Beyond Incentives: Driving Natural Gas Efficiency in the C&I Market through Process Management

Paige Knutsen, Franklin Energy Services, LLC Rick Pettibone, Franklin Energy Services, LLC Tom Syring, Franklin Energy Services, LLC

ABSTRACT

Creative ideas are often necessary to achieve high savings goals in an environment of low-cost natural gas and skeptical customers. Franklin Energy Services, LLC, through its administrative and implementation contracts with utilities around the country, has developed a strategic engagement model that leads to major natural gas efficiency projects within the large Commercial and Industrial (C&I) customer market.

The crux of the model is moving the program beyond providing direct rebates and towards providing an expert extension of customers' energy management teams—managing energy efficiency projects from identification through to completion. Providing customers with dedicated expertise for managing energy-savings projects overcomes the barrier of a customer's lack of time and resources, and leads to the completion of major projects that might otherwise be shelved. This model functions within several specialty programs designed for the large C&I market: Gas Optimization Studies, Engineering Studies, a Competitive Bid Program, and Staffing Grants. In all four programs, program staff assist large C&I customers in the identification and implementation of energy efficiency projects. The starting point is developing a relationship with the customer, and only then moving on to identifying and prioritizing efficiency projects, assisting with project management, and finally providing financial support. These programs and processes target a utility's largest manufacturing, healthcare, hospitality, and commercial facilities.

Focusing on two utilities with whom Franklin Energy works, this paper will present the evolution of a program from a standard provision of rebates to process management. Readers will gain knowledge of lessons learned during this program transformation and from several examples of this program model's success.

Introduction

Franklin Energy Services, LLC implements energy efficiency programs for utility clients throughout the U.S. In 2010, Franklin Energy was selected as the portfolio administrator and implementer for two large metropolitan natural gas utilities in the Midwest. The natural gas components of the efficiency legislation were new to a state where electric efficiency programs were well into their third year of implementation.

In light of the tremendous and immediate success of the region's electric efficiency programs, similar success was anticipated for the natural gas programs. As a result, the initial staffing plan was inadequate to deliver the legislated savings. Fortunately, while the implementation contractor, Franklin Energy, was contracted to deliver specific annual savings, the Utilities were legislated to hit a three-year goal. The portfolio level goals for each utility had

been developed to hit the overall three-year goal providing flexibility across years in that any savings not realized in any given reporting cycle could be rolled over into the next cycle, thus increasing (or later decreasing) the subsequent year's targets.

The first annual savings cycle served as an important learning experience for both the utilities and Franklin Energy. The initial program launch presented the Commercial and Industrial (C&I) customer market with a basic portfolio of programs to choose from – standard prescriptive rebates for items like steam traps, commercial kitchen equipment, furnaces and boilers; custom rebates for any efficiency measure not contained in the prescriptive program; and a Retro-commissioning (RCx) program jointly delivered with the local electric utility. While these program components were designed following industry best practices, they did not deliver what was needed in this market – efficiency solutions customized on a customer-by-customer basis by educated and experienced program staff who gained the customer's trust through small wins.

The C&I programs launched in the first program cycle with just 3.25 FTEs to cover nearly than 100 of the largest accounts and more than 60,000 total business customers. The C&I programs were staffed with a part-time Program Manager, two Energy Engineers, a part-time Project Coordinator and a part-time Trade Ally Liaison. Also worth noting, in 2010 the price of natural gas had dropped considerably from prior years. From 2006 through 2008, natural gas prices at the wellhead averaged \$7.07 per MMBTU with a peak of \$13.10 per MMBTU. Post-recession, however, gas prices from 2009 through 2011 averaged just \$4.14 per MMBTU, a boon for an end use customer but bad for efficiency programs where projects that quickly payback at \$7.07 per MMBTU are no longer attractive at \$4.14 per MMBTU in terms of simple payback (EIA 2015).

Program performance during the first program cycle was dismal. A new and inexperienced staff, a new market with low-cost natural gas, and a flat rebate structure left goal attainment well below legislated goals. In one territory, the C&I programs performed relatively well, achieving 85% of the goal largely due to the strong performance of the joint RCx program which had gained significant traction in the market during the electric-only program. In the second utility territory, the C&I programs achieved just 39% of the legislated goal.

The second year of program implementation began identically to the first. At the program cycle mid-point several interesting and impactful things happened – C&I program savings were still very low, just 30-50% of goal depending on territory, the first program cycle evaluations were finalized putting dramatic downward pressure on realized savings due to the negative evaluation results which were applied retroactively (NTG dropped from 80% to 43% in some programs). Additionally, a statewide Technical Reference Manual was established providing deemed energy savings for common efficiency measures, significantly impacting prospective program savings where a measure was planned at one (1) unit of energy savings, a TRM might deem savings at .9 units, or 1.1 units depending on the measure. While these changes presented many implementation challenges, each Utility was able to pull additional funds from the rate-payer pool to adequately cover the TRM-required changes in savings which resulted in a significant increase in budget available for program implementation.

Methods

At this point, urgent action was required to ensure that the C&I programs, and overall portfolio, would achieve the legislated three-year goal. As a result of the TRM and evaluation adjustments, we were fortunate to have additional budget to develop creative solutions. Acting quickly, investments were made in critical staff positions, a targeted customer outreach strategy was created to engage the largest customers, and program offerings were augmented. This provided a large customer list of customer with around 1,000,000 therms and higher. As described in greater detail below, these three strategies developed into a Process Management approach to energy efficiency program implementation.

Staff Investments

It was clear that the original staffing plan, just 3.25 FTEs for the C&I programs, would be inadequate to meet program goals. So, by the end of the third year of implementation staffing levels increased from 3.25 FTEs to 9.75 FTEs. While more is generally better to deliver any message, the skill set of a few of these hires was a critical element of success. Two additions to the program team were essential drivers of success – an industrial efficiency expert with more than 20 years of experience in utility efficiency programs and project management and a skilled sales engineer with a sophisticated background in closing sales. These two new staff added a level of experience and expertise that the programs had been lacking. As the energy efficiency industry as a whole has been growing rapidly since 2007, efficiency programs are often staffed with enthusiastic and passionate engineers with little field experience and no sales experience. Experienced field staff added tremendous value to the program offerings.

Targeted Customer Outreach

The logical next step was to identify our highest value customers for targeting by the program. The obvious targets were the Utility's Major Accounts – a class of customer with high natural gas usage, sophisticated systems, and local political influence that also had a direct utility relationship through their assigned Utility Account Executive. This list of nearly 100 customers was carefully analyzed for primary, secondary, and tertiary targets based on usage and the quality of the relationship with the account executives. The target market sectors were Manufacturing, Healthcare, Hospitality, Commercial Real Estate, and Private Education. With each of these segments, we created an image of the customer, a storyboard of their needs, and determined our best drivers of success within each segment. We then partnered with each customer's Utility Account Executive to gain entry to the customer and establish our own relationship of trust with these powerful actors.

At first, a simplistic approach was taken based on two factors: existing relationship and customer consumption pattern. This approach differs from some typical approaches based on high energy intensity. Initial meetings were coordinated with decision makers and were designed for information gathering only, particularly to learn more about those needs that aligned with program goals. A tenacious approach is often needed to determine the intersection of goals amongst diverse parties. With that, it is all important to focus on the customer, creating an opportunity for them to discuss perceived issues they have with their current utility costs and

consumption. A typical question might be, "If you could change one thing about your utility use or mechanical systems, what would it be?" These answers allow program staff to match products and services to each the customer's specific needs.

This approach is unique in the efficiency industry where customers are generally presented with a one-size-fits-all download of every available program offering. This approach, simply providing information, leaves the customer to process how the programs will benefit them and they frequently fail to see how the program can have a meaningful impact on their business. Taking the time to identify the perceived needs of the customer and match those needs to program offerings provides a direct line of sight for the customer into a program's specific application to their business and inevitably leads to project implementation, creating energy savings for the customer and goal achievement for the program. A win-win scenario.

Augmented Programs

With the right staff in place and high-potential customers identified, the last piece of the puzzle was program design. To better serve the needs of the market, Franklin Energy developed and deployed four highly specialized programs, targeted to the largest utility customers. Brief descriptions of each offer is below. While these programs are not necessarily unique in the efficiency industry, they have been extremely successful in garnering large-scale, cost-effective projects within the utility territories where Franklin Energy works.

In an effort to deliver significant savings quickly, Franklin introduced **Gas Optimization Studies**. The intent of the Gas Optimization Study program is to analyze a facility's steam, heating or process system to identify no- and low-cost efficiency measures that can be quickly implemented to achieve immediate savings or program "wins." The study program is based on established Retro-commissioning (RCx) processes and design, but instead of using a quality process, it relies on system tweaks. The Gas Optimization Study program is intended to deliver results – start to finish – within 4-6 months, in contrast to the RCx process of 12-18 months.

At the same time that the Gas Optimization Study program was introduced into the market, the **Competitive Bid Program** was designed and deployed to help qualifying customers revitalize large-scale natural gas energy-saving projects. This program gives customers the opportunity to obtain rebates to move "shovel ready" capital scale projects to completion. We recognize that standard rebate offerings may not provide the flexibility that some customers need to access increased rebates for special projects. The Competitive Bid Program balances customer's needs for higher rebates with the need for cost effective efficiency program savings. This program allows C&I customers to compete for the increased rebate dollars needed to implement qualifying natural gas energy efficiency projects. Submissions are ranked by cost-effectiveness and an engineering review of energy savings. In order to apply, a minimum level of energy savings must be achieved through first year energy savings. Competitive Bid recipients received rebates outside of the standard program provisions. This program was possible due to the evaluation and TRM based budget adjustments which provided ample budget support for larger project incentives.

The **Staffing Grant Program** was added as a targeted offering, focused on a utility's largest accounts. Under the Staffing Grant program customers compete for up to \$50,000 in grant funding to fund a project manager to guide previously identified, not-yet-implemented energy efficiency projects to completion. This Staffing Grant can: 1) fund a new full- or part-time

employee, 2) better leverage existing staff, or 3) enable a customer to select a consultant to manage, engineer and/or supervise the implementation of projects that otherwise would not be implemented due to constrained human resources.

As we worked with customers in the market, it became clear that while many customers have an appetite for improved natural gas efficiency, they lack the low-hanging fruit required to participate in the Gas Optimization Study Program or the "shovel ready" projects required to receive a Staffing Grant or submit into the Competitive Bid Program. These customers understand that their systems are prime for improvements, but lack the funds to explore the proper solutions. With that intelligence, Franklin Energy developed and deployed our **Engineering Study Program.** This program is designed to help utility customers undertake energy-efficiency upgrades that accomplish lasting, in-depth efficiency gains by quantifying the financial benefits as well as addressing the engineering challenges which internal resources cannot fully address. Incentives are available to offset the costs for the end use specific Engineering Study that evaluates a complex natural gas system for the purpose of qualifying the more efficient solution from a cost, savings and engineering standpoint. Study fees are paid in two parts: 50% upon the completion of the study and 50% upon implementation of the recommended project.

Process Management

What these three tools, investments in critical staff positions, a targeted customer outreach strategy, and augmented program offerings, Franklin Energy was able to implement a process management approach to utility efficiency program implementation. Process management is not simply answering the phone from a customer asking for a rebate on a new boiler. Process management is facilitating and developing a long-term relationship with a customer leading to an integrated approach to energy efficiency and business planning. It is a process that continues year after year. It is a partnership with the customer. Let's look at a partial definition from Wikipedia.

From Wikipedia, the free encyclopedia:

Process management is the ensemble of activities of planning and monitoring the performance of a process. The term usually refers to the management of business processes and manufacturing processes.

Key to the above statement, and a shift from traditional utility efficiency programs, is the *management of business processes*. In this case, program staff actively manage the integration of efficiency activities into the customer's business. We, as program implementers, position ourselves as the lead, identifying and confirming good projects, facilitating next steps, overcoming perceived barriers, and, in some cases, managing individual projects. We act as an extension of the customer staff.

Results

On a portfolio level, verified net savings quadrupled between the first program reporting cycle and the second, with the overall three-year legislated goals achieving nearly 150% of the legislated goals – all *under* budget. The C&I programs contributed significantly to the success of the entire portfolio (residential and commercial) during the three-year legislated cycle and have

positioned these programs for long-term success. While it is not uncommon for large natural gas efficiency projects to have long timelines, at the end of the first program year, there was no pipeline for future years. Through this we knew that we would need to identify quick savings opportunities in conjunction with larger projects. Fortunately, our investments in staff and the development of new program offerings, allowed for both of those goals to be achieved, while ensuring that future program years, beyond just the initial three-year cycle, would be secure.

The figure below shows the impact on verified net savings by quarter, by year. New staff were added in Q3 2012 with new program offerings added in Q2 of 2013.



Figure 1. Impact of staff investments and augmented programs on program goal attainment during the first three program cycles.

Programs in Action

To showcase these programs, and the process management approach, we highlight three key case studies below.

Case Study 1 – Industrial Food Processor

Prior to implementing a process management approach, this customer completed just \$2,100 in rebated energy savings projects through the Utility programs. Following the implementation of a process management approach, this customer has identified and/or implemented over \$1,400,000 in energy savings projects within two years. The following describes our approach and methods to achieve these results.

A key first step was the preparation for a face-to-face meeting with plant staff, coordinated through the Utility Account Executive. Prior to the meeting, program staff analyzed two years of monthly, weather-normalized gas consumption data. When walking into an initial customer meeting armed with this facility-specific data, we demonstrate our knowledge of each customer's energy use patterns and are able to pre-identify aspects of their energy consumption that may lead to potential efficiency projects. Examples might include: a peaky load relative to degree days highlighting a potential for heat recovery or a high base load can indicate the potential for process optimization

At this first meeting, a series of open ended questions help us to gain a better understanding of each customer's goals. Those questions often include: If you could change one thing about your energy consumption, what would it be? If you could change one thing about your process, what would it be? When making process changes, do you prefer working with a specific mechanical contractor, or do you perform the work internally? Can you describe your process, beginning to end? Questions like these get the customer talking about what's important to *them*. In these initial meetings, specific program offerings may not even be mentioned.

With this Industrial Customer, the initial meeting provided us with critical insights into their corporate energy goals and allowed us to tie program offerings into that goal achievement. The customer had tried to understand our programs in the past through basic web searches, but could not translate the information into an action plan. This customer even had potential natural gas efficiency projects identified but the simple paybacks did not meet the corporate requirements. Getting the customer to talk about their situation and needs was the key at this stage of process management.

We committed ourselves, as a program and extension of their staff, to take a leadership role and assist them throughout the process. The customer provided us with goals and objectives and collectively we agreed to a plan. One tabled project, that had been submitted over the past two corporate budget cycles but had failed to receive capital funding, was selected for initial pursuit. This project was coupled with a custom incentive eligible through our Competitive Bid Program. The key element in making this project successful was our ability to assist the customer in the preparation of this incentive package. This included filling out forms, reformatting the proposal with additional engineering details, discussions with the manufacturing engineer and reviewing all the documents face-to-face with the customer. Even more important, and critical with all customer communication, we agreed on the date by which this would be complete. This assistance demonstrated to the customer a true partnership and teamwork that they could depend on. Following the approval of the financial incentive for this project, the customer was able to present the project to upper management with an attractive rebate and payback. The customer's Engineering Project Manager now had the confidence to sell the project up the chain and receive corporate budget approval.

The above process significantly expanded the customer's vision of what could be accomplished in a relatively short period of time. Fortunately, the Engineering Project Manager also had an in-depth knowledge of the plant process and knew that additional savings were possible, even if they didn't know exactly where the savings were. The customer now had the appetite to do more, so we offered a service which would provide a detailed study of their overall process with recommendations for savings, both low-cost and capital, through the Gas Optimization Study Program.

The customer took advantage of this program with three days spent on-site reviewing the overall process and potential energy saving opportunities. The study and follow-up identified nearly \$1,000,000 in capital projects with an estimated savings over 465,000 net annual therms that had the added bonus of solving numerous issues the facility staff had faced for years. A true win-win. A Gas Optimization Study seeks to identify opportunities where a customer has suboptimal energy management practices. In this particular case, our Industrial Customer was pre-heating outside air, then cooling the air to 40°F, then running that through a desiccant wheel and then additional cooling. Not only was the pre-heating occurring during the space heating months but pre-heating was occurring throughout the summer as well. The purpose of the pre-heat coil was to prevent the cooling coil from freezing during winter months as it contained chilled water. Our Gas Optimization Study Program provided the engineering expertise to design a new process flow that eliminated the need for pre-heat and quantified the energy savings following retrofit.



The figure below highlights this industrial customer's program activity over time. Our Process Management approach began in mid-2012.

Figure 2. Case Study 1 – Industrial Food Processor – Program Participation Pre- and Post-Process Management Approach

In summary, this customer was not active in the energy efficiency programs, having completed just 1 small project prior to Franklin Energy engaging on a process management level.

Since our more complete integration into this customer's energy planning process, they have saved more than 630,000 net annual therms and leveraged nearly \$1,000,000 in direct rebate payments.

Case Study 2 - Institutional Facility

Customers come in all shapes and sizes, and always with their own unique challenges. This case study explores the methods by which we implemented a process management approach with a large, politically influential customer with strict internal purchasing approvals involving multiple layers of management, legal department review, exhaustive vendor screening, and multiple bid requirements before any project is even presented for capital. Sometimes a customer can appear to be so large and complicated with so many barriers that we may give up on the customer unless they reach out with a specific need. Customers of this type typically place energy efficiency program staff at the same level as a vendor instead of as a partner in their energy needs. However, with the correct process management approach, these customers can also be turned into a program's most engaged, enthusiastic participants.

Often these very large customers have some staff with great knowledge, but little capacity for additional work, even when the project is clearly a win for the organization. Asking customers to participate in utility incentive and rebate projects requires an additional commitment of time and a learning curve in terms of applications and required steps in the process. In addition, for some customers, the cost of the commodity is more important than the potential to reduce that cost through successful implementation of energy efficiency projects, or they may value reliability more than the cost or consumption of energy. To implement a successful process management program with a customer of this type, we need to identify key common goals which satisfy both party's needs.

Prior to implementing a process management strategy, this customer participated in the rebate programs with a few basic projects like steam trap replacements and pipe insulation. For a customer operating two large high pressure steam plants (each producing over 100,000 pounds per hour) we knew that much higher value projects exist. We started with a meeting with their Utility and Energy Manager to identify common interests and goals and strategically requested that we meet at one of their two main steam plants. Prior to the meeting we reviewed all past program activity, emails and notes from prior site visits. This review clearly showed the approach to the customer centered on program offerings. Within the files was a lack of information about customer energy use, boiler operation, steam pressures, operating issues, or any potential energy projects.

Historic gas usage was reviewed for their two main gas meters. A brief analysis of the load curve showed a significant base load during the summer for re-heat and domestic hot water. Winter months clearly showed a correlation to degree days for space heating. Just this simple billing analysis allowed us to speak to the customer on their terms, about their issues and challenges, and gain immediate trust.

During this meeting we were able to discuss with the customer their overall steam plant efficiency. This is where our industrial efficiency expert was invaluable. He was able to ask probing questions (do they have a feel for boiler losses, condensate losses, blow-down losses, standby losses and so forth) that a less seasoned efficiency program staffer may have missed.

This spurred a conversation that was of interest to both the customer and the program (identifying ways to improve their boiler plant efficiency) and effectively sold our new Gas Optimization Study Program, specifically a Steam Plant Optimization Study. The program contracted with a DOE-certified steam expert to provide this service to the customer. Once the customer understood the features and benefits of the program, and our ability to quantify all losses, the customer signed-up for the study.

The Optimization Study concentrated on the overall steam plant efficiency and the identification of low-cost energy savings measures which could be easily implemented by the customer. The study identified more than 200,000 net annual therms in low cost savings projects with a Return on Investment (ROI) of one-year or less with rebates.

Upon study presentation, we identified the customer's barriers to implementation, including: the preparation of requests for proposals, the selection of vendors, submission of engineering drawings, and internal engineering approvals – all prior to submission for capital. To overcome these barriers through program offerings, a follow-up meeting was scheduled. Their main barrier, their long internal approval process and bid structure, would not be feasible within the program's time frame. In order to overcome this barrier and meet the legislated program deadlines, the program committed to complete project management – from bid to contracts to commissioning – in order to save the customer more than 140,000 net annual therms. In addition, a total maximum out of pocket cost was established to allow the customer to bypass their typical procurement process. This agreement is atypical for efficiency program implementation but with our expert staff, we were now qualified to do this type of work.



Figure 3. Case Study 2 – Institutional Facility – Program Participation Pre- and Post-Process Management Approach

This project clearly put our program far beyond that of issuing rebate checks. Total project management was in our hands. Everything from system design to engineering drawings to commissioning was managed by the program. In the end the project was completed on time and to the great satisfaction of the customer – they were absolutely thrilled. This was a unique and valuable offering that proved well worth the demands put on the program, as we won the customer's trust and established a long term relationship that moved a very large and complicated customer from low program participation to one that has maximized their potential direct rebate payments for the next two program years. This project opened the door for a

program role on their Green Team where we will work together to meet their energy efficiency goals over the next 10+ years.

Case Study 3 – Commercial Facility

Large specialized commercial facilities that require stringent space conditioning set points represent a challenge for many demand side programs. Traditional energy savings strategies do not apply due to temperature requirements, humidity control and tightly controlled outside air restrictions. One such customer explored in this case study, in order to preserve the integrity of their holdings, must regulate exact temperatures, humidity levels and ventilation specifications far above a typical facility. These concerns take precedence over energy efficiency considerations.

This customer initially became involved with the programs through standard prescriptive rebates. Energy savings achieved with these projects were very small compared to the overall energy use of the building. Boiler burner tune-ups were performed in 2012. Commercial kitchen equipment upgrades were installed in 2013. Combined, these project saved less than 1% of the annual usage for the building. Despite the small size of these projects, working with the customer established a base level of trust, which is critical in moving forward with a process management approach. Through experience, facility staff learned to rely on the program to deliver as promised. Continued follow-up with museum staff yielded additional projects. Third-party vendors, facilitated through program staff identified leaking steam traps and uninsulated steam pipes delivering to additional savings.

Our ongoing relationship with customer staff led to discussions of potentially larger capital investments to improve energy efficiency. Heat recovery from the steam boiler exhaust stacks was identified as a project which could save a significant amount of energy with no impact on HVAC operations. For this, an Engineering Study was completed. A key feature of our process management approach was program staff coordination of this process, in partnership with the customer's selected engineering firm. Therefore, customer staff invested minimal time and effort.

The Engineering Study identified a heat recovery solution outside of the customer's financial payback requirements. This obstacle did not deter program staff. Working with the engineering firm and customer team, the program proposed an alternative project design that significantly reduced the project cost, achieved significant energy savings, and allowed the customer to meet its payback parameters. This creative technical solution would not have been possible without a close working relationship and a foundation of trust between the customer and the program. With this new project configuration, the simple payback was acceptable to the customer, but another issue arose – that of efficiency program deadlines. Custom rebate offers were scheduled to be cut in half within 4 months. This impending rebate reduction would again push the payback outside of the customer's acceptable range if the project did not complete in time. This customer did not have funds allocated for a project of this scope and securing funds would take months. Time would run out before equipment could even be ordered. The customer staff and rebate program staff worked together to make the case that this opportunity was too good to pass up and that it was in the customer's best interest to expedite the approval process. Strong technical support, attractive return on investment, and a limited time offer persuaded the

customer's financial staff that an exception should be made and funding was approved. From a process standpoint it is critical to relate to the customer on their terms, including: how funding will flow, when incentive checks will be issued, and how program staff can make tracking and managing the project easy.

Equipment orders were expedited, program staff were involved in weekly construction meetings, and the project was completed on time. This project increased the customer's overall boiler thermal efficiency by 5.6%, saving over 88,000 therms annually. Afterwards customer staff called to personally thank the rebate program staff for helping move the project forward. In the same conversation, the customer wanted to know, "What are we going to do next?"



Figure 4. Case Study 3 – Commercial Facility – Program Participation Pre- and Post-Process Management Approach

Conclusions and Recommendations

Large-scale Commercial and Industrial energy efficiency programs need to be designed with the end in mind. In order to achieve the high savings goals of our utility clients, we focused on the key accounts – or larger C&I customers. For that specific target market, we developed a set of program offerings that will meet the needs of a variety of customers. And most importantly, we develop relationships with those customers, identify the unique needs of each customer, and offer specific solutions from among our program offerings that meet those unique needs. This process management approach relies on staff expertise, including the "sales ability" to develop those close relationships, gain trust, and usher projects through to completion by acting as an extension of the customers staff. Staff expertise, in the form of the right number of people with the right experience and skills, is an essential component of this program approach.

References

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