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Commercial Strategic Energy Management: Approaches and Best Practices

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ABSTRACT

It is a well-known adage that focused intent gets results! Nowhere is this more relevant -- or more important to the efficiency industry -- than in well-organized and implemented Strategic Energy Management (SEM) programs. SEM programs build lasting partnerships among program administrators and their customers and empower the customers to make smart energy decisions for their facilities. Focused on operational and process improvements, on identifying untapped capital projects and on people engagement, SEM efforts lead to deeper and long-term savings. As SEM begins to take hold in the market, similarities and differences are beginning to show up between program administrator efforts. Navigant conducted a Commercial SEM Best Practices study for a leading mid-west utility to identify the key drivers to success and approaches to effectively engage varying customer types or needs. This presentation will focus on study findings from the in-depth research and interviews with leading SEM program providers around the country. Our findings address the advantages and limitations of various Commercial SEM program models and targeted business types. The study identifies the elements and strategies that are critical to successfully implementing an SEM program, including project planning, people engagement, persistence of commitment, and measurement and verification. We also present a roadmap for program implementation and operation in the form of a best practices logic model, drawn from interviewees, which program administrators can use as an example to design and operate their own SEM program.

Introduction: What is SEM?

Strategic Energy Management (SEM) is a process focusing on continuous improvement of energy efficiency at one or more commercial or industrial facilities. SEM is carried out through a process of employee engagement and identification and implementation of operational improvements. It often includes identification and implementation of discrete, one-time projects that require capital investment; however, the core of SEM is low- or no-cost operational measures and practices that lead to energy and cost savings over time. Previous evaluations of commercial SEM programs have shown savings of approximately 4 to 7 percent of electricity use and up to 8 percent of gas use.^{1,2,3}

Although the measures themselves are intended to be low- or no-cost, SEM often requires a significant amount of time to be invested by a company's employees, and may even involve taking resources away from the company's primary business. That, coupled with the fact that the

¹ energytrust.org/library/reports/SEM_Report.pdf

² https://library.cee1.org/sites/default/files/library/12196/BPA_Energy_Management_Impact_Evaluation_Final_Report_with_Cover.pdf

³ <http://neea.org/docs/default-source/reports/2014-energy-savings-for-the-commercial-real-estate-strategic-energy-management-cohorts.pdf?sfvrsn=4>

energy savings are not always easy to predict, means that companies rarely implement SEM on their own. For this reason, utilities or regional efficiency organizations often step in to facilitate SEM among customers or groups of customers. These organizations have not only resources to bear, but also institutional knowledge that they can distribute among a large customer base. They also have the organizational capacity to implement a program on a broad scale.

Throughout this paper, we use the following terminology to refer to certain SEM concepts:

- *Program administrator*: The entity, usually a utility or regional efficiency organization that oversees the SEM program. This entity is responsible for funding the program, typically in the form of incentives to program participants.
- *Program implementer*: The entity responsible for the day-to-day operation of the program. This entity is often, but not always, different from the program administrator. The program implementer is the direct line of communication with program participants.
- *Program participant*: Sometimes also referred to as the “customer,” the entity that participates in the program and conducts SEM at their own facility or facilities.

Project Motivation and Methodology

A large utility in the Midwestern region of the United States had previously administered programs similar to SEM for certain of their customers in the industrial sector, and sought to develop and implement a SEM program for commercial sector customers. The utility engaged Navigant to identify best practices for a commercial SEM program and develop an approach for initiating the program if they were to move forward. The outcome of the engagement was a set of findings on the various commercial SEM models in use today, best practice approaches and a logic diagram outlining an approach that the client could use in developing their own commercial SEM program.

Navigant conducted primary and secondary research to inform its findings and recommendations to the client. Secondary source research consisted of identifying and reviewing existing commercial SEM programs across the United States and Canada. Navigant examined program literature and other documentation such as third party program evaluations to determine whether each program could truly be considered SEM (as opposed to, for instance, programs that primarily gave out incentives or rebates for capital investments). For those that were clearly SEM programs, Navigant conducted an additional screening step to gauge the quality of the program based on how many elements of SEM the program appeared to implement. Navigant then conducted primary research by interviewing representatives of the strongest programs--that is, those that contained most or all of the SEM elements. Navigant interviewed program administrators and program implementers, and attempted to include programs representing participants from a variety of customer segments (commercial real estate, hospitals and healthcare, education, etc.). In all, Navigant interviewed representatives of nine programs.

Topics covered in the interviews included:

- *Program initiation*: How the interviewees conceptualized their programs; how they identified and recruited their target customer segment(s); their process for making design decisions.
- *Program operational decisions*: Program staffing; costs and savings; third party versus in-house implementation.

- *Program design:* Choice of financial incentive levels; strategies for engaging program participants to set goals and identify savings opportunities; measurement and verification planning; marketing and reporting on the program.

Project Findings

Navigant identified several common themes that emerged over the course of the interviews. First, the program administrators organized their commercial SEM programs in one of three distinct models. Second, programs tend to follow a typical sequence of stages over their life cycle. Third, successful programs incorporated certain common elements. The following sections discuss these findings.

Program Models

Navigant identified three distinct program models in use by utilities and other program administrators it researched: the cohort model, the flagship model, and the top-down model. These models were ways of organizing the program and delivering the program to the utility's commercial customers. Most utilities targeted specific commercial sectors for their SEM programs, and the different program models lend themselves to certain types of customers. That said, the nature of the customer base and the customers' business model is the most significant determinant of what program model will work best.

Cohort Model. In the cohort model, utilities deliver the program to groups of companies, called cohorts. The cohort consists of approximately 10 to 15 companies that all implement the same or similar program practices on a similar timeline. A key feature of the cohort model is regular group meetings in which members of the cohort receive training and share their experiences and recommendations. This model works best when the utility is implementing the program for a large number of distinct companies of a similar size. As such, this is a common program model for industrial programs that target similar-sized manufacturing companies that may be distinct entities and manufacture different products, but have similar types of industrial processes and equipment. Among commercial customers, this type of program tends to work well for independent but similar organizations like schools, colleges, and mid-size real estate companies. For this type of program to work, it is important that the company be able to designate one or two representatives who have the time and inclination to participate in the meetings, but also have the resources and authority within the company to implement SEM. This type of program would not work well for very large and complex organizations requiring approvals from a long chain of command to implement any SEM practices. The SEM programs for Energy Trust of Oregon, AEP Ohio, and Efficiency Vermont used the cohort model.

Flagship Model. In the flagship model, the utility targets large companies with a large number of similar or identical properties (either franchises or corporate-owned)--such as convenience stores, hotels, large real estate companies, or grocery chains. The company chooses one or a few "flagship" properties, which may be in high-profile locations, to implement SEM. If SEM is successful at those properties, the company then implements or encourages their franchisees to implement SEM at their other locations. For this type of program to work, it is

important that the company choose its initial locations carefully and dedicate resources accordingly to maximize the opportunity for success and set an example that will be followed at other locations. One of our interviewees, Focus on Energy Wisconsin, reported that the program implementer tended to use this model for their customers.

Top-down Model. In the top-down model, the utility works with large corporations or entities with a discrete set of properties that they have complete control over. The customer implements SEM throughout the organization. This model is most commonly used for hospital systems, although tech companies with a large number of energy-intensive buildings and data centers may also be a good application. The model may also work for commercial real estate companies, depending on their business model. For this program model to work, it is crucial to have executive buy-in. Top level executives must be convinced of the benefits of the system and it must make financial sense to them. They also have the authority to designate resources to implement SEM throughout the company. Top-down programs may be more difficult to initiate because of the long chain of command involved, but they have the potential to generate large savings as SEM becomes embedded in the culture of the company with the support of management. Among our interviewees, NEEA and Xcel Energy used this approach.

Program Operation

Navigant also discussed the day-to-day and year-to-year operation of programs with the interviewees. Navigant interviewed administrators and implementers of programs at various stages of maturity and found that most programs follow a typical sequence of program stages.

Ideation and Initiation. In most successful programs, administrators conduct market research before even beginning their programs. They determine the program scope and the target market(s)--i.e. which types of customers to target with their programs--and gauge which of the above program models is likely to work the best. Many program administrators choose to conduct program pilots with a small group of customers before implementing their program across a wider customer base. For example, Focus on Energy Wisconsin noted that they were able to use findings from their pilot to narrow their target customer base to those who would benefit most from SEM.

Operations and implementation. Next, program administrators implement the program. Some, but not all, programs hire an implementation contractor to conduct most or all of the implementation on their behalf. The implementation contractor, if there is one, is often the primary liaison to the customers, particularly in a technical role. They may work directly with the customer representative and, in the case of the cohort model, organize meetings and develop training materials. The implementation contractor's specific role may vary from program to program: the implementer for Puget Sound Energy's program is responsible for identifying energy improvements, creating plans, and making sure changes are implemented, as well as reporting and evaluation of savings; in contrast, the implementer for Xcel Energy's program conducts the initial audit and sets up a monitoring system, but the program administrator usually takes on the role of following up with program participants on their action plans.

The program administrator may operate the program over the course of many years, and the program may not have a defined end date, as customers continue to enroll in the program. The process tends to be iterative: the program administrators learn from early participants and improve

the program over time. The program may undergo an evaluation, measurement, and verification (EM&V) process during this time and the outcome of that process can also be used to improve the program. The program administrator may also wish to expand their program beyond the original scope. For example, if it began as a commercial program, it may expand to industrial and vice versa; or it may expand beyond the originally targeted customer segment (e.g. from schools to commercial real estate).

The operations and implementation phase, because it is the longest, is generally the most cost-, resource-, and time-intensive. Programs may consider leveraging internal and external resources to manage time and effort. Besides an implementation contractor, a program administrator may also (or instead) choose to use a licensed software package, assuming one exists for the type of customer and the program model. The implementer for Xcel Energy's program, for example, uses, a software tool designed to engage program participants with SEM.

For program administrators that are utilities, customer account managers may be good internal resources because of their pre-existing relationships with customers: they can be a resource for recruiting and engaging customers. Previous non-SEM programs can also be a source of customer references, data gathering techniques and software, and analytical methods.

Market Transition. One program we spoke with--NEEA's program for hospitals and healthcare--had reached maturity and become essentially self-sustaining. The program administrator had initiated the program and implemented it for 10 years. They had amassed a large number of participating customers and their work, even at a regional level, had built up knowledge of SEM within the industry as a whole, contributing to overall market transformation. At the time we spoke with the program administrators, an industry trade group had agreed to take on the responsibility of educating companies within the industry on SEM and providing technical support such as measuring progress and benchmarking performance. The program administrator would no longer be implementing the program or supporting it financially, but in the two years after their exit from the program, they worked intensively with a regional utility working group that would continue to function as a resource for customers and share lessons learned. Programs achieve market transition only after many years of a successful program. The success of a large number of customers provides a proof of concept and known best practices for future companies.

Best Practices

Navigant found that regardless of program model or program stage, the most successful programs incorporated certain elements in common.

People Engagement. Successful programs kept a strong focus on building and maintaining customer relationships at all stages of the SEM program life cycle. A key part of SEM at the customer level is the formation of an Energy Team: a group of employees led by the leader/representative at the company, consisting of employees at multiple levels and from various departments, especially facilities and management. This factor of team and company commitment cannot be overemphasized. Successful program administrators identify a champion within the company to help move the SEM effort forward. The champion usually is the team leader. Even with a champion identified, executive level support is critical to give force to the team's ability to have the time, resources, and authority to carry out SEM. Successful program administrators also

provide a dedicated point of contact on their side to support the customer's energy team, whether this is an account manager, engineer, energy advisor, etc.

Administrators of successful programs also facilitate communication with (and, in the case of the cohort model, among) customers through regular meetings. AEP Ohio, Efficiency Vermont, Energy Trust of Oregon, and Puget Sound Energy all offer workshops as part of their SEM package; AEP Ohio recommends requiring customers to commit to attending workshops as a condition of participation in the SEM program. These meetings have mutual benefits for the customer and program administrator: The customer receives training, education, and support; while the program administrators receive customer feedback on the operation of the program.

People engagement can be a challenge; energy is not a focus area of many companies who participate in SEM. Even though the longer-term benefits may be clear, more immediate priorities can take precedence over SEM activities. One challenge is a lack of time and resources among employees on the energy team, with the underlying cause being low prioritization of SEM on the part of management. This can be mitigated by ensuring management buy-in from the beginning, securing early commitment of resources before even beginning the program. Early and high-impact successes at the customer can also reinforce management support by showing them an immediate impact on the bottom line. Another challenge with people engagement is maintaining consistent energy team participation with company turnover. This is why it is important to have an energy team, and not just a single representative of the company, so that other team members can fill in if one leaves the company, and the institutional knowledge of SEM is retained.

Project Planning and Implementation. The core of SEM is establishing a system by which customers are able to systematically and independently identify and implement strategic energy management at their company's facility or facilities. The most successful programs help their customers along this path initially, with the ultimate goal of setting up a system that customers will follow on their own. Interviewees reported that customers were eager to implement energy-savings opportunities, and the main challenge was for them to be able to identify these opportunities in the first place. Program administrators tended to come up with creative names for identifying essentially the same process of identifying these opportunities: Opportunity assessments (AEP Ohio); Energy Treasure Hunts (Efficiency Vermont); and Energy management assessments (Energy Trust of Oregon). Most often, this identification takes the form of members of the customer's energy team physically walking around the facility to see where energy waste is occurring and where energy can be saved. Programs were most likely to bring in third party contractors to help with this process, even if they did not hire a full program implementer. This could be an engineering firm or subject matter expert/technical advisor, depending on the size of the program and the number of customers. Xcel Energy promoted the SEM software tool/program to their customers to help them identify opportunities for energy savings. Interviewees emphasized that to achieve persistent energy savings, the process needed to be ongoing and iterative, so that program participants could identify more opportunities even after the low-hanging fruit had been implemented.

Measurement and Verification. Many (though not all) program administrators conduct EM&V on their programs to verify the energy savings achieved by the program. This step may be required by a regulator for the program administrator to claim savings and issue incentives, or the program may wish to evaluate whether the program is worth the resources being spent. EM&V is a long-term effort that typically requires data to be gathered over a long period of time--months or

even years. On the other hand, there are several independent and well-established EM&V protocols that have been used by program administrators to verify their SEM programs. The most commonly used method is the International Performance Measurement and Verification Protocol (IPMVP), managed by the Efficiency Valuation Organization (EVO), which describes four different options for measuring energy: two end-use metering options, billing regression analysis, and computer simulation.⁴ AEP Ohio and Energy Trust of Oregon conduct EM&V based on IPMVP. Other programs conduct similar EM&V practices supported by software: Puget Sound Energy, for instance, conducts multi-variable regression analysis with in-house software

Logic Model

The output of our study was a logic model collecting all our findings into a diagram of a recommended program design. The logic model includes all the steps for a successful SEM program and the thought process our utility client would go through to design the program. The logic model, shown in Figure 1, includes the following elements:

- Barriers to an SEM program
- SEM elements, strategies, and specific activities to overcome the barriers
- Expected near-term, intermediate, and long-term outcomes
- Expected impact of an SEM program

⁴ <http://evo-world.org/en/>

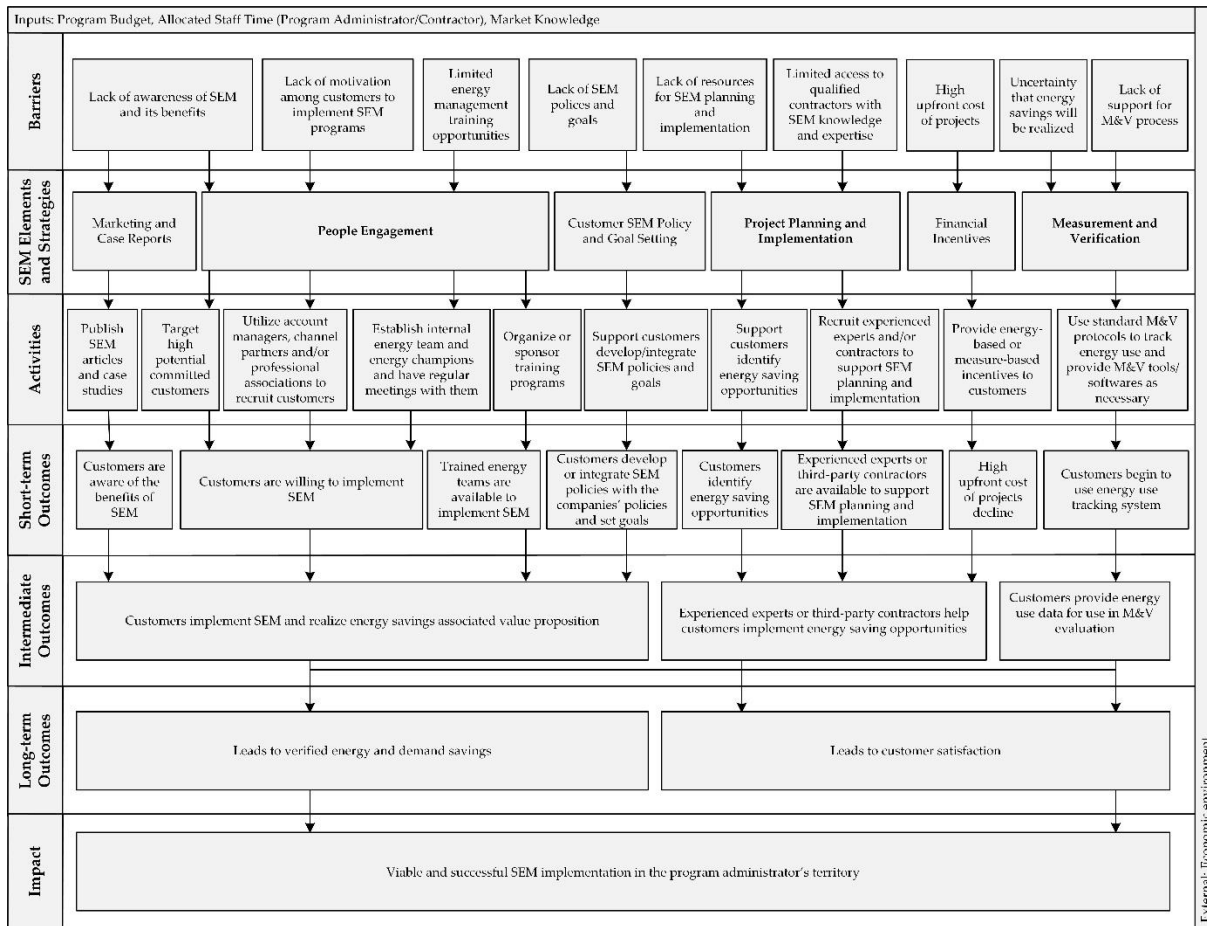


Figure 1. Logic Model for a Commercial SEM Program

Conclusions

Navigant found that several program administrators across the country have successfully implemented and continue to implement commercial SEM programs. A utility or efficiency organization wishing to implement their own commercial SEM program may learn from example: Choose the customers and program model wisely; engage with program participants early and often; undertake well-organized program planning and implementation with sufficient resources; and conduct measurement and verification to ensure accuracy of energy savings calculations. If widely adopted, commercial SEM programs can facilitate significant energy savings nationwide.

Endnotes

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