer distrust of new technologies

no

H. Customer convinced it has done all it can.

no

I. Others

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston
Industry: Schools & Colleges
Person(s) Interviewed: n/a
Interview Number: 14

Key Questionnaire Responses

The Company did not provide the questionnaire.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

n/a

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

n/a

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

n/a

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

For three years put little money into efficiency. Competing for funds in a bunch of other areas and efficiency is not a high priority for the Company. Anything that supports the main goal of the Company will receive funding before conservation. The Company recently received approval for an efficiency project, but for three years the Company didn't do anything.

Barriers to Participation

A. Financial limits

B. Economic downturn

Previously, yes. Uncertain going forward.

C. Customer awareness and marketing

D. Program design and administration

The real money seems to be on the retrofit side. It's much harder to get money on the new construction side than on the retrofit side and there is only a certain amount of that that you can do.

E. Corporate review and approval process

F. Timing of program administrators

G. Company distrust of new technologies

H. Company convinced it has done all it can.

I. Others

Large companies should be allowed to retain the amount they pay into state efficiency programs and use that money within their company only for efficiency purposes. On the gas side, companies don't pay into program and don't participate in programs and seems to work well. Companies don't get nearly as much money out of the program on the electric side as they put into it. It would be helpful if companies could retain the money. If there was a cap on the amount that could be used in total, perhaps the amount spent can't be greater than funds normally paid into the utility programs, it could be a reasonable constraint. Company feels forced to leave money on the table; money that could be used towards conservation.

On a universal basis, if a company can help the utilities meet their savings goals, there should be a simple reward that applies to everyone, perhaps a universal ratio of incentive dollars per savings achieved. Could get more people to jump on board because it's a simpler approach to participation. If a project has real savings but is too complicated like a behavioral based program, then it won't get done because it doesn't fit into the utilities programs. This could open up funding to more people.

Companies that have done all the low hanging fruit could receive higher incentives for the harder, more complicated projects. They need to be incented to do more, and meeting paybacks is difficult with more complex projects. The incentive could be based on a scale of previous projects, where the more you've done the more incentive you receive for a future project. Could be a difficult program to manage however.

There should be better transparency on the amount the utilities spend and save relative to the amounts they planned for.

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston

Industry: Schools & Colleges

Person(s) Interviewed: Associate Director of Energy Supply and Utility
Administration

Interview Number: 15

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between five and one percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between five and one percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

The rebates and technical assistance.

Please name one or two things about the program that did not work well for your company:

The process is not well defined. There is too much turn over in personnel. Utilities should not keep 100% of the FCM credit.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

n/a

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

n/a

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The utilities are not very up to speed on new thing. It can take a long time for the them to come to grips with some of the possibilities of new products or projects. The person interviewed finds it very frustrating that behavioral programs are not well incorporated into utility programs. The utilities say they want to do behavioral things but there is really no reward for it. The customer has brought very clear behavioral programs to the utilities but it's been difficult to get anything going.

The utilities are not proactive enough on informing companies on how best to use money for efficiency and how can the utilities help in efficiency projects.

Utilities don't treat the customer like it knows anything. Most large companies are pretty sophisticated. It would be nice if the utilities treated them with that sophistication and understood that they're not babes in the woods.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

n/a

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

The person interviewed feels that utilities should cover more of the technical support costs.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

n/a

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

It is important that there is enough money to support more efficient option all the time. If money is available, companies will do efficiency projects, but they have to be made aware that the money is available, and there has to be enough money so that it's worthwhile and won't take too much out of the customer's budget to participate.

Barriers to Participation

- A. Financial limits
- B. Economic downturn
- C. Customer awareness and marketing
- D. Program design and administration

Yes. The utilities are slow to adopt new projects or savings opportunities, and are not proactive enough in assisting companies in recognizing projects.

The person interviewed feels that utilities should cover more of the technical support costs.

- E. Corporate review and approval process
- F. Timing of program administrators
- G. Customer distrust of new technologies
- H. Customer convinced it has done all it can.
- I. Others

Utilities don't treat the customer like it knows anything. Most large companies are pretty sophisticated. It would be nice if the utilities treated them with that sophistication and understood that they're not babes in the woods.

Other Comments

The customer strongly recommends the right to opt-out of efficiency programs. Large companies should be allowed to retain the amount they pay into state efficiency programs and use that money within their company only for efficiency purposes. MOUs help but do not address the problem. The customer would spend a lot on efficiency even

if it didn't feel compelled to get the money back out of the programs that it put into it. Make it so that the customer gets to keep more of its money to spend on electricity savings.

Larger companies would benefit from FCM credits, and the person interviewed feels that the utility is stealing that money.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston
Industry: Healthcare
Person(s) Interviewed: Utilities Manager
Interview Number: 16

Key Questionnaire Responses

The Company did not provide the questionnaire.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

n/a

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

n/a

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

n/a

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

When dealing with budget issues, money does not go to efficiency. Even easy projects with a 6 month payback can take time to convince management to participate.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

n/a

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

Barriers to Participation

- A. Financial limits
- B. Economic downturn
- C. Customer awareness and marketing
- D. Program design and administration

The person interviewed recommended that the utilities should divide the amount of funding available by their MW or kWh goals as a way of allocating incentive dollars. Reward each kWh saved in the same way. Sometimes utilities can't fund a project because it doesn't meet the program requirements. If a company can't do a project with the utility's funding, it would be hard to convince that company to do any more efficiency if they were already turned down by the utility. If a company can prove that a project saved energy they should be rewarded with the incentive. Large companies should have incentives for being aggressive as it's getting harder and harder to find efficiency projects.

MOUs are not blind to other project requirements. It can be difficult and time consuming to document costs, such as behavioral or automation costs, although the savings can be well documented. If you can document savings clearly with the M&V protocols that utilities establish, then that should be the rule, not anything else involved in the project. If the Company saves an amount of kWh that meets the utilities' goals for the savings for that amount of money, then that money should just be paid out to the Company to make it easier. Buy the kWh the Company is saving, regardless of the cost to implement the efficiency savings. Requires a rigid way of documenting and measuring savings.

The person interviewed feels that utilities should cover more of the technical support costs.

- E. Corporate review and approval process
- F. Timing of program administrators
- G. Company distrust of new technologies
- H. Company convinced it has done all it can.
- I. Others

Large companies should be allowed to retain the amount they pay into state efficiency programs and use that money within their company only for efficiency purposes. Companies can pay millions into the state efficiency funds without getting close to that back. Utilities should make it easier for companies to access that money. If businesses could keep the amount they pay into the state efficiency funds, they could avoid having to

raise additional capital for efficiency projects. That would be the fairest way, people would look for projects, and projects would move faster.

Over the past 4 or 5 years, the Company has been pretty aggressive with energy conservation, and the person interviewed thinks they received back about 10% to 20% of what they put in, and they have been aggressive. Wondering where the other 80% of money is going and how it's being distributed. Not sure if what that 80% is used for offsets the savings that the Company would get if it had been allowed to use it for efficiency.

The low-hanging fruit is gone. As you get into more complex projects, payback and costs change dramatically.

There are rules in place that don't allow utilities to give money for certain projects. The regulators don't allow them to do certain things. The project has to meet certain metrics according to the regulator. Needs to be a policy change that makes the utility want to give you the money for efficiency projects.

The person interviewed does not like that FCM payments are not returned to the Company.

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston
Industry: Schools & Colleges
Person(s) Interviewed: Energy Manager
Interview Number: 17

Key Questionnaire Responses

The Company did not provide the questionnaire.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

n/a

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

n/a

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

n/a

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

n/a

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The Company had a lot of new construction projects stopped because of the economic downturn, and so any efficiency associated with those projects obviously isn't happening anymore. Digging into existing facilities is more difficult, but the only place to spend money on efficiency at the moment. Such projects would probably have a better efficiency outcome though.

Barriers to Participation

A. Financial limits

B. Economic downturn

Yes. Less new construction.

C. Customer awareness and marketing

D. Program design and administration

New construction side is a tremendous amount of effort to try to coordinate the utility programs with the construction process and not get in the way of it. The reward in the end is not huge so you have to wonder if it was worth it

Anything that simplifies the process breaks down a barrier.

The person interviewed would like outside lighting to be incented more by the utilities. Outside lighting reductions don't work well in the utilities formulas because it's off peak load.

E. Corporate review and approval process

F. Timing of program administrators

Utilities have problems with scale. When the Company is ready to roll out a project and when the utility is ready to roll out a project it's not necessarily the same time. The utilities can't always be there to support a project and the Company needs to move forward with the project, so opportunities are missed. It doesn't always happen in the same timeframe that the programs are working within.

G. Company distrust of new technologies

H. Company convinced it has done all it can.

I. Others

Large companies should be allowed to retain the amount they pay into state efficiency programs and use that money within their company only for efficiency purposes. Company feels forced to leave money on the table because the Company has already done the easy stuff that the rebate programs are designed around. The Company has changed its light bulbs multiple times, but the next level of work is much more complex. If

the Company could keep its efficiency money in house, it would be easy for the Company to make a commitment to only spending that money on efficiency projects.

Other Comments



**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Western Massachusetts
Industry: Heavy Industry
Person(s) Interviewed: Plant Superintendent
Interview Number: 18

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

20 to 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between five and one percent.

15) Annual natural gas costs as a percent of annual operating expenses:

One percent or less.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

n/a

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

The company has not specified criteria regarding efficiency measures.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes,

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

We received money from {utility} for purchasing new energy efficient light fixtures

Please name one or two things about the program that did not work well for your company:

n/a

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The customer was recently purchased by a different parent company, and is still working through the new capital approval process. For projects that are large than \$10,000, capital expenditure approval is required from the new parent company. The approval process takes about 8 to 10 weeks. Anything less than \$10,000 the customer does not need capital approval.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

The customer looks for a 2 to 2.5 year payback.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The customer primarily participates as a way to save money and to make the process simpler. The customer couldn't have done efficiency projects without the rebates offered by its utility.

Anytime equipment needs to be replaced, the customer looks for a more efficient model with newest technology available.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The utility company is easy to work with but could be more helpful. "They don't make the process as easy as they could." The customer first learned of efficiency opportunities through contractors that knew about the programs and not from the utility company. The customer heard of efficiency opportunities from three other sources before the utility called the person interviewed to say that they will pay him to change the lights.

The customer would prefer that the utility contact them directly, especially given the amount they pay into the state efficiency funds. "They send me a bill every month, you'd think they'd put on the bottom 'Hey you could save some money if you did this.' But with all those taxes and fees on the back there's probably no room on the same piece of paper."

The utility should "have someone come out to you facility and show you the potential you could have. To me it's pretty much a no brainer: they have endless amounts of money because all they have to do is raise the rate a penny and they pick up a half a million

dollars a year. How simple is it to go out and see who's using the most electricity and say "Hey you guys are using a lot of electricity. Why don't we see if we can give you guys some help? Let's come into your place look around and see what we can do to save you money."

The person interviewed is attending a seminar hosted by its utility to learn more about efficiency opportunities.

The utility provided an audit and recommended lighting upgrades, including upgrades for more efficient exit signs. The person interviewed did homework on pricing for lighting contractors and then went to the utility for the rebate. Contractors charge different rates for bulbs and installations, so the person interviewed shopped around for the best rate from a contractors. The customer also had an audit for its air compressor system.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes. The customer planned to undergo a lighting upgrade last year, but the project was stalled because of the corporate restructuring and new ownership (see question 2). The project was approved by the last parent company, so the person interviewed doesn't see why the project would not receive approval from the new parent company, especially because the new company has a more "green" focus.

The customer also plans to participate so that it can upgrade aging equipment, and so that the customer can be more cost-efficient. The person interviewed has been looking into such projects.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

At the moment the person interviewed does not see budgets posing a barrier, although with the new ownership it is uncertain.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The previous parent company had troubles with the economy, and the person interviewed is uncertain about the new parent company. "The economy itself is not good. We're extremely slow right now. I'm laying people off tomorrow because there isn't enough work for them. There's no sense bringing them in and turning the lights on if I can't make enough money to pay for it."

Energy efficiency is seen as an opportunity to save money, so long as the payback is high, such as lighting. "When times are slow you have to cut back spending every place you can. Spending a few dollars to put in new light fixtures which is going to save us

thousands of dollars over the long run makes sense to do it. It helps the environment and it helps your costs. It's a no brainer.”

The customer changed its lighting in the 1990s when the economy was affecting the customer's business and it had to stay competitive. The customer is changing out its lighting again to remain competitive still.

About three years ago the customer condensed its operations into half of its building facilities and the other half is vacant. This does not eliminate processes or production potential. This was done solely to save on utilities. The customer has shut down the water to that side of the building except for sprinklers, turned off the lights, and keeps the heat down to a minimum so the pipes don't freezing. The customer has tried to rent out the other half of its facilities but has not been successful.

Barriers to Participation

A. Customer Barriers

- a. Financial limits
- b. Budget limits

Potentially – depends on new corporate structure.

- c. Economic downturn

Yes. customer has been downsizing but efficiency is seen as something that can help with the down economy.

- d. Corporate review and approval process

Potentially, but unlikely.

- e. customer distrust of new technologies
- f. customer convinced it has done all it can

No.

B. Program Design & Administration Barriers

- a. Insufficient incentives

No – the more the better.

- b. Insufficient marketing and outreach

Strong yes. The customer would like for the utility to be much more proactive about identifying and promoting efficiency.

- c. Transaction costs
- d. Responsiveness and timing

Not really.

- e. Limited measures offered



No.

f. Policy Issues (Opt out of SBC)

Yes – “I’ll never figure out any of these utilities’ billing. When I have to pay more for electricity to come here than I actually use, it makes no sense to me. There’s more taxes on these damn things.”

g. Other (note)

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Central Massachusetts

Industry: Retail

Person(s) Interviewed: Manager of Utility and Energy Services

Interview Number: 19

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Leased.

13) Annual electric costs as a percent of annual operating expenses:

One percent or less.

15) Annual natural gas costs as a percent of annual operating expenses:

Between one and five percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period; Other.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

Yes, prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

We like the concept of the Upstream Program. It shows that the utilities are trying to help their customers get incentive dollars without having to submit a lot of paperwork.

Please name one or two things about the program that did not work well for your company:

There is little or no flexibility reemerging technologies and the DLC list that many of the utilities use to determine if the product qualifies for rebates. There should be some flexibility that allows the utility or the vendor to get the product approved for a rebate when there is a minor difference such as color temperature.

Finally, the company has changed the way our stores are constructed. We have gone from actually owning the building to “build to suit.” The developer ultimately owns the building but is buying the energy efficient equipment according to the company’s specifications. With these types of projects, it is very difficult to get the necessary documentation (such as invoices) from the developer to show the utility what is actually installed. Since build to suit projects are becoming more common the utilities need to come up with a better system to make it easier to get incentive dollars.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important. They have a staff of four full-time people managing energy costs; for 200 stores, including some office buildings.

They build six to twelve new stores per year.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The energy management team oversees all the procurement and energy needs. “If they can find an EE measure, they will adopt it.”

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

They are always looking for ways to reduce their energy bills.

Their decision-making process on how deep to go has evolved over the past five years. It used to be that they would focus on lighting, and it would need a payback period of two years or less. Now with LEDs with long lives and O&M savings they have stretched out the payback period. They have seen their light O&M bills drop significantly with LEDs.

For deeper retrofits, beyond lighting, they might adopt measures with paybacks of longer than two years.

Their standard lease for new buildings is 20 years, it used to be six years. This is very long for a retailer. This long-term perspective carries over to their EE investment perspective.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Not asked.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

They have had mixed experience. "It all comes down to the personnel."

One of the electric companies used to be really good. Now they have been less responsive with new personnel.

Another one of the electric companies used to be "horrendous," but have recently been much better.

The PAs should be more pro-active in helping with the paperwork.

In general, the PAs have been more supportive in the past; where the applications were filled out in advance and they (the customer) "just had to sign the forms."

If they only have one account rep, then that rep is likely to be a bottleneck to the process.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

No, they have the opposite problem. They would like to get rebates for efficiency measures that are not offered by the programs.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes, they want to get as much financial support as they can get. They want to get refunds that are closed to the amount of money that they contribute to the efficiency programs.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

This is not a limitation for them.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

This is not a barrier for them.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

This was never mentioned as a barrier for them.

Barriers to Participation

A. Customer Barriers

a. Financial limits

No.

b. Budget limits

No.

c. Economic downturn

No.

d. Corporate review and approval process

No.

e. Company distrust of new technologies

No.

f. Company convinced it has done all it can

No.

B. Program Design & Administration Barriers

a. Insufficient incentives

Yes. They would like to see incentives available for a much broader range of efficiency measures.

b. Insufficient marketing and outreach

Yes. They would prefer more pro-active engagement from the PAs.

They do not hear much from gas companies and do very little gas efficiency.

c. Transaction costs

Yes. Paperwork and invoices. One of the biggest barriers.

d. Responsiveness and timing

Yes. One of the biggest barriers.

e. Limited measures offered

Yes. The PAs should be more on top of emerging technologies.

f. Policy Issues (Opt out of SBC)

Mentioned briefly.

g. Other (note)

The DLC list is too confining, cumbersome and slow. See below.

Other Comments

The three biggest issues for this company are (1) the programs do not sufficiently support emerging technologies, (2) the application process is too cumbersome and should be streamlined, and (3) the new building program requires a new application for each new building even though the build many that are exactly alike.

This company has several stories of how the programs were too slow and burdensome in approving new technologies – technologies that were clearly highly energy efficient. They are especially frustrated with the Design Lights Consortium (DLC) list, and the time it takes to get new products on the list.

- When they moved to a new building they had an immediate need for new LED floodlights. They put a lot of work into finding the right fixture, but the one they needed was not on the DLC list, due to the color temperature.
- They also needed 3,500 LEDs to go from 50W to 9W, but they were not on the DLC list because they were not directional.
- They gave a manufacturer a set of specs for a specific LED lights, they got what they wanted, a great design, but it took six to twelve months to get it approved for rebates.
- The products change every month, but it takes much longer for the DLC list to be updated to reflect new products.
- In the time it takes a manufacturer to get on the DLC their product can be out of date. Three-quarters of measures on the DLC is out of date and no longer available.
- One of the specs on the DLC was in error.
- DLC is a regional / national list – the MA program administrators could go beyond what is on the list, but they do not.
- They have seen a similar problem with upstream measures.

They are trying to be more progressive and pro-active, but they feel like they “get slapped” by the programs.

They put in lots of LED in their parking lots and expected to get paid \$40k, according to the program offerings, but were only paid \$20k.

They make energy efficiency decisions for their entire chain, which extends well beyond Massachusetts. They make decisions about what to purchase regardless of whether they will be getting rebates. They also did a lot of lighting upgrades to their office building without any rebates.

- However, they can do more efficiency investments with the funds provided by the rebates.
- Also, there often is a lot of deeper efficiency measures that they could adopt but that they do not adopt because of the paperwork necessary for the rebates.

They build a lot of new buildings, and they are all alike; cookie-cutter. But every time they want to get rebates from the new construction program they have to re-apply from scratch. They often don't bother. Also, they typically lease the buildings and pay the energy bills. They don't bother to apply for the NC program because of the paperwork,

and because they have to chase the builder down for all the invoices. It is not worth it. They do not know if the builder goes after the NC program rebates.

Their experiences in New York and New Jersey have been even worse, because those programs are run by the government.

In general they applaud what the states are doing on energy efficiency, and want to be a part of it.

They are investing in a lot of roof-top PV. However, all of it is through PPAs with private companies; they just get a bill reduction. None of this is through the energy efficiency programs.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Central Massachusetts
Industry: Office
Person(s) Interviewed: Project Manager
Interview Number: 20

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Not provided.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Not provided.

15) Annual natural gas costs as a percent of annual operating expenses:

Not provided.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return, payback period, benefit-cost ratio, energy bill savings, but mostly whether the incentives are there and energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years and yes, prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Not provided.

Please name one or two things about the program that did not work well for your company:

Not provided.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important. They are a small company, so energy expenditures immediately affect expenses. They are always looking to streamline manpower and energy.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

When new tenants trigger a retrofit, or a tenant space opens up and allows for upgrades, the company typically contacts the utility with ideas and to see if there are incentives for those projects. If so, the interviewee discusses the opportunity with the property manager and they make the decision.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

The company does not have a threshold for savings or payback. They evaluate the merits of energy efficiency project by project and implement energy efficiency as it makes sense.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The company trusts the utilities guidance on energy efficiency products and services.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The company's relationship with their gas provider is new, but they were very satisfied with the process. They recently converted from oil to gas and received incentives towards a new gas boiler. They said their rep was excellent and eager to help.

The company's relationship with their electric provider has been ongoing for at least 7 years. They have been happy with the relationship until recently. Recently, they have been experiencing an issue that is straining this relationship. The electric provider has hired a third party as a go between the company and electric provider. This third party is responsible for assisting with the application process and answering the company's questions. The company does not trust this third party as they suspect there is some incentive involved for the third party and also is concerned that this duplication of effort is costing additional money that is being charged to ratepayers, including themselves.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

No. The electric provider did a technical assessment of the building and did not recommend anything outside of lighting to the company. They have cooling towers and HVAC systems. The company has mostly focused on lighting opportunities and has been transitioning to new lighting over the past 10-13 years. Their building was built in the late 1800s and is on the historical registrar which limits opportunities somewhat. They are interested in doing window replacements, but there isn't currently an incentive for this so they probably won't get done.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes, every step the company takes affects long run expenses. Even though they must do this in a phased approach, eventually they will get to it all.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Tenant fit outs, when expensive, compete with dollars for EE. But usually, they have enough capital to do what needs to get done. Fortunately they have remained busy/full. However, this takes away from their ability to do as much EE as they could be doing. They evaluate opportunities on a year by year basis.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

They haven't financed any projects to date. They typically have the cash on hand to cover it. However, they would consider financing if they find cost effective savings.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

[the interviewee has granted Synapse permission to quote her]

"With this economy a lot of businesses have a hard time."

"Because we have tenants that have a difficult time, which means they have a difficult time paying the rent and so forth, it does somewhat affect us. Without the income it is hard to carry the expense side of the building, so at times you find, when things are bad, you are taking care of the most necessary and not doing as many improvements as you would like to. We've been fortunate enough where our tenant base has not been as bad as it could be. We have a lot of state tenants in our building, because they are large and here for large periods of time it helps out our expenses, our income so that when the smaller tenants because all of the spaces are rented to different businesses."

They found that mortgage brokers and attorneys specifically went through hard times, and it impacted the company.

Barriers to Participation

A. Financial limits

No

B. Economic downturn

Not really

C. Customer awareness and marketing

Yes, to the extent that there are other opportunities other than lighting that could be addressed.

D. Program design and administration

No

E. Corporate review and approval process

No

F. Timing of program administrators

No

G. Company distrust of new technologies

No

H. Company convinced it has done all it can.

Partly. The company knows it has more to do, but does not seem to be aware that they could be going much deeper than they are today.

I. Others

Other Comments

The company has saved 5% of its energy costs by implementing efficiency measures until this year. They expect greater savings moving forward from their oil to gas conversion project.

The company met with a company recently to set up sustainability goals but no action has been taken at this time. The company considers itself to be very environmentally conscious (i.e., they recycle lighting, electronics).

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston
Industry: Healthcare
Person(s) Interviewed: VP Property Management
Interview Number: 21

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Leased.

13) Annual electric costs as a percent of annual operating expenses:

Twenty percent or greater.

15) Annual natural gas costs as a percent of annual operating expenses:

Between ten and five percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period and energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

No cash upfront, the ability to pay through savings.

Please name one or two things about the program that did not work well for your company:

Not indicated.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe.

Predetermined Interview Questions

1. How important are energy costs to your company?

High importance. The fact that all buildings in MA are leased has not raised any limitations as all parties benefit from efficiency; the company is responsible for all utility costs and the building owners also see the benefit of having new equipment and more efficient equipment.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The interviewee drives the process. He makes a proposal to the CFO including capital costs, payback analysis, and what rebates are available. If the capital and payback are there the interviewee gets approval. The company will only consider projects with a payback of three years or less. Energy efficiency competes with patient care and other infrastructure upgrades for capital. Once approval is given, the interviewee manages the process by working with maintenance directors on site and hiring contractors to do the work.

Over the past 5 years, the interviewee has upgraded 10 facilities and done 1-2 projects per year. The projects they have pursued include lighting upgrades, boiler replacements, domestic hot water, kitchen appliances, and cogeneration.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

A payback period of 3 years or less is the primary criteria.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Reduced costs. Utility costs come directly out of the bottom line.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The program administrators do reach out, but the company generally drives the process.

The interviewee feels that the program administrators don't understand health care at all. An assessment was conducted that 1) identified projects that had already been implemented 2) identified measures that are not able to be implemented in a healthcare environment (i.e., occupancy sensors and programmable thermostats with set back) and 3) did not identify opportunities that the company was interested in (the assessment focused entirely on short term quick fixes and ignored projects with larger capital outlays). They look at lighting in healthcare the same as for an office building which doesn't work.

The company believes the ideal program would be a no capital outlay, pay as you save program and wants the utility to offer this. They feel that 100% of customers would participate if this program were available. A third party company has approached the company with proposals of this nature, but the company finds that ESCOs are too focused on energy management systems for lighting and space heating and cooling that don't work well for healthcare. Also, the company is required by EPA to have a certain number of air changes, which limit opportunities for air sealing improvements.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

The company did not implement the recommended measures from the assessment, but has implemented measures that it has identified on its own.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Maybe. Future opportunities include more boiler replacements, domestic hot water opportunities, and rooftop unit retrofits. However, the company's capital is constrained by government action which is difficult to plan for.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

This is a key issue for health care. Revenue streams are restricted (i.e., Medicare/Medicaid) and at the whim of the government. The rate cuts have impacted them greatly. The company has a forward looking 5 year capital plan that is reviewed on an annual basis.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

They have looked at financing both in terms of leasing equipment and financing equipment replacement, but the interest rates were too high (i.e., 8-9%) to bring the payback to below three years. They would do much more if there was low interest financing with an interest rate of 2-4%. They feel that if a well-designed financing program were available that many customers would take advantage of it.

"If there was a program out there that had low interest for some of these capital projects I'm willing to bet you more and more people would take advantage of it because it makes a lot of sense and not just in my industry but in a lot of industries. This equipment is expensive."

For example, the company looked at cogeneration which met the 2-3 year payback requirement, but required a \$1M capital outlay that they couldn't afford. The financing pushed the payback out of their comfort zone.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

[interviewee has granted Synapse permission to quote him on this]

"It has dramatically hurt us. The rate cuts on Medicaid and Medicare have really put a strain on our revenue. You put a strain on the revenue, you can't turn around and take that revenue and put it into what some would deem discretionary projects. You know, we like to replace things before they break at the end of their expected useful life. But that's

a luxury, not a necessity. So, you know, we end up having to replace when we have to replace and then a lot of times you just don't have the time to go through the process of seeking out energy rebates, you got to try to do it after the fact. And, after the fact you are not always successful."

Barriers to Participation

A. Financial limits

Yes.

B. Economic downturn

Yes.

C. Customer awareness and marketing

No.

D. Program design and administration

No.

E. Corporate review and approval process

No.

F. Timing of program administrators

No.

G. Company distrust of new technologies

No.

H. Company convinced it has done all it can.

No.

I. Others

Other Comments

The company has seen its utility cost decrease 40% over the past 3 years due to a combination of a unique natural gas commodity purchasing arrangement with an energy supply company, energy efficiency, and a reduction in heating and cooling degree days. The company estimates that 5% of this reduction is due to its efforts on energy efficiency.

Survey of Commercial and Industrial Customer Perspectives of Massachusetts Energy Efficiency Programs

Interview Notes

Region: Western Massachusetts

Industry: Heavy Industry

Person(s) Interviewed: President

Interview Number: 22

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

This company did not complete a questionnaire. The information below was obtained through the interview.

4) Approximate number of company employees located in Massachusetts:

NA.

5) Building ownership:

NA.

13) Annual electric costs as a percent of annual operating expenses:

Between one and ten percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between one and five percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes. It is an important issue.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

The capital costs required and the project ROI relative to other uses of that capital.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

Yes, prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

NA

Please name one or two things about the program that did not work well for your company:

NA

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

She makes the decisions, and has wide latitude to undertake EE investments.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

Based on the use of capital, and project ROI. They do not have a problem getting access to capital, because of the size and nature of their company. However, competition for capital is the big question for them – if they can get a better ROI on a different capital project, they will forgo the EE project.

They have competing capital projects, some with great ROIs.

They use a payback criterion of three to five years for EE projects. However, their own projects have much shorter payback periods.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Reduce energy costs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The electric company account manager does fairly well. However, it seems like the problem occurs "behind" them, i.e., they do not have enough support from the rest of the electric company.

They see very little of the gas company account representatives.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

Yes, due to competition for capital for other projects.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes. They want to do more projects, but the program administrators need to make it easier with more real-time commitments to projects and higher funding levels to help address the competition for capital.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Not really. The issue is competition for capital.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

Again, the primary barrier for them is competition for capital. They have no shortage of capital opportunities that compete for the capital that is required for the EE projects.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The economy is not an issue for them.

Barriers to Participation

A. Customer Barriers

a. Financial limits

Yes, in terms of competition for capital

b. Budget limits

No.

c. Economic downturn

No.

d. Corporate review and approval process

No.

e. Company distrust of new technologies

No.

f. Company convinced it has done all it can

No.

B. Program Design & Administration Barriers

a. Insufficient incentives

Yes. This is an important issue as it would address the competition for capital.

b. Insufficient marketing and outreach

No for electric program administrators. Yes for gas program administrators.



c. Transaction costs

Yes.

d. Responsiveness and timing

Yes.

e. Limited measures offered

No.

f. Policy Issues (Opt out of SBC)

Yes. They believe they should be able to opt-out and use the money more efficiently on their own EE.

g. Other (note)

Other Comments

They could utilize the EE programs much more.

They have done many projects and never seem to get the full 50 percent of rebates. It always turns out to be less.

They are not provided with good information, for example regarding payback periods.

They see energy as a whole; electric, gas, oil, etc. They did a study of a CHP project. The payback period turned out to be seven years, even with the incentive from the program. They were uncertain that they would actually get the incentive, which turned them off. They chose to replace the oil boiler with gas, but not to install CHP.

There is too much paperwork. It took them over two years to get a rebate for an EE project, primarily because of the need for data and measurements.

The programs should be less bureaucratic. Contracts must go through legal review with the customer's legal team. This slows things down on their end.

Their gas company has been terrible in outreach. They have not heard from them at all, even though they have lots of gas end-uses.

There is inefficiency in the communication with the account reps. There needs to be more information up front.

The amount of the incentive offered by the program administrators must be clear up front, and the program administrators must follow through and make the payments offered.

Participating customers should get a portion of the shareholder incentives that the program administrators get.

Survey of Commercial and Industrial Customer Perspectives of Massachusetts Energy Efficiency Programs

Interview Notes

Region: Western Massachusetts
Industry: Heavy Industry
Person(s) Interviewed: Manager of Environmental Affairs
Interview Number: 23

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

This company did not complete a questionnaire. The information below was obtained through the interview.

4) Approximate number of company employees located in Massachusetts:

Greater than 50. They also have facilities globally.

5) Building ownership:

NA.

13) Annual electric costs as a percent of annual operating expenses:

Between one and ten percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between one and five percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes. It is an important issue.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

The capital costs required and the project ROI relative to other uses of that capital.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

Yes, prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

NA

Please name one or two things about the program that did not work well for your company:

NA

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

They have wide latitude to undertake EE investments. See below.

However, their finance executives take a macro view to all this. They want to see the bills going down, but they continue to go up despite their EE investments. While it is true that they are better off with the EE, this is still a very big issue at the corporate executive level. They need to see the data to convince them that EE makes sense for them.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

Based on the use of capital, and project ROI. They do not have a problem getting access to capital, because of the size and nature of their company. However, competition for capital is the big question for them – if they can get a better ROI on a different capital project, they will forgo the EE project.

They have many competing capital projects, some with great ROIs.

They see environmental benefits of the EE programs, but they are small. It is better to show a reduced environmental footprint from their own operations.

They do want to be good corporate citizens, but they can only do so many “feel good” projects.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Reduce energy costs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

They see very little of the gas company account representatives.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

Yes, due to competition for capital for other projects.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes. They want to do more projects, but the program administrators need to make it easier with more real-time commitments to projects and higher funding levels to help address the competition for capital.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Not really. The issue is competition for capital.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

Again, the primary barrier for them is competition for capital. They have no shortage of capital opportunities that compete for the capital that is required for the EE projects.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The economy is not an issue for them.

Barriers to Participation

A. Customer Barriers

- a. Financial limits

Yes, in terms of competition for capital

- b. Budget limits

No.

- c. Economic downturn

No.

- d. Corporate review and approval process

Limited.

- e. Company distrust of new technologies

No.

- f. Company convinced it has done all it can

No.

B. Program Design & Administration Barriers

- a. Insufficient incentives

Yes. This is an important issue as it would address the competition for capital.

- b. Insufficient marketing and outreach

No for electric program administrators. Yes for gas program administrators.

- c. Transaction costs

Yes.

- d. Responsiveness and timing

Yes.

- e. Limited measures offered

No.

- f. Policy Issues (Opt out of SBC)

Yes. They believe they should be able to opt-out and use the money more efficiently on their own EE.

- g. Other (note)

Other Comments

None.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Western Massachusetts
Industry: Heavy Industry
Person(s) Interviewed: Manager of Engineering
Interview Number: 24

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

This company did not complete a questionnaire. The information below was obtained through the interview.

4) Approximate number of company employees located in Massachusetts:

Greater than 50. They also have facilities globally.

5) Building ownership:

NA.

13) Annual electric costs as a percent of annual operating expenses:

Between one and ten percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between one and five percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes. It is an important issue.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

The capital costs required and the project ROI relative to other uses of that capital.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

Yes, prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

NA

Please name one or two things about the program that did not work well for your company:

NA

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

They have wide latitude to undertake EE investments. See below.

However, their finance executives take a macro view to all this. They want to see the bills going down, but they continue to go up despite their EE investments. While it is true that they are better off with the EE, this is still a very big issue at the corporate executive level.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

Based on the use of capital, and project ROI. They do not have a problem getting access to capital, because of the size and nature of their company. However, competition for capital is the big question for them – if they can get a better ROI on a different capital project, they will forgo the EE project.

They have competing capital projects all over the world, some with great ROIs.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Reduce energy costs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

They have had great experience with the electric company representative.

They see very little of the gas company account representatives.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

Yes, due to competition for capital for other projects.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes. They want to do more projects, but the program administrators need to make it easier with more real-time commitments to projects and higher funding levels to help address the competition for capital.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Not really. The issue is competition for capital.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

Again, the primary barrier for them is competition for capital. They have no shortage of capital opportunities that compete for the capital that is required for the EE projects.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The economy is not an issue for them.

Barriers to Participation

A. Customer Barriers

a. Financial limits

Yes, in terms of competition for capital

b. Budget limits

No.

c. Economic downturn

No.

d. Corporate review and approval process

Limited.

e. Company distrust of new technologies

No.

f. Company convinced it has done all it can

No.

B. Program Design & Administration Barriers

a. Insufficient incentives

Yes. This is an important issue as it would address the competition for capital.

b. Insufficient marketing and outreach

No for electric program administrators. Yes for gas program administrators.

c. Transaction costs

Yes.

d. Responsiveness and timing

Yes.

e. Limited measures offered

No.

f. Policy Issues (Opt out of SBC)

Yes. They believe they should be able to opt-out and use the money more efficiently on their own EE.

g. Other (note)

Other Comments

They were only able to recover ten to twenty percent of the incremental costs of some EE projects.

The program administrator offered a “crash” replacement program that they liked. If you fit in to their standard programs designs, they work great. Otherwise, they do not fit your needs well.

The program administrators do not offer a program to improve power factor, or for induction motors.

The program administrators should plan their expenditures better so that they spend it all in time, and are not left at the end of the year with unspent funds.

The amount of the incentive offered by the program administrators must be clear up front, and the program administrators must follow through and make the payments offered.

Survey of Commercial and Industrial Customer Perspectives of Massachusetts Energy Efficiency Programs

Interview Notes

Region: Western Massachusetts

Industry: Heavy Industry

Person(s) Interviewed: Director of Procurement Operations, Americas

Interview Number: 25

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

This company did not complete a questionnaire. The information below was obtained through the interview.

4) Approximate number of company employees located in Massachusetts:

Greater than 50. They also have facilities globally.

5) Building ownership:

NA.

13) Annual electric costs as a percent of annual operating expenses:

Between one and ten percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between one and five percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes. It is an important issue.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

The capital costs required and the project ROI relative to other uses of that capital.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

Yes, prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

NA

Please name one or two things about the program that did not work well for your company:

NA

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

They have wide latitude to undertake EE investments. See below.

However, their finance executives take a macro view to all this. They want to see the bills going down, but they continue to go up despite their EE investments. While it is true that they are better off with the EE, this is still a very big issue at the corporate executive level. They need to see the data to convince them that EE makes sense for them.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

Based on the use of capital, and project ROI. They do not have a problem getting access to capital, because of the size and nature of their company. However, competition for capital is the big question for them – if they can get a better ROI on a different capital project, they will forgo the EE project.

They have competing capital projects all over the world, some with great ROIs.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Reduce energy costs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

They see very little of the gas company account representatives.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

Yes, due to competition for capital for other projects.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes. They want to do more projects, but the program administrators need to make it easier with more real-time commitments to projects and higher funding levels to help address the competition for capital.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Not really. The issue is competition for capital.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

Again, the primary barrier for them is competition for capital. They have no shortage of capital opportunities that compete for the capital that is required for the EE projects.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The economy is not an issue for them.

Barriers to Participation

A. Customer Barriers

a. Financial limits

Yes, in terms of competition for capital

b. Budget limits

No.

c. Economic downturn

No.

d. Corporate review and approval process

Limited.

e. Company distrust of new technologies

No.

f. Company convinced it has done all it can

No.

B. Program Design & Administration Barriers

a. Insufficient incentives

Yes. This is an important issue as it would address the competition for capital.

b. Insufficient marketing and outreach

No for electric program administrators. Yes for gas program administrators.

c. Transaction costs



Yes.

- d. Responsiveness and timing

Yes.

- e. Limited measures offered

No.

- f. Policy Issues (Opt out of SBC)

Yes. They believe they should be able to opt-out and use the money more efficiently on their own EE.

- g. Other (note)

Other Comments

They have done a lot of efficiency projects already, including lighting, steam process and CFDs.

They believe that the program administrators are not efficient; they spend 35% of the program fund on administration and profit. The customer could be more efficient with that money.

It feels to them like they are paying for the efficiency twice, first through their bills and second with the resources and money that they have to invest to participate in the programs.

The programs should be less bureaucratic. Contracts must go through legal review with the customer's legal team. This slows things down on their end.

There is inefficiency in the communication with the account reps. There needs to be more information up front.

The amount of the incentive offered by the program administrators must be clear up front, and the program administrators must follow through and make the payments offered.

Participating customers should get a portion of the shareholder incentives that the program administrators get.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Bristol County
Industry: Retail
Person(s) Interviewed: Controller
Interview Number: 26

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between five and one percent.

15) Annual natural gas costs as a percent of annual operating expenses:

One percent or less.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return, payback period and energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

No.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Payback made the jump to gas financially attainable.

Please name one or two things about the program that did not work well for your company:

Slow turnaround on the payback of the rebate due to computer issues at the agency. Could not get a confirmation that the application was received.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe.

Predetermined Interview Questions

1. How important are energy costs to your company?

They are very important. Energy costs are a regular topic of conversation at the senior team level.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The building maintenance manager is in charge of making a request at the time that a piece of equipment needs replacing. The controller helps to evaluate the incentives available and the payback.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

They are looking for a 3-5 year payback. Also mentioned that environmental cost avoidance (as in the case with inspection costs that motivated their recent switch from oil to gas boilers) plays a role.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Reduced and avoided costs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

Not really applicable. The Company has a municipal electric utility, a new relationship with its gas utility and is working on a solar project with a third party. However, the company indicated that the incentive program allowed them to really jump at the opportunity to convert from oil to gas. The gas program administrator did a presentation for the company which kicked off the process. They also provided a technical efficiency analysis and explained the operation of the new technology.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

No.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Maybe. They have a 30 year old building and 4 AC units with compressors that need replacing. They also need to replace all lighting due to recent legislation and need to look at other options. Lastly, they are also hoping to get a federal credit for a solar installation.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

They don't really feel constrained by budget.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

They are not aware of any financing available, but would absolutely take advantage of financing if it were available. They would need to see a 5-6% interest rate to pursue financing.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

They had one tough year where they had to right size their staff, but other than that they haven't really been too constrained that they couldn't move forward with energy efficiency projects when they wanted to.

Barriers to Participation

A. Customer Barriers

a. Financial limits

Yes.

b. Budget limits

No.

c. Economic downturn

No.

d. Corporate review and approval process

No.

e. Company distrust of new technologies

No.

f. Company convinced it has done all it can

No.

B. Program Design & Administration Barriers

a. Insufficient incentives

Yes, in that they have a municipal electric utility.

b. Insufficient marketing and outreach

No.

c. Transaction costs



No.

d. Responsiveness and timing

No.

e. Limited measures offered

No.

f. Programs not tailored to customer's unique needs

No.

g. Policy Issues (Opt out of SBC)

Yes, in that they have a municipal electric utility.

h. Other (note)

Other Comments

Overall, the interviewee was very unclear as to the distinction between the incentives offered by the program administrators vs. other third parties vs. federal tax credits, etc. The interviewee considered them all one in the same and seemed willing to work with any party that could provide an incentive.

The interviewee was also not that knowledgeable about the overall process and relationship between the program administrator and company. Was not aware whether a technical assessment has been completed or not. The building maintenance manager would likely have been a better person to talk with about this.

They expected to save 30% of energy costs with their oil to gas conversion. Even with the mild winter, it has been more than that so far.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Central Massachusetts

Industry: Restaurant & Lodging

Person(s) Interviewed: CFO

Interview Number: 27

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

One percent or less.

15) Annual natural gas costs as a percent of annual operating expenses:

One percent or less

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years and prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Simplicity of paperwork, ease of financing cost.

Please name one or two things about the program that did not work well for your company:

Identifying qualified light bulbs that suit our design.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The approval process can be a little bit long and cumbersome. The CFO does the initial investigation of the possibilities and then presents it to the ownership who then weighs it with other factors, such as payback and initial cost of the program and how seamlessly it will integrate into their existing environment.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

“We see what’s available for energy savings solutions. We see what’s involved with the expense of making any changes. We also like to know if it’s going to give us similar results to what we’re seeing without the efficiency, in terms of lighting quality and refrigeration performance. Then look to see payback period. Then we typically do a trial on a smaller scale then do a full scale installation.”

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Primarily for financial reasons and trying to increase the bottom line and save as much money as possible. The person interviewed is always looking for things that would achieve those goals but not require a lot of hands on, constant working at a project. For instance, it’s easier to change a light bulb that’s going to payback for five plus years and not have to worry about it, just get it done and enjoy the savings. The customer is always looking for new options that might save it some energy and some money.

5. How well did the representative of the energy efficiency program administrator understand your company’s interests and needs?

Some lighting upgrades received pushback from the ownership, particularly because the color and brightness of the light was not quite right so it was changing the aesthetics of the building. The company was ultimately able to find some products that were qualified with the rebate program as well as provided the correct quality of light.

The company participates regularly, and sometimes the company will be interested in projects that it brings to the utility and other times the utility will approach the company with projects.

Generally speaking the process goes smoothly and there is not an excessive amount of paperwork.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

n/a

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

No.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

The company has financed efficiency. The process was very easy. They installed some refrigeration controls and the cost of that installation was spread out over one year and was added to the utility bill so it wasn't a large initial outlay of money. As the savings were coming in the customer was paying for the expense of doing it and that made it a lot easier. This definitely helped overcome upfront costs.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

If business levels were higher, there would be more cash available to spend on efficiency. The company is not suffering in the economy and is doing fairly well all things considered. It hasn't been a major factor. It's actually probably encouraged the customer to be more careful in how it spends its money. Investing in efficiency is a little more on the forefront because of the down economy. Profits are not as easy to come by, it makes the customer more careful without expenses. If there are ways the customer were able to save on its utility bills without too much of an investment then obviously the customer would be more likely to pursue some of those efficiency measures to capture some more money. Rather than spending it on utilities the customer can enjoy those profits instead.

Barriers to Participation

A. Customer Barriers

- a. Financial limits
- b. Budget limits
- c. Economic downturn
- d. Corporate review and approval process
- e. Company distrust of new technologies
- f. Company convinced it has done all it can

Still some more opportunities. Some of them are bigger investments in terms of HVAC so the customer is slower to make decisions because the existing equipment is working and

functional, and doesn't necessarily know if it makes sense to replace it. It's easier to replace something when it needs to be replaced rather than when it's still working.

B. Program Design & Administration Barriers

a. Insufficient incentives

Incentives are generally adequately set. It would be nice if they were even greater to minimize or eliminate the initial investment and decrease the payback period. Accelerate the savings.

b. Insufficient marketing and outreach

Utility is very helpful in identifying projects.

c. Transaction costs

It's absolutely worth taking the time to participate. Participating does eat into my available time to work on other projects, but the benefits are great enough that it's worthwhile. That's also why the person interviewed likes projects that generate the benefit but don't require a lot of maintenance along the way. Once the measure has been put in place it runs itself rather than requiring maintenance and continually eating up my time. Set it and forget it.

It takes up more time in terms of researching the models that are available and see what kind of incentives they qualify for. Certainly it'd be a lot easier to call someone up and say I need a new piece of equipment and just take what they give you. You do have to weigh some other issues, so it does take extra time.

d. Responsiveness and timing

There have been some instances when equipment needed to be replaced quickly. At that time the customer was looking for the more energy efficient model to see if they qualified for any rebates.

e. Limited measures offered

The color quality and brightness of the light and availability of the light bulbs. The Company wasn't able to buy a light bulb off a shelf. They had to special order them because the one that was on the approved list for rebates was not readily available. The company had to find a light that was qualified for a rebate and then test the aesthetics of it in its building. The special order took many weeks to a couple months to arrive. It would have been easier to purchase the light bulb that was more readily available. The bulb the company ultimately ended up buying was more expensive, so the initial cost of the program was greater than if they had been able to use the light bulbs that were more readily available. However the rebates offered through the program administrator made the overall cost less than the initial bulbs.

f. Policy Issues (Opt out of SBC)

g. Other (note)

Other Comments



**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston

Industry: Office

Person(s) Interviewed: Sustainability Practice Leader

Interview Number: 28

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Leased.

13) Annual electric costs as a percent of annual operating expenses:

One percent or less.

15) Annual natural gas costs as a percent of annual operating expenses:

One percent or less.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

We look for Energy Star or equivalent where appropriate.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

No.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

No.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

n/a

Please name one or two things about the program that did not work well for your company:

n/a

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

No. We will probably be relocating our office within this amount of time, so there is no financial incentive to do such

Predetermined Interview Questions

1. How important are energy costs to your company?

The person interviewed wished they were more important. The customer is looking to save money and energy but it's actually not a huge priority right now, just because the customer is not documenting it or sub-metering it. A lot of that has to do with the fact that the customer is a tenant in a building that's not being sub-metered. It's a huge priority whenever the person interviewed makes it a priority, but it's not something that is brought up before the building's board.

It would be great if they were sub-metered and would likely help their ability to participate. The company is an office tenant in a building set up for retail. There is one meter for the entire building with six floors. The overall energy consumption of the building is divided up to each tenant by square footage, not based off usage. The first floor is going to use more energy because they're retail establishments with restaurants and kitchens, which use more energy than an office. The company realizes that it is probably paying for a lot of the electrical use of its neighbors. It would definitely be in the company's interest to have more energy focus, but it's the virtue of the building and the way that it was set up. The company was not even aware that this was the billing arrangement until about 2 years ago when the person interviewed looked into it. Now as the company considers new office spaces, sub-metering is a huge consideration.

If the company were to install efficient equipment, they would only see a very small bill reduction, and wouldn't be able to calculate the return on investment.

The company does not discourage employees if they request new plug loads (i.e., new computers or a space heater). As they need energy, it is freely given.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

When the company first moved to its current office space, efficiency was a huge priority. The company has high efficiency lighting. The company is considering moving within the next few years, so there is no incentive to do any efficient upgrades, no matter how slight they might be. The ability to sub-meter and energy efficiency is something that is being considered by the company for their next office space.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Over time the company has done lighting and retrofitted its space to be efficient. The person interviewed did not know if the company had taken advantage of utility rebates or incentives because it was before his time at the company.

A year and a half ago the company had an energy audit. The person who conducted the audit was only able to find a couple hundred dollars' worth of efficiency measures. A lot of it had to do with getting rid of redundant lighting and adding motion sensors. He said they had the top of the line efficiency fixtures, and couldn't go any lower and justify the costs. The company only focused on lighting measures, as their lease is very clear that they cannot alter base building features such as HVAC systems. If the company were to upgrade base building equipment, their lease stipulates that they are required to re-retrofit back to the previous equipment. The company has no incentive to upgrade such equipment.

The company is an architectural firm and often works with its clients to engage in efficiency and tries to help its clients utilize efficiency rebates and incentives in various states.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The person interviewed is not in regular contact with its utility.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

The company would like to install occupancy sensors but cannot justify the costs. There is pushback to install anything if the company may vacate within the year, primarily due to rental prices in the area.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

The customer does not see budgets being an issue. Obviously no one wants to over pay for anything and everyone wants to get the most for their money. As long as you can demonstrate an ROI of about 3 to 5 years on any item, that's usually a no-brainer. The customer works with clients that have tight budget concerns, but the customer usually likes to demonstrate the benefits of each measure, and would consider a payback up to 8 years if it was worth it. It's not so much about the budget as it is about the payback. HVAC tends to be within the 10, 12, or 15 year payback range, so those tend to be a little more difficult, especially as a tenant when leases are about 10 years.

The best situation would be if the customer could find a building to occupy as it was being built, and then work with the owner to configure the building to their needs. It would be difficult to find that and negotiate such a situation.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

Because of the economy, the customer's employee base has shrunk to about a third of what it was before the economic downturn. The customer is in the architectural industry, and architecture and new construction have been hit pretty hard by the economy. Over the years the customer has gotten leaner and leaner and leaner. The customer used to occupy two floors of the building, and now occupies one floor and is a third of the size it used to be. There's just not a lot of work out there. Everyone is afraid of taking risk and competition for architectural projects is fiercer than in previous years. There's definitely a difference in the market.

The economy is a huge part of the company's decision to move. Rent prices are high and the company wants to remain profitable. Business was better last year than it was before, but because it hasn't been what it was a few years ago. The company has to sincerely look at its overhead to see if it can be reduced and see if there are benefits to moving. Energy is part of the overhead, and the ability be responsible about how you use a resource like energy and not using it at will like the company currently does.

Barriers to Participation

A. Customer Barriers

- a. Financial limits

The incentives continually change, making it difficult to stay on top of them.

- b. Budget limits
- c. Economic downturn
- d. Corporate review and approval process
- e. Company distrust of new technologies
- f. Company convinced it has done all it can

B. Program Design & Administration Barriers

- a. Insufficient incentives
- b. Insufficient marketing and outreach

Awareness only goes so far as you're willing to look. The customer wasn't aware of efficiency opportunities through the program administrators until another employee asked about it. Once the customer was aware of the opportunities, it continues to look for rebates for its clients. It's hard to be in the know. The person interviewed did the research on the program administrators programs.

The customer noted a trend with its national clients that, in new construction, owners and companies in the construction industry are learning to look to the utility early in the design process to access rebates. There is also a benefit to the utility knowing that a new hospital or other building is going to be joining the electricity grid. The energy provider needs to be part of the design team.



As long as you know who the provider is, it's pretty easy to go out and look up the incentives yourself. If there were campaigns or commercials or something to get the general public more aware, that would help. However, these programs have become more common place, so keep up the good work.

- c. Transaction costs
- d. Responsiveness and timing
- e. Limited measures offered
- f. Policy Issues (Opt out of SBC)
- g. Other (note)

Other Comments

The customer spoke of a situation where it helped a company in Massachusetts receive one of the biggest efficiency packages provided by a program administrator because other customers were not taking advantage of the incentives and the program administrator needed to spend the money. The company was exquisitely happy.

Education of the clients is a big barrier. A new build, or a tenant situation also create barriers and unique situations. Sub-metering would be a great way to overcome the tenant-owner barrier. Sub-metering can quickly identify inefficiencies and problems, thereby quickly resolving the problems and identifying opportunities for efficiency. The customer would have more leverage to make the argument to participate if they were sub-metered. Also, the customer doesn't use that much energy to begin with.

Survey of Commercial and Industrial Customer Perspectives of Massachusetts Energy Efficiency Programs

Interview Notes

Region: Boston
Industry: Office
Person(s) Interviewed: n/a
Interview Number: 29

Key Questionnaire Responses

The customer did not provide the questionnaire.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important. With the size of the facility, it's a considerable investment each year.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The customer has to do a cost analysis and determine the return on investment and have that approved. The approval is based on the dollar costs and what the payback is based against the term of the customer's lease. If the payback is 2 years, and the lease extends out five years, than it makes sense to go ahead with the efficiency project.

The process can take time; depends on the dollars spend. If it's hundreds of thousands of dollars, it has to go through a couple levels and can take from 2 weeks to 10 weeks.

Efficiency projects are generally straight forward and received very well.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

The customer has to do a cost analysis and determine the return on investment. Anything with a payback under 2 years is a no brainer; it's pretty attractive.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The customer did a complete re-lamping and rebalancing in a number of buildings, and installed occupancy lighting sensors and controls in all restrooms, copy/fax, and kitchen areas in all buildings.

The company knew of the local incentives and worked with an energy consultant that helped shape the program and what the company wanted to do to get the process streamlined through the utility. The company brought in the energy consultants to help out with the process. The company explained to them what they were looking for: they wanted to get a grasp on what the incentives were for the programs. The consultants helped them from start to finish doing the reporting back to the utility on the fixtures installed, any other controls, what the kWh saved were. They did it from top to bottom:

proceed the paper work, did all the calculations in terms of what the utility was looking for in order to make it a smoother process.

Hiring the consultant was something that just made sense to the customer, knowing that, by working through the consultants, they would handle all the applications and processing and calculations. It just made sense to give the company time to focus on what they were doing day to day but also to give leverage to make sure they were capitalizing on the programs to the best of the customer's ability. It was well worth the investment in time having the consultants. The customer was able to achieve the maximum benefits and rebate.

The customer does receive frequent updates from its utility on what efficiency incentives are available.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

Yes. In the past few years, it's become more evident that they're doing a much better job in announcing and pushing these programs out. The person interviewed receives information from its local utility on different types of products that are available for rebates; everything from variable speed frequency drives to lighting packages.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

Yes. At the time of participation, the customer was also looking at ultra HVAC implementation (retrofits and change outs) throughout all the customer's buildings. At the time, there wasn't enough interest in that with the payback at about 6 years, the age of the equipment (too young to benefit from the program) and the dollar amount to do the project.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes. The customer feels that, with the ever changing lighting and energy field, they would probably be at the point within the next three years to start considering other options to take advantage of the programs.

A lot of the customer's ability to participate in the future is based on where the customer is (a sole tenant in a multi building facility), and based on the customer's lease. If the customer renews in the next couple years, there would be a lot of changing and work within the facilities to take advantage of some programs.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Any budget limitations would be based on the terms of the lease and the return on investment.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

The customer has never really looked into the financing option. Actually, when the customer did the lighting retrofit there was a finance option, but they thought it was better to purchase outright and use the savings on maintenance and cost of the utility to get a

return. The upfront cost was not an issue. If the upfront costs come into the millions of dollars, then there might be options there.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The current state of the economy when the customer was doing the lighting retrofit had a positive effect on the customer. Companies were in that cut back mode looking to save anything they can. Sometimes you do have to spend to save so it made sense in the long term to the customer. Sometimes when the economy is down, but if you can put out a structure to show savings over a course of time, those things get approved quickly.

The customer made it through the economy alright. The company provides information for the financial markets, so when the stock market was down it hurt everybody. There were tough times when the reigns were pulled back on spending, but if you were showing a good turn around and considerable savings, that was considered money well spent.

Barriers to Participation

A. Customer Barriers

a. Financial limits

No, unless upfront costs get in the millions.

b. Budget limits

No, so long as payback is shorter than the building's lease.

c. Economic downturn

No. Economy had a positive effect on the customer's energy use.

d. Corporate review and approval process

No so long as there is a short payback and does not conflict with the customer's lease.

e. customer distrust of new technologies

n/a

f. customer convinced it has done all it can

No, would like to do more HVAC.

B. Program Design & Administration Barriers

a. Insufficient incentives

Thought the incentives were very good this last time around. It was very nice. It was incomparable to what the cost savings were in utility charges, too. Those two combined worked out really well.

Overtime, the person interviewed would expect the incentives to get more attractive as government regulations put them in that corner to offer these programs. It seems that in the past couple years there's been a big push on being environmentally friendly and reducing energy costs. Obviously the utilities have a responsibility to provide to their

customers options. Over the next couple years you're going to see that grow and grow and their programs will probably become more attractive to some people that thought they weren't attractive. For the customer right now, they are very attractive and it worked out well.

- b. Insufficient marketing and outreach

No. customer thought they were well informed.

- c. Transaction costs

Potentially. The customer needed to hire an energy consultant to make sure they were taking full advantage of the efficiency programs.

- d. Responsiveness and timing

n/a

- e. Limited measures offered

Everything was fine. Fit the customer's needs at the time.

Lighting and HVAC are large portions of utility costs. If could get over hurdles and make HVAC systems more attractive that would be something that the customer would be interested in pursuing.

- f. Programs not tailored to customer's unique needs

- g. Policy Issues (Opt out of SBC)

- h. Other (note)

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston
Industry: Heavy Industry
Person(s) Interviewed: Controller
Interview Number: 30

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between five and one percent.

15) Annual natural gas costs as a percent of annual operating expenses:

n/a

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period; Benefit-cost ratio; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

No.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

No.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

n/a

Please name one or two things about the program that did not work well for your company:

n/a

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The approval process varies based on the dollar volume being discussed. If it's a relatively inexpensive measure or the payback is very quick then it becomes a no brainer and the decision process is relatively quick. As the dollar amount gets bigger and the payback gets longer, more discussions happen, more analysis is need, therefore the decision making process gets expanded out.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

The company looks at how much it is going to cost. Cash flow for the company right now is definitely a challenge and something that is managed very closely. Before implementing any type of policy or change they need to make sure they have a way to pay for it and analyze what the benefit is going to be. The company looks at the break even, how long it is going to take to pay it back, and the cost-benefit.

The company looks for a payback before 18 months. That's the latest they would want to go.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The company is not in regular contact with its utility. If they company has a problem, the utility tries to address it as best they can.

The company has not been very proactive in trying to look for cost saving measures, and the program administrators have not been very proactive in trying to assist the customer in cost saving. The company would be receptive if the utility were to reach out to them.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

n/a

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

It would depend on the cost, but would definitely be something the company would entertain. The company is not actively looking for opportunities, but if opportunities were brought to the company's attention, then they would consider them.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Budgets would definitely play a major role in the company's ability to participate.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

Would depend on the dollar amount and the payback. The company wouldn't be opposed to that option if it made sense and within the 18 month break event that they're looking for.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

Significantly. The customer is a manufacturing company. The last recession had an impact on its business. It does seem to be picking up and moving in the right direction, but the economic climate and conditions definitely play in the customer's decision making.

Capital is not tighter because of the economy. Their bank has told the company that they have mandates from corporate to lend as much as possible, so capital is not a major issue at this point.

Business is slow, margins are tighter, a lot more price shopping is taking place. The company is making less money on its bottom line because of all that.

Because of the economy the company has cut back and is wearing more hats so there is less time to devote to efficiency.

Efficiency viewed favorably at the company and as a way to cut costs.

Barriers to Participation

A. Customer Barriers

- a. Financial limits
- b. Budget limits

Yes. Capital is a big barrier.

- c. Economic downturn

Yes. The company has less time to devote to efficiency and profit margins are tighter.

- d. Corporate review and approval process

Yes – 18 month payback.

- e. Company distrust of new technologies



f. Company convinced it has done all it can

B. Program Design & Administration Barriers

a. Insufficient incentives

b. Insufficient marketing and outreach

Yes. The company has only a general understanding of the programs and has not been given much information by its utility on the programs.

c. Transaction costs

Yes. The company does not have time to devote to efficiency participation. The easier the process is the more likely the company is to participate.

d. Responsiveness and timing

e. Limited measures offered

f. Policy Issues (Opt out of SBC)

g. Other (note)

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Western Massachusetts

Industry: Heavy Industry

Person(s) Interviewed: Purchasing; Plant Manager

Interview Number: 31

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between ten and five percent.

15) Annual natural gas costs as a percent of annual operating expenses:

n/a (uses propane)

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

No (10 years ago)

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

n/a

Please name one or two things about the program that did not work well for your company:

n/a

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The customer has an audit conducted to identify areas for energy improvement. From there the customer does the repairs or implement what they have to do.

The Finance Manager/Vice President is in charge of energy approvals. He goes through proposals thoroughly before giving approval. The person interviewed was not aware of the Finance Manager/Vice President turning down efficiency projects. His review of efficiency projects is usually pretty quick.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

The customer is always looking for some kind of a payback period anytime they look to invest in something. The customer generally looks for a quick payback, anywhere from 2 to 7 years. When buying a new machine, the customer is always looking at how long it is going to take to get the payback on it as well as what are they going to save on their energy bill compared to the last machine. The customer is always trying to go a little more energy efficient. A lot of new machines you can't really be more efficient with. The customer looks at machines that will allow them to increase their productivity and at that point, they're not looking at the efficiency as much. The customer needs equipment that will do the job that needs to be done. The customer needs to get what it's got to have to run the product. If they can combine it with energy efficiency they will.

Equipment planning is done pretty well in advance of whether a machine is likely to fail. Machines usually stay around for 10 to 15 years or more. There are plenty of warning signs that they will need to start shopping for new machines, and don't usually need to replace equipment on an emergency basis.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The customer is aware that rebates and incentives are available through its utility. About 10 years ago the customer completed a lighting upgrade through its utility. The customer also had a new furnace installed, which could possibly have a rebate available for it.

Within the past few months, the customer had an audit completed by the University of Massachusetts' Department of Mechanical and Industrial Engineering. The UMass Department approached the customer and offered to do the free audit. They walked around and identified where the customer was losing or wasting energy, mostly around

fixing air leaks and compressors, meaning that the compressors were running more than they should be. Air leaks had the shortest payback. Because of the audit, the customer made adjustments to its air compressor systems.

The UMass Department gave a list of everything they found, along with recommendations for repairs and calculated paybacks with the savings they would receive and what the customer was losing. Some repairs were identified but did not have a payback associated with it. The customer then did the upgrades on their own based on the recommendations in the report. The UMass Department did not identify rebates or incentives in their report. Most of the things identified by the UMass Department were not available to be incented by the utility programs. There may have been a few things that were eligible, but the customer did not look into it.

There's a lot of stuff out there that you can get for free. To pay someone to come in and do the same type of evaluations doesn't work well for the customer. The customer doesn't like to pay people to come in and do evaluations. A bunch of people have been offering to do free audits. It seems to come in spurts. Right now everybody's calling about it. The UMass Department was different because the Finance Manager/Vice President told the person interviewed to get them into the building to do the audit.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The persons interviewed were not sure if their utility had reached out to the customer regarding efficiency measures. The utility may have contacted someone else at the customer.

The customer is not in regular contact with its utility unless there is a power outage. When asked whether the customer would prefer to be in more regular contact with its utility, the person interviewed questioned what benefit that would bring. There's been no real problems.

The customer gets people calling all the time about different types of efficiencies, primarily third party suppliers trying to bid on the next energy supply contract when its current contract expires.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Yes. No specific plans yet. Once the Finance Manager/Vice President makes a decision to move forward, which should be soon, the customer will move forward with efficiency projects. There's no other barriers to participation other than the Finance Manager/Vice President making the call to say let's do it.

The main motivating factor to participate in the next few years is to reduce energy costs and make things more efficient, and to make everything greener. The Finance Manager/Vice President is figuring out it's a good time to get going on some efficiency projects again and they have some good opportunities and a good window coming up. He had some time freed up after the end of the year was finished, and wants to take

another look at energy use around the customer and cost savings and improvements. He's big on trying to get his arms around the heat loss in the building.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

No budget or capital barriers. The customer is not just going to spend money on efficiency just for the sake of saying they're spending money on efficiency if it's not going to give any payback.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

No, finance is not a problem.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The biggest effect was in 2008. The customer had a substantial layoff and business just dropped off because people weren't ordering products. Since 2008, the customer has been steadily climbing back to where they were.

Going forward, as long as the economy is going pretty well it's not likely to pose a barrier to participation. If it crashed again like it did back then, than that will have an effect. The customer would be on locked down and wouldn't be allowed to spend extra money on anything. Going along now, it should be business as usual.

Barriers to Participation

A. Customer Barriers

a. Financial limits

No.

b. Budget limits

No, so long as decent payback.

c. Economic downturn

No.

d. Corporate review and approval process

Yes. The Finance Manager/Vice President seems to control the direction of efficiency projects.

e. customer distrust of new technologies

n/a

f. customer convinced it has done all it can

There are always opportunities to do more efficiency.

B. Program Design & Administration Barriers

- a. Insufficient incentives
- b. Insufficient marketing and outreach

Possibly. The customer is not in regular contact with its utility, and was just aware that incentive programs are available.

- c. Transaction costs

Time is the only barrier identified by the person interviewed. The customer is very busy so it's just a matter of finding the time to looking into everything and get it going.

- d. Responsiveness and timing
- e. Limited measures offered

Potentially. Air compressors seemed to be an area of improvement that were not incentivized through the program.

- f. Programs not tailored to customer's unique needs

Customer is not unique. Big old steel building with high ceiling, big windows, concrete floors.

- g. Policy Issues (Opt out of SBC)
- h. Other (note)

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston
Industry: Heavy Industry
Person(s) Interviewed: VP of Finance
Interview Number: 32

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between five and one percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between ten and five percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period; Benefit-cost ratio; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, both within the past three years and prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

n/a

Please name one or two things about the program that did not work well for your company:

n/a

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe.

Predetermined Interview Questions

1. How important are energy costs to your company?

Quite important. The customer pays a nice piece of change each month for electricity and natural gas. They keep an eye on it and contract out for gas and electricity so that they can fix the cost for a period of time and do their costing for other materials.

Energy costs are typically a low priority until the contract is up. The company usually signs up for a one or two year contract. As it's time to renew, it starts picking up the pace and then the customer is able to put it behind them knowing that they're locked in and can move on from there. It's certainly an important piece, but it's not like they're buying on a daily or monthly basis.

When buying the contract, the customer gets an estimate of how much they expect to use for electricity or gas, based on how they expect their business to do over the year.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The customer certainly looks to see if new equipment is going to be energy efficient. On the other hand, there may not be too many choices for the type of industrial equipment that is needed to get the job done. It's going to take whatever amount of horse power or gas it's going to take. They look to see what the operating costs will be like but they also look to see how well the equipment will perform.

The President, the VP of Manufacturing, and the VP of Finance (the person interviewed) get together and look around to see how buying new equipment would affect the company. "It's like getting a razor for free but having to spend an awful lot of money for the blades. Electricity is the same way. If the equipment is inexpensive but it's going to cost a lot to power it, you may look for something else. In other cases, we don't have a much of a choice. If it's a unique piece of equipment, then that's pretty much all we can buy." Energy is part of the decision making process but it's not the only factor.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

If it's a payback of many many years, it's probably not going to happen. If the payback is less than a year, it's probably going to happen. Less than a 1 year payback is pretty self-explanatory unless it's going to disrupt production. Changing lights is not going to shut your facility down. There's no real rule in place on the payback period, but it's been the customer's practice to go with a payback of less than a year, and it's not too difficult to sign off on such a project because you'll see the results real quickly. Once the payback is longer than a year, there are a number of different factors considered. What those factors are depends on the situation.

At the end it comes down to economics. The lighting upgrade (discussed below) was a no brainer. Anything with a long payback would probably be put on the back burner and probably wouldn't be acted on immediately.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

A couple years back (probably not within the past 2 years) the customer had an energy audit conducted on its facilities. The company relighted with efficient lamps in its warehouse facility. The PA did the audit, showed the company what they could save and what it would cost them to do and it was basically a no brainer to the customer. With a payback period of less than a year the company went for it and had the warehouse re-lamped. The audit seemed very thorough to the customer. The customer had just installed some new equipment, which probably limited the extent of the opportunities in the audit. Any recommendation that could be made was positive to the company. The lighting was very easy. As far as some of the other things, it's more difficult to change motors. The company also took care of a compressor issue and a couple of smaller recommendations from the audit.

About every 5 years the company has an audit conducted. From time to time the customer does have measures identified in the audits taken care of to see what else they can do. The two buildings that the customer used to occupy were audited.

The company doesn't know what it will be like the next time around, because you get to a certain point when you get the low-hanging fruit and after that it gets more difficult. Payback becomes a strong consideration.

They also participated in demand response programs.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The person interviewed believes that the PA approached the customer to conduct the audit, although was not entirely sure. When the "utility" approached the customer about demand response programs, the person interviewed believed that that is when they were made aware of efficiency programs.

The customer had not done any specific research ahead of time to assess rebates or opportunities. When the customer was contacted for the interview, it reminded them to see what new opportunities are available. The customer acknowledged that natural gas is low now, but will go up in time, and so is considering adjusting its supply contract.

The customer was not aware of whether it had been contacted by its gas utility.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

The person interviewed could not remember if recommendations were made on some of the bigger equipment and motors. Because a lot of equipment was new, there was not a lot that could be addressed for bigger pieces of equipment in the audit. The company did most or all of the measures and recommendations that were worthwhile. The customer did not adopt any recommendations because it didn't believe in them; there weren't any measures that made sense to some people but didn't make sense to others. There may have been some measure that the customer may want to consider at some point.

-
7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

The customer said “maybe” because they couldn’t respond yes or no. They probably could have said yes, but didn’t want to be definitive about it. With energy costs relatively low, it’s not the number one priority. Right now the customer is looking to make more sales and get more business.

If the customer could be pointed in the right direction as far as who to contact, the person will certainly take notes and see what they can do. At some point the company will look to see what they can do, but at the moment it’s not on their radar. The person interviewed asked whether they should be contacting the EEAC for information on program participation. They were directed to contact their utility/PA, and they said they would at some point. Anything that could be done in the short term or kept in mind for down the road about something they haven’t thought about would help the customer.

8. To what extent do budget limitations pose a barrier to your company’s participation in energy efficiency programs?

There might be some budget limitations, but without knowing what the projects might be, the person interviewed could not say. There are always budget limitations for something. The company looks at the cost of most projects, but also evaluates what benefit it will give them. There is no fixed dollar limit as to what can or cannot be spent. It’s more a matter of what makes sense. The customer has a parent company that supports them well. In 2004 the parent company lent the customer some money for a project, and at the time no one else would have lent funds to the customer. The loan is now paid back. If they can justify the expense, they can usually get the money.

9. To what extent do financing limitations pose a barrier to your company’s participation in energy efficiency programs?

No. The customer goes through its parent company (the customer is a subsidiary of a privately held company). The parent company mostly leaves the customer alone except for money matters and insurance matters. Everyone has a limit somewhere, but financing has never been a concern of the customer.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

With the economy the way it is right now the customer is more interested in making sales. With gas prices the way they are, efficiency is not something that is foremost in the customer’s mind. Usually you take care of these things when it’s too late. If gas prices started to rise, it would peak the customer’s interest in efficiency.

The customer certainly felt the downturn in the economy. They felt it like everyone else did. The company works in an industry that is mostly based on new construction or capital investment activities. When the economy took a down turn and companies stopped new construction or refurbishing projects, the customer felt the decrease in business. The customer’s business is slowly picking up again as the business it depends on start to pick up again. Historically, the customer’s business slows down after the slowdown because contracts are already in place. They also pick up after other businesses pick up because their one of the last considerations in a new construction project. They follow the economic curve but are always a little later than other businesses.

The nice thing is, that with the customer's parent company, they do not feel that the economy would affect the customer's ability to participate in efficiency programs going forward. The parent company has allowed the customer to take advantage of economic dips from time to time depending on what it is. Once, the company bought equipment when it wasn't the best time to be equipment if you were going to go to a bank. The company was able to get good pricing from a manufacturing company because they were looking for business, and the customer was able to negotiate a low price with the help of its parent company.

Barriers to Participation

A. Customer Barriers

- a. Financial limits

No.

- b. Budget limits

Maybe, likely not.

- c. Economic downturn

Could be a barrier, but person interviewed does not think so.

- d. Corporate review and approval process

No.

- e. Company distrust of new technologies

- f. Company convinced it has done all it can

Maybe. Right now, the customer has done several improvements. That's not to say that there isn't the next generation of motors or equipment that isn't going to be coming down the pike that might be worthwhile. The majority of the customer's equipment is new and they had the lighting taken care of. Sometime down the line when it's time to replace equipment the customer will look into efficient options.

B. Program Design & Administration Barriers

- a. Insufficient incentives

No.

- b. Insufficient marketing and outreach

The power companies are doing what they can do and it's up to the customer to take advantage of them and seek them out further. The customer has to help themselves.

There's always that friendly reminder that could come across and wouldn't hurt to jog the company's memory to participate in programs. The customer is well aware of the programs offered. If the customer was not aware, then they would suggest that the utilities need to do a better job of outreach. Because the customer is aware, it's on them to see what they can do.



c. Transaction costs

The person interviewed did not remember any significant paperwork involved with the energy audit the customer conducted. There was more paperwork for demand response. It was all within the regular course of business and was not a real problem.

d. Responsiveness and timing

The customer does not have the time to devote to participation, and is more concerned with business and sales than efficiency.

e. Limited measures offered

No.

f. Programs not tailored to customer's unique needs

No.

g. Policy Issues (Opt out of SBC)

No. Customer needs to help itself.

h. Other (note)

Other Comments

Probably not a lot of things would prevent the customer from at least talking to the PAs.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Western Mass

Industry: Office

Person(s) Interviewed: Senior Property Manager

Interview Number: 33

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

1 to 4.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between ten and five percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between ten and five percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period; Benefit-cost ratio; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

No.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

n/a

Please name one or two things about the program that did not work well for your company:

n/a

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important. A high priority is set for energy costs. The customer is a property management company that communicates this high priority to the building owners. The company looks at each building's usage and energy costs, and then looks for ways to reduce them.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The company has not installed energy using equipment in its building recently. The company looks to install new equipment only when it breaks down. The maintenance staff at the building will monitor equipment and notify the management company when it's at the end of its life. The maintenance staff calls a vendor to find new equipment, and then asks the management to fund the new equipment. The management company then considers payback and the equipment's usage, before bringing the proposal to the building owner for approval.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

When looking to purchase new equipment, the customer looks at its energy savings, the payback period, and whether it will work or not for the building. The company looks for a 2 year payback.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The PA contacted the customer about efficiency programs. Prior to being contacted, the customer was not aware of the efficiency programs (later the person interviewed indicated that they are aware of the programs). The customer has been in discussions with its PA, and is expecting to have an audit to see what can be done. The audit looked into HVAC and lighting opportunities, and the customer just received the engineering report and is currently deciding how to proceed. Gas measures are being looked into as part of the audit process. The next step is to work with the PA to determine the incentives available for the recommendations in the engineering report. The company has not yet made investments in efficiency, but expects to address HVAC and lighting measures.

The building owners can see efficiency as a more expensive option at times. One building in particular is very old. There could be a lot of efficiency opportunities but the owner is hesitant because it could be a lot of upfront money. It's a huge building and to upgrade or replace the HVAC system will likely result in astronomical costs that would be too expensive to undertake in one year. The customer is considering a phased approach to spread the costs out over time. The PA is accommodating to the phased approach.

The company primarily conducted the audit to look for ways to save money. The company is also trying to be proactive and avoid not being able to participate because of equipment failure.

The company has replaced some converters and some pumps. Equipment does not need to be replaced often. The company tries to look for something that's energy efficient if it's going to be replaced. Sometimes trying to get equipment incented from the PAs doesn't work because the equipment needs to be replaced immediately. They don't have the time to go to the PA and request incentives. Everything has to be preapproved and that takes a while, and the customer doesn't have a while because they need it immediately.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

Well. There is nothing the PA could have done differently to address the customer's needs. The customer is in regular contact with its utility. The customer finds them be very helpful. If the customer calls with a question, they give you an answer and if they don't have an answer, they call back quickly with someone who can answer the question.

The company keeps in contact with its gas PA, but not as often as its electric PA. The gas PA has not mentioned efficiency, whereas the electric PA is in regular discussions with the customer regarding efficiency.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

There could be budget constraints; it all depends on what the bottom line is. The person interviewed does not think that efficiency projects would compete with other capital investments.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

No.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The customer is lucky in that it has been performing really well over the past couple years. The customer did not have much of an issue with the economy. The company's performance does not affect its views on efficiency. The company is hopeful that they will continue to perform well going forward.

Barriers to Participation

A. Customer Barriers

- a. Financial limits

No.

- b. Budget limits

Maybe.

- c. Economic downturn

No.

- d. Corporate review and approval process

Maybe. Owners determine what gets funding.

- e. Company distrust of new technologies

No.

- f. Company convinced it has done all it can

No.

B. Program Design & Administration Barriers

- a. Insufficient incentives

No.

- b. Insufficient marketing and outreach

Likely no.

- c. Transaction costs

Yes. The process is taking a little while. There have been lags getting the engineering report.

- d. Responsiveness and timing

Yes. When equipment breaks the customer needs it to be replaced immediately, and the programs are not responsive to that.

The customer has done minor efficiency upgrades in one building (even though the person interviewed stated earlier that they were unaware of the programs). The last time the person participated, they found the process much easier. They could submit to the PA receipts from efficiency equipment and related paperwork. Now, everything needs to be preapproved by the utility before the equipment can be purchased. While this adds an extra step to the participation process, the real issue is that if you need new equipment you need it now.

- e. Limited measures offered

No.

f. Programs not tailored to customer's unique needs

No.

g. Policy Issues (Opt out of SBC)

No.

h. Other (note)

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Western Massachusetts
Industry: Warehouses & Distribution
Person(s) Interviewed: Facilities & Systems Engineering
Interview Number: 34

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

20 to 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between ten and five percent.

15) Annual natural gas costs as a percent of annual operating expenses:

Between ten and five percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Of course.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period,

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

No.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

n/a

Please name one or two things about the program that did not work well for your company:

n/a

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe.

Predetermined Interview Questions

1. How important are energy costs to your company?

Energy represents 10% of operating costs between gas and electric, so they're not trivial, but they're not the overriding piece of it. Energy is probably a medium priority for the customer. They've secured good electric rates and they have natural gas so that's working in their favor at this point in time. This priority is not officially set or communicated to employees.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

The CFO considers projects and provides approval. He makes a fairly quick decision. He generally views efficiency favorably.

The company is in the process of replacing the roof over the summer, so any other projects are not likely to be approved in the near term.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

If a project doesn't have a very quick 24 month payback, then it wouldn't be considered. A project within 24 months is more likely to be considered. The shorter the better, but it needs to be something that will provide real savings in the near term.

At one point the customer considered a co-generation facility, but with the low gas costs and electric rates, it had a 5 or 6 year payback, so it was not considered.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

In 2006 and 2007 the company put on a major addition, adding about 40% capacity to the company's operations. At that time, the customer added about 140 horse power worth of electric motors. Since then, equipment alterations have only been to replace equipment. No substantial changes since 2007.

Energy efficiency is a consideration when replacing equipment, but it hasn't been given a lot of thought, or there have been expeditious swap outs. The system runs with relatively high efficient motors, some of which include VSDs. The company has considered adding more VSDs, but the physical constraints are daunting, so they haven't gone far with it. The customer has spoken with local vendors and its PA about efficiency opportunities. They got to the point where they understood what the cost would be, but weren't able to pull it off at that point in time and haven't been back to it. The cost and capital outlay and ability to do the install prevented the customer from pulling off the project. Physically the

customer doesn't have the space in the electric room to add the gadgetry to add the VSDs and efficient equipment. The physical, practical aspects of the installations stood in the way. There are other things that come up that need attention all the time.

The cost with incentives was not the problem. The physical space prohibited the customer from being able to install more efficient equipment. The customer was presented with discounts or incentives that would largely cover the cost of the VSDs, but the customer wasn't convinced that they were going to be able to take advantage of them anyway. Most of the time the systems are running wide open. To turn the system back would potentially reduce the customer's ability to operate the system successfully with a lower electricity flows.

The customer has been contacted by both its gas and electric PA. The gas PA has been in touch with the customer and they installed high efficiency munchkin boilers in 2000. The electric PA worked with Applied Dynamics to determine the savings estimates.

The customer feels like it's done a lot in terms of savings and has done a lot of the low-hanging fruit. When the offices were built, they were state of the art in terms of lighting. There may be some savings achievable with more lighting.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The customer is in occasional contact with its utilities. The person interviewed attended a conference a few years ago organized by its gas PA where efficiency was a big topic. He felt like that was an indication that the PAs are reaching out to customers.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

n/a

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

Not likely.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

Budget limitations are always going to be a consideration. If a project doesn't have a very quick 24 month payback, then it wouldn't be considered.

There are other things that come up that need attention all the time.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

n/a

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The economy has had an effect on the company over the past few years. The company's employee base has remained fairly constant.

The economy has not had an impact on the customer's decision to participate in efficiency projects. The uncertainties have made the company more hesitant to invest in something that doesn't have a highly guaranteed returned. It's hard to create a compelling argument when you only have 10% of the operating costs going into energy.

Barriers to Participation

A. Customer Barriers

- a. Customer's financial limitations

n/a

- b. Customer's competition for capital

Yes. Other projects (such as a roofing project) compete for capital, and other things are always coming up.

- c. Economic downturn

No.

- d. Corporate review and approval process

No.

- e. Company distrust of new technologies

The customer is concerned that reducing energy consumption may reduce production capability. This was an impediment to implementing efficiency but was not a stopper.

- f. Company convinced it has done all it can

Maybe. The customer thinks there are opportunities out there, but doesn't feel like the savings are significant enough to prompt them to throw the man power at it. The customer thinks it has done all the low hanging fruit. Participating in an energy audit would probably be a great idea to have someone with a fresh set of eyes view the facility. The person interviewed had been there for 20 years and admitted he is probably jaundiced and may not see things that someone else from outside the facility would see things. The customer does not think they have huge savings to be had, maybe talking on the order of 5-10% of consumption at best, which is half or one percent of operating costs. There's just so much else going on, that it's not something the person interviewed can get their arms around. Having an energy audit might be useful to figure out what's going on.

B. Program Design & Administration Barriers

- a. Insufficient incentives

No.

- b. Insufficient marketing and outreach

No.



c. Transaction costs

Yes. The customer believes it would take a lot of time and manpower to participate in the programs. About ten years ago, the customer tried to install lighting and in house staff would have needed to do the installation as part of the package of incentives offered by the PA. The measures would only be completely incented with an installation contribution by the customer. This makes it not free and not without commitment of resources on the customer's part.

Because of this, the customer figured that this time around would require similar time commitments. Justifying the time commitment to participate is a barrier for the customer.

d. Responsiveness and timing

n/a

e. Limited measures offered

Yes. The equipment the customer needed to be efficient could not fit into the space in the electrical room.

f. Programs not tailored to customer's unique needs

n/a

g. Policy Issues (Opt out of SBC)

h. Other (note)

Other Comments

The customer suggested that more effort or assistance in evaluating the achievable energy reductions and implementing the projects would help customers. The customer didn't have a firm sense of whether the energy savings were really achievable, and whether they could practically implement them. There was not a huge motivation to go the more efficient version. Even if the measures were free, there would still be system upsets that would go along with trying to install them and providing their piece of whatever the incentive was. A lot of businesses don't have someone dedicated to energy and conservation looking at these things. It would be better to have someone shepherd the project and evaluate whether the project would be feasible under the certain circumstances a customer has. That was a missing piece for the customer. They did speculate that they could periodically turn down the system, but they didn't do a system level analysis on the impact that would have on operations. They realized it was free, but the energy savings were like to be sporadic.

Having a better understanding of what's realistically achievable and having a compelling case for change stands in the way of executing projects. Everyone is supportive of the idea of conservation, and the company considers itself to be a sustainable company. Actually getting from there to executing concrete actions there is a process that the customer has not gone through yet in terms of pulling it off.

Someone to shepherd the project a little more: to introduce it to the company and go through the energy audit and stick with it as a mentor or contact would be useful to get the company to the point that they're confident that the energy savings are going to be significant enough that they impact the bottom line enough to warrant the investment. It's

not like the PA just comes into your house, screws in a CFL, and walks away. You actually have to do something. You have to revise the operating strategy of the systems and that requires a lot of time and effort. Working with some to understand what its actually going to take would be useful.

Building a stronger case for the practicality and achievability of the conservation measures is something the customer would recommend would be useful for the programs.

The customer was curious to know how successful the programs have been to warrant Synapse conducting this study.

The customer suggested that the PAs revisit customers who were at one point interested in efficiency but did not follow through to see why they may have been put on hold. If he were trying to see why customers aren't participating in programs, that's where he would start asking questions. If there is a dead-letter file or are open applications where things never came through to fruition that could be a good area to explore and follow up.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Cape Cod
Industry: Healthcare
Person(s) Interviewed: Director of Engineering
Interview Number: 35

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Between five and one percent.

15) Annual natural gas costs as a percent of annual operating expenses:

One percent or less.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes for the larger equipment. Smaller equipment depends on up front cost.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period; Benefit-cost ratio; Energy bill savings; Other.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Having some one knowledgeable filling out the paper work.

Please name one or two things about the program that did not work well for your company:

On the electric side, the energy efficiency engineers were dreadfully slow. I need to produce and I can't be waiting on others. It certainly makes me wonder about the qualifications of the company that is being used for the engineering analysis.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important. Energy costs are a high to medium priority for the customer.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

Efficiency or energy projects have to go through capital budgets.

Once equipment is about to reach the end of its useful life, that's when it will get approved. The company has an annual review process that starts in the spring and is approved by October for the following year. If a project has savings associated with it, it's an easier sell. This past year, the customer had a lighting project and new chillers approved. Originally the customer was supposed to receive incentives for the lighting projects but, as further discussed below, the customer no longer expects the incentives. The customer needs plans now for efficiency upgrades to start putting it through the system for approval for 2013.

There is a chain of review. The person interviewed comes up with a plan, submits it, then all the department managers review everyone's requests, sees which ones are the best, serve the needs of the patients and the facility, then it goes to corporate to see how much money they have to fund everything, they chop out a few more things, then a list of approved projects is provided in October for the following year.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

When purchasing new equipment, the customer considers the implications to its electricity bills and knew it was going to be a significant cost. They didn't buy the equipment based on how much energy it used; they based it on the quality of treatment that is provided to their patients. The decision was made solely on what is the best product for their customers. They knew the equipment would use a lot of electricity, but that was not a consideration in which purchase they made. Patient care first; energy second, or not at all.

Patient care is number one for the customer. But on the other hand, you have to have a facility or else you can't have patient care. There's got to be compromise there. The organization is very good at trying to improve the quality of the facility. The engineering department probably gets more than half of the capital funds available for the plant, equipment, and building, which are big ticket items.

Management is generally receptive to efficiency projects. A lighting project did not pass the corporate review last year. They knew it was going to save money, but they didn't have the funds for it. This year, the project was approved. They do give efficiency serious consideration.

The dollar amount is also considered. The efficiency program incentives allow the person interviewed to ask for less funding from corporate, which makes it more likely to pass approval. Corporate does ask about the rebates and incentives offered through the program and needs a number. As discussed below, the person interviewed does not have an incentive number available for projects because the engineering study has not yet been provided to the customer, so projects have more trouble receiving corporate approval.

The customer looks for shorter paybacks. The CEO stated that the customer is not going to do any projects that have a payback greater than 3 years. But the person interviewed stated that there aren't that many projects with a payback period of less than 3 years out there. Five to seven years is more typical, but are not likely to get approved. When money is tight, they look for shorter paybacks. If there is any money left over at the end of year, then they look at longer paybacks.

However, the company recently purchased air conditioners, and the particular brand purchased by the customer was chosen for its energy efficiency.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

The customer approached its PA to see if incentives could be received for the air conditioning equipment purchased. The PA also suggested that the customer complete an energy audit, which the customer allowed, but was mostly interested in the air conditioning incentives. The customer is working with, and still working with the PA, and are making "damn little progress and damn slow progress for rebates and stuff, and as far as I know I won't be getting a nickel. I put a lot of time and effort into it." The customer hasn't heard anything from the people that would be giving them the incentive, primarily because the engineering firm has not provided the engineering study.

The customer started the audit process in the middle of summer 2011, and as of March 2012, had not received the engineering study. The engineering company did a "preliminary audit: it was a couple of days of walking through the facility, but it wasn't a detailed study." That was the last the customer has seen or heard from the engineering company, unless the person interviewed calls them directly. When the customer calls, he's told the engineering company needs more information or that they're still looking into it, but nothing definitive. The customer is told that they need to figure out how much the old machines were using and compare that to how much the new machines are using, which doesn't seem that complicated to the person interviewed (who is an engineer). As far as the person interviewed is concerned, it's a waste of his time. "It doesn't take an awful lot of math to figure this stuff out. It doesn't take 9 months. So quite frankly, I'm not going to put my job in jeopardy to save my organization maybe a couple of dollars. It's not worth it."

He's called several times. The customer hasn't tried to call back the engineering company in months, and had no interest in talking to them at all anymore. The customer is unsure if the engineering company is overwhelmed and has too much going on, but the customer hears nothing. They usually have short conversations. They're either

overwhelmed or under performers. Dealing with the PAs and engineering company has not been difficult; it's the lack of response that upsets the customer.

The PA isn't the problem, but they're at the mercy of the engineering firm they favor. The PA initially tried to help the customer deal with the engineering firm, but over the last several months the customer "threw up his hands and said to hell with it."

The customer doesn't know how much the air conditioners are going to be incented for, and is getting tired of waiting. The person interviewed thinks it would take another year before they will get the process completed, and has gone ahead with purchasing the ACs without waiting for the PAs. "Their response is poor, and that's being kind." The person interviewed "doesn't have a clue if we'll get a nickel back, or \$1,000 back." The customer expected significant rebates when planning to buy the ACs, because its half a million dollars of equipment. The customer is annoyed that they still have not received the engineering study, and that any discussions have been verbal and there is nothing in writing to indicate the incentive amount.

All of the above information is specific to electric. The customer has been in conversations and had an audit with its gas PA but doesn't really have a lot of opportunities with gas measures just yet. The customer doesn't have any equipment that it would replace that would save copious amounts of gas. If the customer had the engineering study, they could at least see what the gas opportunities would be and could set aside capital dollars for it. The customer expects gas measures to be included in the engineering report. However, because of the lack of response from the engineering company, the customer is just going to go ahead with whatever gas measures that need to be done and won't consider the efficiency programs.

There could be small things that the customer does that could be incented through the programs, but the customer is not going to waste his time participating, unless his boss specifically tells him to participate. The person interviewed is just going to go ahead and buy the equipment. The person's time "is a hell of a lot more valuable than the service I'm getting from the people I'm dealing with."

"This is not unusual by the way. Thirty years ago we had programs similar to this, and I threw up my hands then, too. A \$70,000 grant to do stuff cost me \$200,000 of my time to get it done. So I said nope never again. But I tried it here, and it ain't working here any better than it did 30 years ago."

If the person interviewed is waiting on someone forever and ever and ever, that means he's not getting his job done. If he doesn't get his job done, he's going to have to work someplace else. He's not going to jeopardize his job for someone else's incompetence. Every month, the person interviewed sends status reports to management. Every month, the same projects are not going forward, which makes the person interviewed look bad.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

-
7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

The person interviewed has to look at the incentives and programs or else he would be negligent at his job. But he does not plan to aggressively pursue them. He just doesn't have the time to be chasing after people. That's the bottom line. If his boss doesn't insist that he participate, then he's not going to bother. "What's \$5,000? That's nothing for an organization of this size. It's a huge amount of effort."

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

A lighting project did not pass the corporate review last year. They knew it was going to save money, but they didn't have the funds for it.

The new healthcare plan could affect how much money the customer has to put into the building.

The facility is allotted only so many dollars, which are determined by administration of the financing.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

The economy will definitely affect efficiency as new healthcare policies take effect. "We give that very serious consideration because we're going to get reimbursed significantly less, which means we're not going to be able to replace aging equipment for new more efficient equipment. Those things are brought up at almost every meeting; we have to be prepared. Every healthcare organization is giving it serious consideration. We have to be able to pay the bills and take care of the patients. If the more efficient equipment has to wait because we don't have the funds, that's the way it is. The better care we give, the better reimbursement we get. We're going to go with the best possible medical equipment we can get to get the best possible outcomes we can get for the patient so we can get reimbursed for a higher rate." They expect to get millions of dollars less than they got before. It's a lot of money. "People are very weary, so they're going to keep money in their pocket so we can get through. If something breaks, then we'll fix it if we have a dollar in the bank." Management is trying to take care of things now while they have the money, and are preparing for the storm.

Barriers to Participation

A. Customer Barriers

- a. Customer's financial limitations
- b. Customer's competition for capital

Yes. A lighting project did not pass the corporate review last year. They knew it was going to save money, but they didn't have the funds for it.

- c. Economic downturn



Yes. Customer is definitely affected by the economy and healthcare policies.

- d. Corporate review and approval process

No.

- e. Company distrust of new technologies

No.

- f. Company convinced it has done all it can

B. Program Design & Administration Barriers

- a. Insufficient incentives

Maybe. The person interviewed seemed to think that participation would not save the customer much money, especially compared to the opportunity cost of the time required to participate.

- b. Insufficient marketing and outreach

No. Customer was well aware of the programs.

- c. Transaction costs

Not really. More the responsiveness and timing.

- d. Responsiveness and timing

YES. The customer was very upset that the engineering company took so long to get back to them, and will likely not participate again because of it.

- e. Limited measures offered

Not really.

- f. Programs not tailored to customer's unique needs

Not really.

- g. Policy Issues (Opt out of SBC)

No. Likes the SBC idea.

- h. Other (note)

Other Comments

The programs should be changed to provide a faster response. It's not rocket science to figure out how much energy equipment uses or saves. "In a matter of days, I should have an answer as to how much the new equipment is going to cost, save, and be incented for. The money has been paid into the system, and if that's what it's for then I'll try to do my part." "I like the idea that we all put into this little kitty and have the opportunity to get some money back."

The PAs should make it easier to see how much the programs are going to benefit the customer. “Don’t make me wait 9 months to tell me nothing.” Make it simple for the customer and the engineering company. It’s not worth the effort.

The PAs seem to be on top of things and that worked well. They were clear and filled out all the appropriate stuff. Then it went over to the engineering firm and that’s where everything fell apart. The reps are in tune with the programs and what the customer wanted to do, but that’s where it stops.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston
Industry: Retail
Person(s) Interviewed: Regional Energy Manager
Interview Number: 36

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Not indicated.

15) Annual natural gas costs as a percent of annual operating expenses:

Not indicated.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return, payback period, benefit cost ratio, and energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Ease of filling out the applications.

Please name one or two things about the program that did not work well for your company:

The time to receive the incentive.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Yes.

Predetermined Interview Questions

1. How important are energy costs to your company?

Very important; this priority is communicated from the top down.

2. Please describe the decision-making process that your company undertakes to decide whether to implement an energy efficiency measure.

When a store is about to be built or remodeled, the design managers sit down with the electric, HVAC, and refrigeration experts and determine what energy efficiency upgrades make sense for the space. As early as possible, the interviewee, who is the liaison between the utilities and the company on efficiency, reaches out to the appropriate utility to determine what incentives are available. The incentive is used to calculate ROI for the project. After reviewing the analysis provided by the design managers, the interviewee makes the call on whether to proceed with the measures. The interviewee takes into account her time and effort when determining the measures to proceed with. If a measure offers only a marginal return, but will take a lot of her time and effort, it may not be worth it. Also, she manages stores from Virginia to Maine and is responsible for efficiency across that entire territory.

3. What criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facilities?

The extent to which it can save the company money on their energy usage.

4. Please explain why the company chose to participate in the Massachusetts energy efficiency programs.

Reduced energy costs. The company does have a department in charge of sustainability, but these projects are not the responsibility of that department.

5. How well did the representative of the energy efficiency program administrator understand your company's interests and needs?

The electric program administrators are pretty good; the company has had good relationships with these folks. They have received rebates and incentives from the electric program administrators, but no audit or technical assessment has been conducted (the company has its own engineers to do this).

The company has not heard from the gas companies, though in talking with its electric program administrator, gas programs did come up once.

6. Did your company decide not to implement any efficiency measures that were offered through the energy efficiency programs?

The company drives the boat in terms of which efficiency measures to install. Most of the focus has been on lighting, HVAC and refrigeration, with the biggest savings coming in refrigeration measures.

7. Do you plan to participate in Massachusetts energy efficiency programs in the next three years?

They hope to but it depends on what they will be doing and the ROI of the projects.

8. To what extent do budget limitations pose a barrier to your company's participation in energy efficiency programs?

The interviewee cannot say. This is the responsibility of the design managers.

9. To what extent do financing limitations pose a barrier to your company's participation in energy efficiency programs?

Financing has not been used yet. The interviewee would have to look into this further with her director to determine whether the company would be interested in financing.

10. In general, how does the current state of the economy affect your interest and ability to participate in the energy efficiency programs?

It affects it. They have to make sure that revenues always offset the costs of any energy efficiency improvements they are making.

Barriers to Participation

A. Customer Barriers

- a. Customer's financial limitations

Not sure.

- b. Customer's competition for capital

Not sure.

- c. Economic downturn

Yes.

- d. Corporate review and approval process

Yes.

- e. Company distrust of new technologies

No.

- f. Company convinced it has done all it can

No.

B. Program Design & Administration Barriers

- a. Insufficient incentives



No.

- b. Insufficient marketing and outreach

Yes, in that they have not heard about gas opportunities.

- c. Transaction costs

Yes, in that this is factored into ROI.

- d. Responsiveness and timing

Yes, must align with construction of new stores or remodeling of existing stores.

- e. Limited measures offered

No.

- f. Programs not tailored to customer's unique needs

No.

- g. Policy Issues (Opt out of SBC)

No.

- h. Other (note)

Other Comments

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Western Massachusetts
Industry: Restaurants & Lodging
Person(s) Interviewed: General Manager
Interview Number: N/A: only provided questionnaire

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

One percent or less.

15) Annual natural gas costs as a percent of annual operating expenses:

One percent or less.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

No.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

No.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Not aware of any.

Please name one or two things about the program that did not work well for your company:

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

I have no information about any electric or gas efficiency programs.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Boston

Industry: Office

Person(s) Interviewed:

Interview Number: N/A: only provided questionnaire

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

Twenty percent or greater.

15) Annual natural gas costs as a percent of annual operating expenses:

Between ten and five percent.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Benefit-cost ratio.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Enhanced modeling of building

Please name one or two things about the program that did not work well for your company:

Inclusion conditions tied to rebate.

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe.



**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Central Massachusetts
Industry: Heavy Industry
Person(s) Interviewed: Plant Manager
Interview Number: N/A: only provided questionnaire

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

One percent or less.

15) Annual natural gas costs as a percent of annual operating expenses:

One percent or less.

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Payback period; energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, prior to the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Please name one or two things about the program that did not work well for your company:

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe.

**Survey of Commercial and Industrial Customer Perspectives of
Massachusetts Energy Efficiency Programs**

Interview Notes

Region: Cape Cod

Industry: Heavy Industry

Person(s) Interviewed: Associate Manager, Facilities/Project Engineer

Interview Number: N/A: only provided questionnaire

Key Questionnaire Responses

Note: question numbers correspond to the order in which questions are asked in the questionnaire.

4) Approximate number of company employees located in Massachusetts:

Greater than 50.

5) Building ownership:

Owned.

13) Annual electric costs as a percent of annual operating expenses:

n/a

15) Annual natural gas costs as a percent of annual operating expenses:

n/a

16) When purchasing new equipment, does your company consider the efficiency with which that equipment consumes energy?

Yes.

17) If the answer to question 16 is yes, what criteria does your company use to determine whether to purchase equipment that is relatively energy efficient or to undertake energy efficiency improvements to your facility?

Internal rate of return; Payback period; Benefit-cost ratio; Energy bill savings.

18) Prior to being contacted for this interview, were you aware of the energy efficiency programs offered by your electric and gas utilities?

Yes.

20) Has your company ever participated in the energy efficiency programs offered by your electric or gas utility?

Yes, within the past three years.

21) If your company has participated in the energy efficiency programs offered by your electric and gas utilities within the past three years:

Please name one or two things about the program that worked well for your company:

Contractor was familiar with the reimbursement process and coordinated the majority of those activities.

Please name one or two things about the program that did not work well for your company:

n/a

22) Based on your current knowledge of the efficiency programs offered by your electric and gas utilities, does your company plan to participate in these programs within the next three years?

Maybe.