

A TEAM APPROACH TO GENERATING ENERGY EFFICIENCY IN COMMERCIAL MARKETS

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Abstract / Introduction

This paper incorporates both program design as well as the human resource element of implementing energy efficiency programs. The organizational structure is an important factor to successful implementation of a design. The Focus on Energy, Commercial Sector has developed a team approach that is paying dividends in generating cost effective energy savings for Wisconsin's public benefit program.

The Commercial Sector of Focus on Energy saved more than 40 million kWh, 8,000 kW, and 600,000 therms in energy in the last fiscal year (July 1, 2003 to June 30, 2004). Our program generates \$10 of benefit for every \$1 of costs for the State of Wisconsin.

Commercial businesses can be categorized into about 8-10 core types of businesses (such as office, retail, restaurant). Usage data from the Environmental Protection Agency (EPA), the Department of Energy (DOE) and other sources can quickly show the segments that are more energy intensive than the average commercial building. In addition, there is research that documents the energy savings potential within industry segments and end-use technologies. For these reasons, we decided to target our proactive efforts to three main market segments – Grocery Stores (including convenience stores), Hospitality (restaurants and lodging), and Health Care (hospitals, clinics, and nursing homes). Proactive initiatives include: Refrigeration in the grocery segment, drives in the health care segment, pools and pre-rinse sprayers in the hospitality segment.

Too often program designers do wonderful work with the design, but the implementation becomes cumbersome and the program never lives up to the potential that we dreamed about in the design process. Our Commercial Sector developed an implementation management system using a team matrix to focus in on specific initiatives within specific market segments.

Implementation of energy efficiency programs is an art. Good design of programming is important, but incorporating the human element into the implementation plan is at least as important. Organizational behavior principles of team-building are being used successfully in the Commercial Sector of Focus on Energy. Other program managers in the country could benefit from learning about our approach to implementation.

Commercial Sector Program Design

In July of 2004, the administrator introduced major changes to the structure of the business programs. The Commercial Sector was the combination of the small business, new construction and existing buildings programs. This provided an excellent opportunity to change other aspects of the program delivery as well as reduce administrative time and enhance customer and ally activities. There were four key aspects to these changes:

- 1) Create and communicate a mission for the commercial sector;
- 2) Make changes to the customer incentive plan and process;
- 3) Identify specific target market segments based on energy intensity;
- 4) Create new initiatives based on technologies with large opportunities for energy efficiency.

Vision and Mission Statements

The starting point was for us to establish Vision and Mission Statements that corresponded to the policy of the overall Focus on Energy plan and State energy policies. These statements help in building the foundation for the details of our program design and the implementation of this design by our energy advisors in the field with customers and allies.

Vision Statement

Commercial businesses will invest in sound energy efficiency products and services, and program allies will offer and sell sound energy efficiency products and services that will result in safe and efficient commercial buildings, sustained economic growth, and a healthy environment for current and future generations.

Mission Statement

The Commercial Sector of Focus on Energy creates and implements energy efficiency program offerings and services to commercial business owners/managers. In collaboration with commercial businesses, program allies, utilities, other sector/program offerings, the residential administrator, non-profit organizations, and government, this sector:

- Connects and supports the customer-contractor interaction in regards to products and services that increase the energy efficiency of commercial buildings in Wisconsin;
- Promotes improvements to buildings that enhance comfort, productivity, and health of the employees and customers that work or do business in commercial buildings;
- Facilitates the process of increasing the energy efficiency in commercial buildings from project identification to final installation;
- Enhances economic development, reduces operational costs, and makes Wisconsin businesses more competitive.

Changes to Incentive Offerings

There were incentive design changes needed. Previously, we were spending all of our time responding to incoming requests – not because of successful marketing, but because our incentive process was so cumbersome. It took many hours to process project incentives, or grants as they were described. Customers, or allies, would complete long grant applications and apply for funding. There were no guarantees of grant dollars for the project and no indication as to the level of funding (other than a \$40,000 per project maximum). Although this design may make sense from a freeridership standpoint, it confused the market and customers and allies did not embrace our programs.

Our solution was to develop a prescriptive list of retrofit projects and corresponding incentive amounts for each measure that would fit the simple one-for-one type change out. In addition, we structured a custom incentive plan based on published incentive rates per unit of energy saved. The form was a three-part, one page application that was easy to use and understand. It was also easy to process for our staff. This reduction in administrative time per project was necessary in order to move forward with proactive efforts.

There are prescriptive incentives for simple lighting retrofit projects including compact fluorescent light bulbs and fixtures, T12 to T8 fluorescent ballasts/fixture, LED exit signs, high-bay fluorescent replacing HID, and pulse start metal halide. The custom incentives are calculated using the electric usage savings (kWh) and demand savings (kW) at a rate of \$0.01/kWh plus \$30/kW for lighting projects, \$0.02/kWh plus \$40/kW for lighting projects with controls, and \$0.03/kWh plus \$45/kW for non-lighting electric saving projects. We have a similar structure for HVAC retrofit projects which include incentives for ENERGY STAR® furnaces and programmable thermostats, high efficiency boilers, infra-red heaters, and controls. Custom projects are awarded incentives based on natural gas savings (therms) at the rate of between \$0.20 and \$0.30 per therm depending on efficiency levels.

Targeting Specific Market Segments

Due to our streamlined incentive process, our energy advisors found time available to spend on proactive efforts. However, we needed to ensure that we spent this time in the right way. Concentrating our efforts on energy intensive market segments and key technologies within those market segments was the direction we took. A review of research on energy intensity and market potential of energy efficiency revealed excellent opportunities in grocery stores, hotel/motels (lodging), restaurants, and healthcare facilities. Below are some of those findings.

Grocery Stores are energy intensive due to the amount of refrigeration required in the facility. According to the baseline study, there are 4,072 groceries (sic code 54) in Wisconsin. This segment uses about 1,385 GWh of electricity and 21 million therms in energy per year. The total energy savings potential for grocery stores is 9.2% for electricity and 6.4% for natural gas. The largest potential is associated with refrigeration equipment – more than 62 GWh potential.

Restaurants are energy intensive due to the amount of cooking equipment, water heating, lighting, and ventilation required within these facilities. The baseline study gives the following information: 10,562 establishments (sic code 58) and uses about 1,508 GWh and 10.8 million therms. The total energy savings potential for restaurants is 16.4% for electricity and 2.6% for natural gas. The largest potential is associated with lighting – more than 159 GWh potential.

The lodging segment is energy intensive due to the amount of lighting and hot water use required in the facility. According to the baseline study, there are 3,647 lodging establishments (sic codes 70 and 805) in Wisconsin. This segment uses about 800 GWh of electricity and 78 million therms in energy per year. The total energy savings potential for lodging facilities is 19.4% for electricity and 2.8% for natural gas. The largest potential is associated with lighting – more than 120 GWh of energy savings potential.

Health Care facilities are energy intensive due to the requirements for fresh air with their space conditioning in the facility and long operating hours. According to the baseline study, there are 11,654 health care facilities in Wisconsin. This segment uses about 1,626 GWh of electricity and 124 million therms in energy per year. The total energy savings potential for health care facilities is 13.0% for electricity and 4.8% for natural gas. The largest potential is associated with boilers – more than 5.7

million therms potential. In addition, there are over 38 GWh of potential energy savings for space cooling.

Three teams were set up to establish strategies, plans, and tactic activities to generate significant amounts of energy savings in these segments. The teams were formalized as: Grocery Team (includes convenience stores), Hospitality (lodging and restaurants), and Healthcare (includes hospitals, nursing homes, and clinics).

Team Initiatives

Each of the three teams has developed their own set of initiatives over the past year. This is where the real activity takes place. The initiatives are the technology where the team feels that there are significant energy savings opportunities and a good chance that customers, when they learn of the opportunities, will implement the measure or practice. The initiatives of each team include:

Grocery Team

- Anti-Sweat Heater control incentives
- Energy Policy and Implementation Memorandum of Understanding initiative
- Supermarket Simulation Tool initiative
- Online Learning – Virtual Tour

Hospitality Team

- Pre-Rinse Sprayer Direct Installation and Distribution
- Utility Promotion to Restaurants
- Guest Room Energy Management initiative
- Pools training
- Water heating upgrades and conversion initiative
- ENERGY STAR Kitchen Equipment
- Direct Installation of Showerheads & Aerators in Hotels

Healthcare Team

- VFD initiative
- Efficiency Bidding program
- Water heating upgrades in Nursing Homes
- High potential / large project feasibility
- Chiller replacement initiative

Each of these initiatives is in various stages of development. The later section of this paper, however, describes a few of our highest potential initiatives and early successes.

Human Resource Changes

Program design of energy efficiency programs usually becomes a work in progress or continuous improvement. Regardless of the terminology, it should be recognized that the structure of the organization also needs the same type of review and scrutiny. A review of Organizational Behavior concepts provided some fresh ideas on the necessary re-structuring of the Commercial Sector program.

Organizational Behavior (OB) is the study of individuals and groups in organizations. The table of contents of a OB textbook included topics such as corporate culture, planned change strategies, high performance organizations, team building, decision-making process, motivation theories, managing conflict, communication, goal setting, and job design among others. We needed to create an organization that matches the human resource element to our program implementation design and plans.

The goal of incorporating OB concepts is to create a team that can perform better than the sum of the individuals working separately – a high performance work team. Our resources are too limited, our market too broad, and the opportunities too vast, to not seek out the most effective and efficient methods of implementing the program design.

High Performance Organization/Teams

A high performance organization is created to bring out the best in its members to produce sustainable results. Some of the elements in a high performance organization include employee involvement, self-directed teams, integrated technologies, organization learning, and total quality management. Schermerhorn, Hunt, and Osborn in the textbook Organizational Behavior suggest the following in how to create a high-performing team:

- Communicate high-performance standards.
- Set the tone in the first team meeting.
- Create a sense of urgency.
- Make sure members have the right skills.
- Establish clear rules for team behavior.
- As a leader, model expected behaviors.
- Find ways to create early “successes.”
- Continually introduce new facts and information.
- Make sure members spend a lot of time together.
- Give positive feedback and reward high performance.¹

Our first meeting was in October of 2003. In this meeting, we outlined the new team approach, we described the goals that we needed to meet by the end of June 2004, budget dollars and allocations were explained, challenges were highlighted, and a call to action was made to create a sense of urgency. The group broke into teams in the afternoon and brainstormed the types of activities that each team could take on to create both immediate energy savings project implementation (to hit this year’s goals) as well as developing new activities that would work towards influencing market players over the long run.

Motivation Theories

Probably the best-known motivation theory is that of Maslow’s Hierarchy of Needs. In this theory, there are five levels of human needs that individuals desire to meet. Maslow suggests that individuals need to meet the most basic need first before being able to move on to the second level, then third and so on through the fourth and fifth. These levels include 1) Physiological (i.e. food, water, and sustenance); 2)

Safety (the need for security, protection); 3) Social (need for love, affection, sense of belonging); 4) Esteem (need for respect, prestige, recognition); and 5) Self-Actualization (the need fulfill oneself, use abilities to the fullest).

There are other motivation theories as well such as Alderfer's ERG Theory, McClelland's Acquired needs Theory, Vroom's Expectancy Theory, Adams' Equity Theory, and Herzberg's Two Factor Theory. The one I like best and try to keep in mind when establishing methods of motivating individuals and teams is the Two Factor Theory. Herzberg identified two separate lists of factors from his research that cause job dissatisfaction (he called "Hygiene factors") or job satisfaction (called "motivator factors").² What is interesting is that the opposite of job "dissatisfaction" is not job "satisfaction" but rather "not dissatisfied". The same goes for job satisfaction; the opposite is "not satisfied" with ones job.

Hygiene factors include things like base salary, supervision, relationship with peers, status, security, and working conditions. Motivator factors include achievement, recognition, work itself, responsibility, advancement, and growth.³ For instance, if a team member is happy with the responsibility they have, this person will be "satisfied" with his/her job (i.e. motivated). If this person is happy with the supervision, they will be "not dissatisfied" with their job (on this aspect).

In our new team approach, and to motivate our team members, we wanted to incorporate things like achievement, responsibility, recognition, and growth. An example of providing an opportunity for various team members is the element of assigning an Energy Advisor to a specific initiative. This may seem like a very simple and common sense thing to do, but full responsibility for the research, input to program design, outreach, and implementation was never really handed off previously. In fact, the past would have each energy advisor trying to be aware of all initiatives and "sell" these ideas to customers that either were assigned to him/her or had contacted our program through ally involvement. The energy advisor was never responsible for anything other than achieving his/her assigned energy savings goal by the end of the year. They were operating as an individual on an island fending for themselves pretending to be on a team.

The Five Stages of Group Development

About three months into our team approach, we set up a meeting where each segment team (grocery, hospitality, and healthcare) would give a presentation of the successes of the first six months of the fiscal year and how they would achieve the energy savings goals over the next six months. This is when the first sign of success of the team approach hit me. After announcing that each team would give this presentation, a number of people filed into my room and said, "This team thing will never work!" I was ecstatic. Finally, after three months, the teams were moving into the second stage of development.

When a new group is formed, there are five stages to the development of the group including (in this order):

1. Forming (getting to know each other);
2. Storming (dealing with tensions and defining group tasks);
3. Norming (building relationships and working together)
4. Performing (maturation in relationships and task performance);
5. Adjourning (disbanding and celebrating accomplishments).⁴

As managers of energy efficiency programs, we need to set the stage for continuous improvement. As our program matures, we should be able to deliver more energy savings and higher levels of market effects given the assumption of level funding.

Continuous Improvement

In the book “The Improvement Guide: A Practical Approach to Enhancing Organization Performance”, the authors specify five key activities that can be used by leaders to drive, manage, and support the organization toward an aim of building a system of improvement in an organization:

1. Establishing and communicating the purpose of the organization;
2. Viewing the organization as a system;
3. Designing and managing a system for gathering information for improvement;
4. Conducting planning for improvement and integrating it with business planning;
5. Managing individual and team improvement activities.⁵

Our energy efficiency programs teach customers that their building’s energy using equipment (HVAC, lighting, electrical, building envelope, etc.) operate together as a system. The same can be said for the way our organizations work to deliver these programs to the public. The activities of the organization are interdependent and have to be considered as a system. The authors of the book go on to say, “This approach protects against suboptimization from independently managed individual improvement efforts”.

Results of a Team Member Questionnaire

One year after the start of our new team approach, we solicited input through a team member questionnaire. Table 1 shows the questions on the survey form. The two core objectives of the questionnaire included:

1. Were team members more motivated/satisfied using the team approach compared to the previous method focusing on individual activities?, and;
2. Identification of what members viewed as disadvantages and advantages of the team approach.

Table 1: Team Questionnaire

The table below has a list of job content factors. This short survey seeks to understand if the work being performed by individuals within the team approach is more or less satisfying to team members than the work performed when the approach was more individualistic.							
	Less Satisfying			Same		More Satisfying	
Amount of responsibility	1	2	3	4	5	6	7
Sense of achievement	1	2	3	4	5	6	7
The work itself	1	2	3	4	5	6	7
Growth in my job	1	2	3	4	5	6	7
Recognition for a job well done	1	2	3	4	5	6	7
Please list any disadvantages to the team approach:							
Please list any advantages to the team approach:							

Table 2: Results of the Survey

Number of Respondents	1	2	3	4	5	6	7
Amount of responsibility	0	0	0	4	2	2	0
Sense of achievement	0	0	0	2	3	3	0
The work itself	0	0	0	3	4	1	0
Growth in my job	0	0	0	2	3	2	1
Recognition for a job well done	0	0	0	4	3	1	0
TOTALS	0	0	0	15	15	9	1

None of the surveys returned had even one “less satisfied” response and 62.5% of the answers were 5 or higher which indicate that the team member is more satisfied (or motivated) in those categories since the team approach was instituted.

Team members had interesting responses when identifying the disadvantages and advantages of the team approach. These answers exhibit the feelings behind the numeral answers above.

A key theme in the disadvantage section revolved around the sense of fairness to the contributions of some of the members on the team or the distribution of the work. The comment, “Not all team members seem to share the same sense of accountability” is a good example of this theme. A couple people responded with the fact that our focus narrows in the teams, which could lead to “too single minded of an approach”.

One other disadvantage mentioned is that our approach may have created “too many ideas or thoughts on the table (which) can create no decision”. This could be related to the “buffet effect” where team member eyes are bigger than their stomachs (or ideas are more than the time available). One member said the result of this was “...there’s too much to do and not enough advisors to handle it...”

There were twice as many advantages mentioned as disadvantages. A core advantage mentioned several times was that the teams were able to build off successes. One person wrote, “You can really leverage successful programs versus keeping to oneself.” Communication was also a common theme. All team members are able “to be on the same page”, “group meetings allow members to communicate better”, and “renewed enthusiasm and sense of direction is reinforced at each meeting”. Similarly, one coordinator offered that the team approach allowed for “more buy-in and opinions” of the team members. Getting “buy-in” is especially important when making wide sweeping changes.

There were some comments that seemed to conflict between disadvantages and advantages. One person said, “People don’t feel as pressured to get things done because there are more people involved” (disadvantage) where another wrote, “Some people feel more of an obligation to help the team and not let others down when a goal is not achieved”. Although, when you really think about it, both of these comments can be true at the same time. There are team members that step up to the challenge and take on action items whereas others may hang back and not get as involved in team activities.

One last comment mentioned as an advantage sums up this section. A team member wrote, “By staying focused on a few targeted areas, I learn more about the technologies and end uses specific to those businesses. So do the other reps on my ‘team’, so I think we’re able to offer solutions and opportunities with calculated savings that are ‘proven’ elsewhere. It’s always easier to ‘sell’ a concept when you can refer to the guy down the road who already tried it.”

Team success stories

There are several initiatives started in the past year that can tell stories of early success. The best parts of these stories are the building of relationships and huge potential in the near future.

Pre-rinse sprayers

In restaurants and cafeterias that have dishwasher machines, most have a basin with a pre-rinse sprayer dangling from overhead that rinses off dishes before they are placed in the dishwasher. These sprayers use about three to four gallons of water per minute, use 130 to 160 degree water, and may use the sprayer two, three, or more hours per day. Our Hospitality Team decided to test a new energy efficient pre-rinse sprayer, which is now on the market.

Food Service Technology Center has tested and has indicated that three pre-rinse sprayer models meet the Federal Energy Management Program (FEMP) criteria. These sprayers are high-pressure, low-flow, and use only 1.6 gallons per minute. The savings potential was significant. However, the products are new and there was no distribution to Wisconsin. In addition, food service owners were skeptical that less water would clean dishes as well. The hospitality team announced a pilot program at the March 2004 Wisconsin Restaurant Association Annual Conference where about 100 restaurants signed up for a free pre-rinse sprayer – installed by a member of our team. We collected data on current sprayer water flow per minute, the temperature of the water, the efficiency and fuel type of the water heating system, and an estimate of the hours of use.

For a restaurant that uses natural gas for water heating, the average business can save about \$300 on their energy bills each year. In addition, the team calculated that participants save another \$300 or more on their water/sewer costs. All of this benefit for a \$60 piece of equipment. The team continued to install several hundred more sprayers and called past participants to find out how they liked them. An overwhelming majority approved of the sprayer and enjoyed the energy and water efficiency of it.

This data made it easier to approach distributors of equipment, food, and services to the restaurant industry. The team devised an instant incentive approach where participating distributors could offer an immediate incentive of \$25 off the price of the sprayer. They committed to selling the product for under \$40 each, so customer could start saving money immediately for the price of only \$10 to \$15. In September of 2004, seven distributors committed to offering the product with the instant incentive. There are about 20,000 sprayer retrofit opportunities in the state and we hope to capture five percent of the market through distributors in this program year. If this goal is hit by June 30, 2005, this initiative would generate more than half of our natural gas savings goal and about 10% of our electric usage goal for the year.

Anti-Sweat Heater Controls

Grocery stores have the highest energy utilization indexes of all other specific markets. This is primarily due to the high refrigeration load within these facilities. Refrigeration is typically over 50 percent of the total usage for a grocery store. Because of these large loads the grocery team set out to determine what could be saved in this marketplace.

When the grocery team was developed, we knew there would be some opportunities to be addressed, but are findings were somewhat surprising from our initial thoughts. In determining what opportunities existed, we performed in-depth studies on 12 supermarkets of various sizes in various locations throughout state. Ten different companies also owned these stores. The results of these studies showed

that all of the stores did not incorporate anti-sweat heater controls. This was surprising in that these controls are fairly simple to implement and typically show paybacks of one year or less. Nevertheless, these stores were not operating them. Having this information in hand, we knew we needed to capitalize on this opportunity.

The first action we took was the development of a standard incentive for incorporating anti-sweat heater controls (ASHC). In reviewing analyses and applying the programs criteria for incentives and comparing this to the rate structures of the utilities and product cost information, we determined a \$20 rebate per door was in order. We then sent mailers to 2,600 grocery and convenience stores throughout the Focus territory. From this effort, we have received about a one percent response and are continually applying this incentive to ASHC projects. In addition, we will soon be co-marketing with a major ASHC manufacturer to send a mailing to their customers and piggy-back their incentive with one of their limited offers. If 100 grocery stores were to implement ASHC in their stores this year, it would generate more than one-third of our electric energy savings goal.

Another successful item from this effort is we were able to develop an approach for refrigeration contractors to promote this measure to their customers. By analyzing the data from the 12 supermarket studies, a flat kWh and dollar amount in savings was determined. This gives refrigeration contractors more ease in promoting the ASHC measure as they can readily answer the question, "So, what am I going to save?"

Efficiency Bid program

The healthcare market, hospitals specifically, have major renovation and new construction projects planned or are in the planning stages. Up to this point, Focus on Energy had not been very successful in being involved in these projects in order to influence decision makers and ensure that energy was a key point when they were making decisions in these projects.

The healthcare team felt that what they needed was additional technical staff to be able to provide the benefit that these customers needed in order to be invited to the table. In addition, we needed to review the incentive structure to see if we could make adjustments that may make participating in our program more appealing to this target segment.

The commercial sector issued a Request for Proposal for technical assistance and hired two engineering firms to support our efforts with the healthcare market. One of these firms offered an idea of an Efficiency Bid. An Efficiency Bid program would reach out to large healthcare organizations and trade allies that designed and implemented energy efficiency projects and have them bid for incentive dollars. It would be a competitive bid with a finite amount of dollars available, but would allow for the customer and/or ally to specify the amount of incentive dollars that they would need from the Focus program in order to implement a set of energy efficiency projects.

As of the writing of the paper, we are about two weeks away from the deadline of the first bid cycle, so there are not specific numbers available yet. However, our feedback from the market has been very positive and we feel that we will receive six to ten comprehensive proposals that will more than exceed the incentive dollars that we have allocated for this effort. If our goal is achieved, the healthcare team will generate about 15 percent of the overall commercial electric goal and about 30 percent of the natural gas goal in bid cycle one.

Summary

In the work of managing the design and implementation of energy efficiency programs, our industry, understandably, tends to spend much more attention to the program design features and largely ignore the benefits we can gain from incorporating proven management and human resource techniques. As program managers, we need to align our human resources with that of the program design. Successful implementation depends on it.

In Wisconsin for the past year, the Commercial Sector of the Focus on Energy program has taken the initiative to change our structure and incorporate a team approach to helping the energy efficiency market be successful. This change has resulted in more enthusiasm, creativity, and ownership of our activities by the people who are assisting customers and allies every day. These teams have created many more interesting ideas with high energy savings and market changing potential than any one program manager could come up with.

It has taken a year to build the foundation, but we believe our best days are ahead of us. We are currently still building relationships and working together (Norming stage of group development) as we move towards more maturation in our relationships and task performance (Performing stage). We need to continue to perfect communication and coordination functions between team members as well as with our customer and ally groups and seek feedback on our activities. It is through this feedback loop that we can review our plans, make adjustments, look at our program as a system, and build a continuous improvement model. A high performance team is one that can produce sustainable results. This is our goal; we intend to work smart to achieve long term success.

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