Beyond Traditional Evaluation for Systems-based Program Designs

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ABSTRACT

Strategic Energy Management (SEM) is an example of a complex systems-based program design. Here, a complex system is defined as a system comprised of a number of interacting components (e.g. stakeholders, processes, equipment) in a changing environment that creates heightened uncertainty for implementation and outcomes. SEMHub[1] defines SEM as "a system of organizational practices, policies, and processes that creates persistent energy savings by integrating energy management into business practices [focused] on changes in daily operations that engage staff at all levels..." (NEEA).

A traditional evaluation approach typically delivers a prescribed evaluation often too late to make adjustments when adjustments can make a bigger difference. More important to program staff is continuous timely feedback, or fast feedback, to inform program design and delivery as the program is implemented. This captures opportunities for improvement throughout the long SEM program delivery period, allowing for timely program adjustments. Equally important is an evaluation methodology that is flexible – one that adjusts to what is learned as the program and the evaluation are implemented. An embedded evaluation approach provides this flexibility and timely feedback. Embedded evaluation can include impact and process evaluations.

This paper discusses using embedded research and evaluation to continuously learn and improve as SEM pilot programs are delivered to two separate clients using two different design approaches.

Introduction

Embedded research and evaluation establishes a framework to test program design components, new applications, and delivery mechanisms. It tracks performance and highlights issues as they occur. And because the research and evaluation is embedded within design and delivery practices, it provides fast feedback and facilitates continuous improvement.

Embedded research and evaluation allows for experimentation with attributes being studied and with evaluation approaches. Learnings from embedded evaluation inform the program in real-time, facilitating much quicker changes in program design and corrective action as issues are identified. Learnings also inform the evaluation effort as it progresses by identifying where there are gaps in our research and by identifying surprising findings – which can lead to a change in the evaluation focus or methods. The objective is to keep the evaluation relevant for the most meaningful and timely discoveries.

As depicted in Figure 1, embedded research and evaluation projects can be a team effort, with stages – immediate, intermediate, and transformational – that build upon each other as the research and evaluation progresses and the program develops. Note that a key element of successful embedded research and evaluation effort is program staff buy-in. This can be a tough sell if program staff have experienced evaluation efforts that provided little value too late in the

[1] SEMHub is a resource made available by the Northwest Energy Efficiency Association (NEEA).

game. To overcome this, our embedded research and evaluation efforts are led by the program manager.

Program staff plays the primary role with the evaluation staff in a support role. This ensures that the embedded research and evaluation objectives are all about the program staff – what they need to know and when they need to know it – for successful program outcomes. The objective is to learn and improve in real-time as a team effort, not to comply with a regulatory evaluation framework. We recognize that for some regulatory evaluation frameworks, this model would not meet an independent third-party evaluator requirement. The embedded research and evaluation model is not intended to fulfill this requirement.

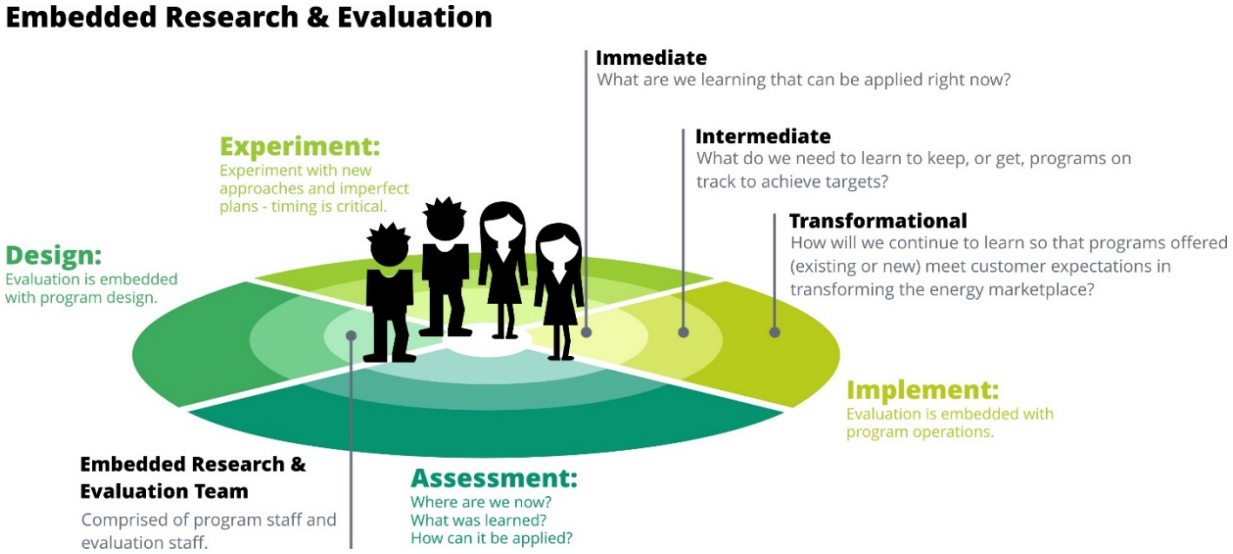

Figure 1. Embedded Research and Evaluation Model

Embedded Research and Evaluation In Practice: Application to SEM Programs

SEM is a more complex systems-based program design. Here, a systems-based program design is defined as one in which program elements work together as part of an interconnecting network with reliance upon multiple stakeholders for success. An SEM program's critical element is the utility establishing a relationship with the customer that builds over time. For the cohort program model, the program's success is dependent upon multiple customers participating in program and a willingness to share stories of program success and failure.

The SEM program provides a trusted energy advisor to guide the customer in the development of an energy plan that identifies energy savings and demand response projects. The energy advisor helps the customer measure quantifiable benefits and set targets for assessing the energy plan success. The energy advisor helps the customer frame projects in language that resonates with those in demand side management project approval roles. In theory, this enduring relationship can drive deeper and persistent savings for many years. Figure 2 illustrates these points.

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The y-axis represents a hypothetical energy cost increase or decrease compared to the year-zero baseline. Each graph illustrates increasing energy use until the facility staff initiate an energy audit. With the traditional approach, easy to implement low-cost energy savings measures are completed with more costly and complex measures shelved…and the cycle repeats.

With the SEM approach, senior management and facility staff work together with the utility to develop an energy plan intended to inform and transform the energy culture within the customer's organization. This support from senior management, the on-going partnership with the utility, and the heightened awareness and transforming culture lead to continuous improvement over time.

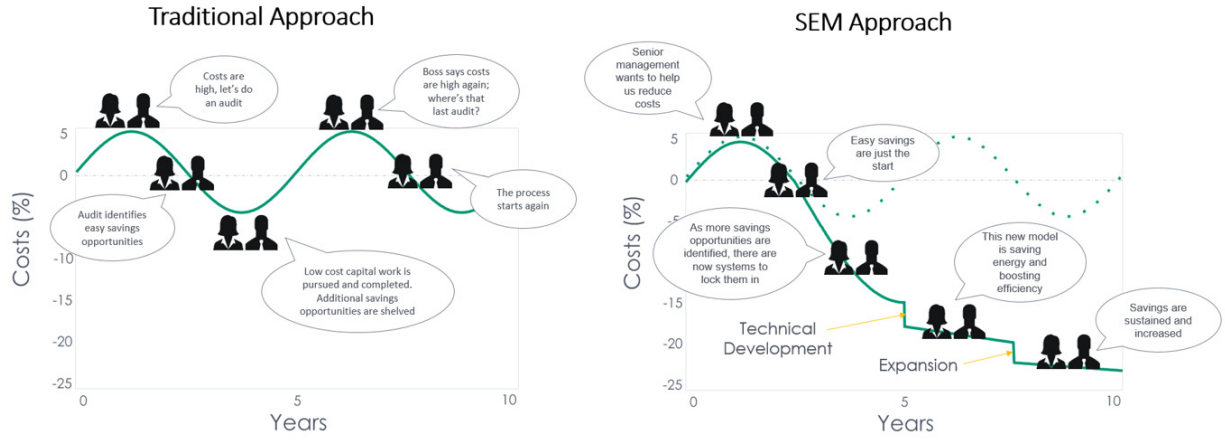

Figure 2. Traditional Approach versus SEM Approach

Two SEM Program Designs

We are delivering two different SEM program pilots. One pilot uses a cohort model and leverages an energy information system (EIS) is available, but does not require an EIS. A cohort model involves establishing one or more teams of peer businesses and uses peer interactions to motivate save energy actions. The other pilot is an individual SEM model which requires the installation of an EIS for program participation. Other than the cohort versus individual design and EIS requirement distinction, the elements of each design is the same (illustrated in Figure 3).

Figure 3. Essential Elements of Strategic Energy Management

Setting up the Embedded Research and Evaluation Project

Good research starts with good questions – and this is how we begin our embedded research and evaluation projects. The first question we ask is, "Does an embedded research and evaluation effort make sense for our program?" To answer this, we consider:

- Is the program a pilot?
- How will embedded research and evaluation make a difference compared to standard evaluation?
- What can we learn about the program design or operations that will help us to understand how the program might need to change to be more effective, or to improve the customer experience?
- Is there a program design or delivery issue that requires more data or information to understand and resolve?

The Embedded Research and Evaluation Plan

Once we determine an embedded research and evaluation effort will be useful, a team is established with the program manager leading the effort. This ensures that the research and evaluation effort is focused on what the program staff want to know. It is also useful to assign an evaluator that is not deeply involved in the program being assessed. This independent perspective will provide greater objectivity.

Together, the program staff and evaluator establish an embedded research and evaluation plan. The plan documents the research and evaluation objectives, the methods and activities, and the timeline. It is important to note that this plan is dynamic – that is, the plan will change as the effort progresses and we learn about the pilot. This is a valuable component of an embedded research and evaluation effort. Findings from the research and evaluation trigger more researchable questions. Recommendations based on findings trigger program changes that require evaluation. This dynamic process facilitates greater learning opportunities in real-time.

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The SEM timeline allows for multiple points of embedded research and evaluation. Embedded research and evaluation is most effective when established in the design phase, particularly for pilot programs. In the first program year, evaluation checkpoints are built into the program delivery. These checkpoints do not need to be a large effort; in fact, many are simply bringing the project team together to talk about how the program delivery is going. Some are opportunities to gather data, such as a participant survey, independent observation, or desk review. And others can be a deeper dive into energy usage data or facility controls data.

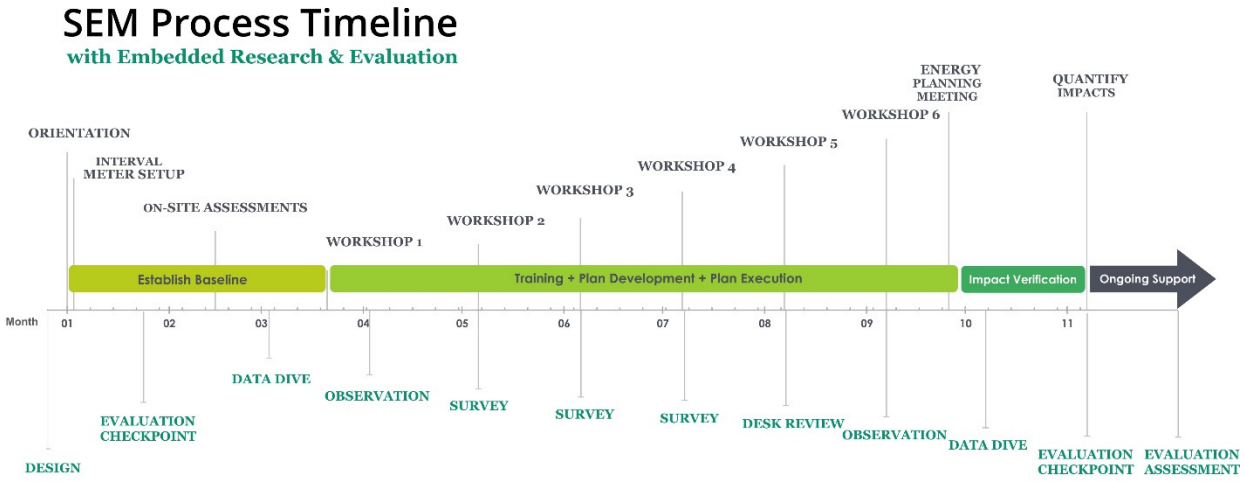

Figure 4. SEM Program Year 1 Embedded Research and Evaluation Opportunities

The SEM Embedded Research and Evaluation Roadmap

As a part of setting up the embedded research and evaluation effort, we identify areas where we anticipate we will have an opportunity to provide fast feedback to program staff. Fast feedback is an essential element of embedded research and evaluation and there are built-in opportunities to provide this through multiple checkpoints in the timeline. Plus, there is no need to wait for a checkpoint – meaningful findings are communicated as they occur. This immediate feedback enables the research and evaluation effort to provide the most value.

Considering fast feedback opportunities ahead of time ensures we do not lose sight of this valuable activity. It also helps us to think about the type of data that could inform both the pilot delivery and the evaluation effort going forward. For example, the embedded research and evaluation plan could include an evaluation of the program recruitment process after program launch. A check-in meeting can be scheduled at the close of recruitment period to provide a summary of the evaluation. In addition, the embedded evaluation effort can communicate findings as the recruitment progresses (fast feedback) to highlight what is working and what isn't allowing more timely recruitment process adjustments if issues are identified.

Figure 5 provides an illustrative example of the SEM Embedded Research and Evaluation Roadmap.

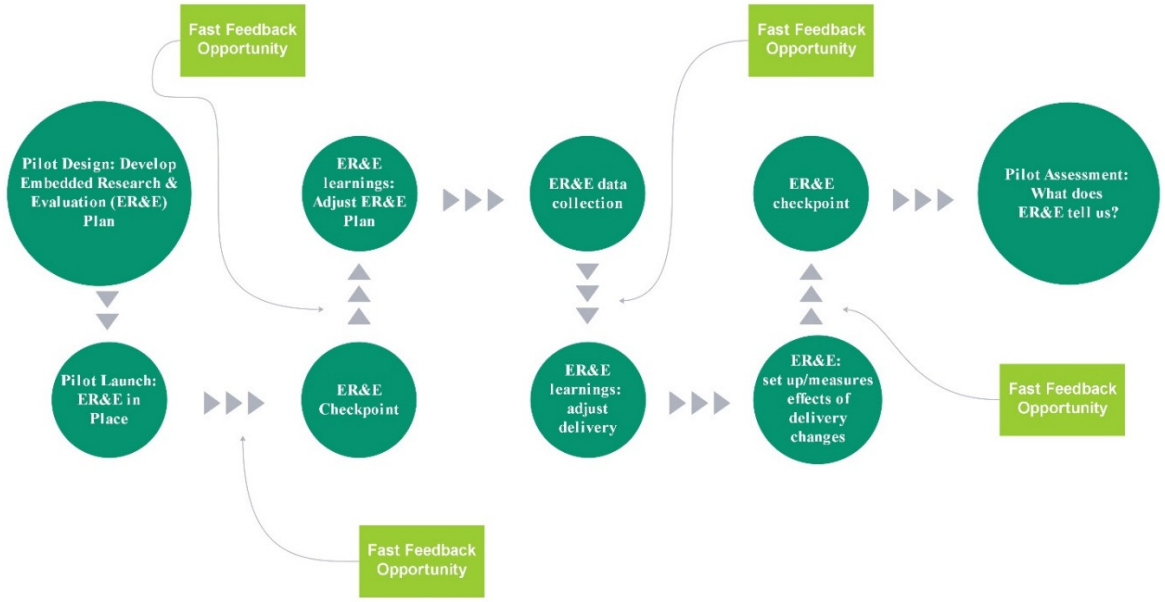

Figure 5. SEM Embedded Research and Evaluation Roadmap

SEM Embedded Research and Evaluation Results to Date

Although we are still early in our SEM pilots launch, we have already experienced substantial benefits from the embedded research and evaluation effort. For the individual SEM pilot, we have identified several areas to experiment with pivoting the program. One example is adjusting the workflow activities. The initial program design placed a large amount of work at the beginning of the process once the customer was enrolled. Energy maps were created to determine where energy is used in the facility and where sub-metering could be applied, specifications and guidance were provided to the customer for procurement of an EIS to ensure it meets their needs, and a baseline energy model was developed using historical interval data.

Some customers, though, drop out of the program after substantial resources have been expended. This results in a large amount of program spend before any energy saving measures are implemented. In order to more closely align the program spend with the impacts, we now focus on providing participants with the information they need to procure and install an EIS.

There can also be delays in EIS implementation. To address this, we are also exploring offering milestone incentives to customers for subtask completion. These incentives would be a token amount that is not large in relation to the program budget, but is large enough that upper management at an organization would question the cause of delays which reduce the incentives received. Missed milestones result in a missed opportunity to receive a milestone payment. These milestones could occur at certain points such as installation of the EIS or customers providing important data within a designated time period.

Another implemented program design pivot to speed up the installation of the EIS is our approach to customer recruitments. When the program was first launched, the utility initiated a marketing campaign to fill spots in the program. The outreach was utility driven. Customers too often enrolled in the program, but did not follow-through on program participation commitments. Substantial program staff activity for these customers was wasted time and money.

The new approach requires the application process to be customer driven. This self-selection process identifies customers who are excited about the SEM program. This self-

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selection process is combined with a customer SEM program application review with program staff. Rather than accepting all customers interested into the program, the focus has shifted to 'qualified customers'. The customers are qualified through a joint utility-implementer vetting process, with the utility approving all enrollees. The utility staff communicate decisions to customers along with the reasoning when enrollment is not approved. Qualifications we are investigating include:

- The financial ability and company resources available to do capital projects
- A desire to do energy efficiency projects
- Excitement about installing an EIS
- Desire for a long-term relationship with the utility.

An emphasis is placed on the fact that this program requires participant commitment. They must recognize from the start that the benefits they expect to achieve require their action. We sell the program to customers and customers sell themselves to the program. There isn't any value in spending a lot of utility, implementer, and customer time when the fit, or customer 'SEM readiness', is not there.

Ongoing Efforts

For the individual SEM pilot, it has been challenging to motivate customers to implement an EIS and recommended measures in a timely manner. We have identified several potential solutions and are now designing research to test the hypothesized tactics to this implementation barrier. This embedded research and evaluation effort will ensure we are collecting data and information for a robust assessment.

An example includes assessing the effectiveness of how the program participation commitments and requirements are communicated to potential customers during recruitment. The past communications provided an overview of the benefits of the program but did not stress customer requirements for participating in the program. Now, customers are informed at the start of the recruitment process that even if they meet the requirements on paper, there is the potential they will not be offered a spot in the program. Customers are told that their applications will be assessed by utility staff for the customers' likeliness to follow-through on the program requirements. This benefits customers as well as the utility.

Conclusion

SEM program timelines are long and engagement is a commitment – both for the customer and for the program. These long timelines, program complexity, and engagement requisites provide an excellent opportunity to experiment with design and communication elements. Embedding research and evaluation into this exploration ensures that the program makes the most of the learning opportunity.

Reference

Northwest Energy Efficiency Alliance (NEEA). Accessed March 2018. www.semhub.com/what-is-sem