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DOE's Project-Oriented SAVEnergy Audit Program

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THE DEPARTMENT OF ENERGY'S PROJECT-ORIENTED SAVEnergy AUDIT PROGRAM

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ABSTRACT

The SAVEnergy program was developed as a result of the Energy Policy Act of 1992 which mandated that the Secretary of Energy establish audit teams. The SAVEnergy program complies with Federal legislation that requires government agencies to function with slightly different parameters than the private commercial sector. This program has proven enormously popular and successful with Federal agencies. This paper addresses those components considered during program development that were built in to ensure program success. This paper will discuss how this program was successful in leading to project implementation and how SAVEnergy can serve as a model to other Federal, utility, and private sector programs.

INTRODUCTION

When the Department of Energy's (DOE) Federal Energy Management Program (FEMP) was first developing the SAVEnergy program, the question was asked, "how does one move from audit data collection to project implementation?". A primary concern was the possibility of spending Federal dollars to collect data that might sit on the shelves of site managers, collecting dust rather than saving money. SAVEnergy staff wanted to scrupulously avoid that situation. Too many audits had been conducted with no actual projects implemented. One Federal official joked wryly about that "warehouse" full of unimplemented audits in a Washington suburb. How could SAVEnergy be different? How could a program be developed that would ensure success?

THE MANDATE

Section 158 of EPACT demanded that an audit program be developed' but other pieces in the legislation made it clear that the Federal Government had to operate under slightly different parameters than the private sector, so Federal protocol had to be written. Life cycle costing[2], in addition to simple payback (under ten years)[3], had to be considered in determining projectcost-effectiveness. Fuel neutrality requirements[4] force the Federal agencies to review all available technologies, not just those recommended by a single-fuel-source utility. Because water conservation and renewable energy were included in EPACT[5], both had to be considered in the audit process. With these very basic standards of protocol, SAVEnergy began to take shape. Executive Order 12902[6] signed by President Clinton in March, 1994, strengthened the call for audits by requiring that 10% of agency buildings be audited each year.

THE TEAM

The SAVEnergy project manager brought together a team of DOE key players--those interested in financing alternatives, those with technical expertise, those with facility operating experience--to brainstorm during the first weeks of program development. Federal agencies were solicited for an indication of their interest in and their need for a Federal audit program.[7] The agency interest was overwhelming, especially after the signing of the Executive Order. Two hundred million square feet of Federal building audit requests flooded the project manager's office, and scores of calls each day indicated that the audit service was critical to the agencies. Throughout the development, DOE Regional Support Offices were called upon for their expertise in technical evaluation and in working directly with agency customers.

THE KEY ELEMENTS

Several key elements were considered essential in ensuring a successful program. These elements were: an understanding of funding mechanisms to recommend, a defensible statement of work and bidding process, customer commitment, targeting and pre-screening of audit sites, a quality assurance plan with follow-up mechanisms, and regional deployment of the program. Not any one of these elements would ensure success; only a combination of all carefully meshed could make SAVEnergy happen.

Funding Mechanisms

Early in the program development, a need for linking the energy conservation measures (ECMs) to specific funding sources, was recognized. It became apparent that an Action Plan, not just a collection of audit data, would be critical to

project implementation. As a result of conversations with energy service company (ESCO) stakeholders, a walk-through audit was determined to be sufficient, in most cases, to begin the process of writing an Energy Savings Performance Contract (ESPC)--obtaining third-party financing for project funding. Since an ESCO would come back in to baseline the buildings energy use, an "investment grade" audit was not necessary to begin an ESPC. To apply to the Federal Energy Efficiency Fund (the Fund)[8]--a FEMP competitive grant program--or for utility demand side management (DSM) incentives, however, it was determined that a comprehensive building audit would be necessary. Thus, the SAVEnergy statement of work was crafted with two audit options.

Procurement Process

The statement of work was drafted using a model Naval Facility Command service contract, and input from several utility programs and other agency suggestions. The two types of audits--walk-through and comprehensive--were developed and, more importantly, a series of draft action plans and site meetings with the agency were required of the auditor to ensure that the audit and resulting action plan had complete site buy-in before the final SAVEnergy Action Plan was delivered. A solicitation was advertised in the Commerce Business Daily and was sent to FEMP mailing list participants to invite small businesses to bid on the work A technical evaluation led to the award of Blanket Purchase Agreements to 20 audit firms that operated in each of the 10 DOE regions (some firms won for more than one region). As a request was approved for an audit in a certain region, the five firms qualified for that region would be called with information about the particular site (the basic statement of work applied to all sites) and would bid on that job. The lowest bidder would win that piece of work for a set price. This process, once honed and practiced, turned out to be efficient (two weeks from request approval to have an auditor chosen for the site) and cost-effective (10 cents average per square foot for the audit). Agencies like the General Services Administration (GSA) and Department of Defense (DoD) who had funding for audits determined that this process could save their organizations from having to issue separate procurement for audits. Interagency agreements could be written to allow agencies to reimburse the SAVEnergy program for audit work done at their sites. The reimbursement would allow the SAVEnergy money to be reserved for those agencies with no appropriated energy funds and would leverage agency funding or co-funding of additional comprehensive audits for larger agencies.

Customer Commitment

SAVEnergy developers realized that, without a customercommitted to implementing a project, an audit could sit on a shelf indefinitely. Thus, before an audit is even performed at a site several preliminary steps must occur. First, the agency must have requested the audit on a SAVEnergy request form.9 Next, the agency must sign a letter committing that, if an audit is performed, a project will be initiated. The agreement does not hold the customer legally bound, but is rather a document indicating a level of commitment to the process. The customer must make some decisions as to which buildings and sites should be the highest priority, rank them internally, and then consider which funding sources to consider for implementation. The agency must indicate on the request form the available agency funding as well as any alternative financing options they would be willing to consider. An agency interested in soliciting an ESPC will receive a walk-through audit geared specifically for ESPC; a customer who wants to apply for the Fund will receive a comprehensive audit. The more known prior to an auditor being deployed to the site, the more focused and targeted the audit can be.

Targeting Sites

Each request is put through a rule-of-thumb pre-screening that asks some key questions about the site: are the utility bills high? is the utility DSM program aggressive? would an ESCO be interested in the site? are there opportunities to showcase technologies or transfer the knowledge to another similar site? Although agencies are asked to conduct their own pre-screening and prioritization, often key questions can be asked that indicate the level of success attainable at a site. In addition, headquarters SAVEnergy staff will look at the audits that have been completed and attempt to spread the work across regions, building types and sizes, agencies and utility territories, so that a "snapshot" of the Federal sites nation-wide can be analyzed and extrapolated for future success. Just as sales companies target customers, SAVEnergy must target sites and customers willing to implement projects--energy "champions."

Quality Assurance

With the need for a Total Quality Management (TQM) approach advocated by everyone from the Secretary of Energy down, SAVEnergy had to be developed with TQM in mind and with a plan to ensure that the SAVEnergy product was both effective and of high quality. A Quality Management Plan was developed and a notebook sent to each Regional Support Office to walk them through the quality assurance process and to provide them with tools for monitoring that process. Checklists were required to be filled out with each completed action plan which would monitor not only the actual audit, but also the follow-up necessary to produce a project. A tracking database was designed and programmed to track audits, to report on the ECMs recommended and subsequently implemented, and to measure and verify the resulting savings. Reports are generated indicating how many audits resulted in projects, what those projects were, and how much energy and taxpayer dollars were saved in those projects.

Regional Deployment

Another key to making a program successful is having buy-in from those tasked with carrying it out. The Regional Support Offices had been asked to deploy SAVEnergy, they were brought in during the initial program development, the

technical evaluations, and the quality assurance planning. They will provide constructive feedback to the project manager so that positive changes can be made as the program evolves. They are also key players in targeting the sites for audits. While the headquarters project manager has a global view of the audits, the regional staff have the agency relationships that are critical in determining where the energy champions are. These regional FEMP personnel have also at their disposal a "tool kit" of FEMP programs that they can use to move facility opportunities from audits and action plans to funding mechanisms and designed and built projects.

A SUCCESSFUL PROGRAM

Determining what success means in an audit program, and especially in the SAVEnergy program, had to be measured the way the legislation categorized success: how many BTUs were saved per gross square foot? Or simpler, how many audit recommendations were transformed into projects and how many Federal (taxpayer) dollars did they save? After talking with DOE State grant technical review teams, utility representatives and DOE headquarters project managers of audit programs, it was found that a 50% rate of success rate is considered acceptable. An "outstanding" audit program from the viewpoint of a DOE industrial audit program was shown to have a 60% success rate. When numbers began to appear in the SAVEnergy program of 75% of audits turning into projects, project management began to see the advantage of developing a program aimed at success. Many more audits are still in process and funding cycles in agencies do not always allow for immediate results to be seen in project implementation, but the indicators suggest that this program is one of the most successful developed.

Examples of Success

During the first year of SAVEnergy development, several pilot audits were conducted using various auditors, but with the same basic scope of work and process that is used today with the Blanket Purchase Agreement auditors. Before the small business procurement was awarded for SAVEnergy, Washington State Energy Office and Oregon Department of Energy were placed under a pilot program to conduct a total of ten audits in the Pacific Northwest that yielded a 90% success rate. One site ended up being targeted for elimination, which impeded the project completion. AU but one other site completed projects on their own after receiving the audits. The final facility needed some additional FEMP guidance in completing their project. Another example of success through a Federal energy champion is that of Peter Gaddy, Regional Energy Coordinator for GSA in San Francisco. Mr. Gaddy requested several audits at the Honolulu Federal building and, as each was completed, the projects were immediately fundedand installed. To date, a lighting retrofit has been installed with HVAC and renewables projects pending installation. Another success story occurred when the Boston Support Office requested funding for an audit of steam traps at the VA Medical Center in Providence, Rhode Island. With the savings from the first project, the hospital was able to conduct audits of the remainder of their site, implementing projects to save money and reduce steam losses.

Unsuccessful Audits

Regardless of the care taken in developing a successful program, events can occur beyond the control of the project manager. A site becomes a target for agency downsizing and suddenly the building occupancy or use or mission changes, nullifying much of the audit data. Funding dries up--the utility rebate could have been retracted, the FEMP Fund may have been fully committed to agencies, the agency operation and maintenance dollars might have been used on a major equipment replacement. Leadership changes and the champion leaves, replaced by a person not well-versed in energy issues who does not consider efficiency a high priority. Any of these events could stop an otherwise technically accurate audit from becoming a project. In the SAVEnergy program this has happened only once. If enough stop-gaps are built into the system, such occurrence can remain the exception.

Lessons Learned

In some sense, the jury is still out on SAVEnergy. The program has seen a high number of projects begin to be implemented as a result of SAVEnergy audits, but much of the work is still to come. The procurement awarding audit contracts was completed in a shorter timeframe than expected in the Federal Government and that efficiency actually caught the program by surprise. The process was still new and the Regional representatives were not fully prepared to begin to administer the number of audits requested. So the private sector firms are still waiting in some regions for action which has yet to occur. Project management believes, however, that where demand exceeds supply, success is waiting in the wings. It would have been nice to be fully prepared when the procurement was put into place, but as long as the process has been developed and is starting in all regions, audits will be conducted and projects implemented.

Next Steps

The SAVEnergy program has always been considered "evolving" by its project manager and will continue to be viewed as such. The program has been turned over to some of the support offices for deployment, yet the headquarters staff is constantly asking the questions, "can this be better? Should we continue doing audits? Is there a second generation we will be moving toward?" It appears that as agencies receive more audits and gain a better picture of their building stock and the typical opportunities in certain types of buildings, the need to conduct comprehensive audits in standard building types willdiminish. Work on special applications--like industrial processes and research and development laboratories--can be continued, but a move to technical design assistance will need to become available to transform these audits into cost-effective projects. FEMP is currently exploring efforts in that direction, and there will be some synergy between the SAVEnergy program and other technical assistance programs that FEMP develops.

CONCLUSION

SAVEnergy has shown enormous success both from an awareness standpoint and from project implementation. The test will be the ability of SAVEnergy to move from being merely audits and action plans to being a means to improve design and deployment of the latest energy and water technologies in the Federal sector. SAVEnergy wants to serve as a model for the way Government programs should be developed as well as a resource for other public and private sectors. Utilities, in particular, in this age of deregulation, can benefit from the development of this successful program in modeling their own Federally targeted audit programs. The vision of a Federal program is to lead and serve as an example rather than to merely administer and regulate. Thus, if all audits were to meet the Federal protocol and become as successful as SAVEnergy has been thus far, the need for the Federal program would be reduced and, perhaps, eliminated altogether.

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REFERENCES

Energy Policy Act of 1992, P.L. 102-486
Executive Order 12902, March 8, 1994, Energy and Water Efficiency in Federal Facilities
SAVEnergy Program Guidance, February 1995
SAVEnergy Quality Assurance Plan, April 1995

ENDNOTES

1. The Energy Policy Act of 1992(EPACT)(P.L.102486), Sec.158(a), Establishment of Energy Audit Teams.

2. EPACT. Sec.544(b), Use of Life Cycle Cost Methods and Procedures.

3. EPACT, Sec 543(b)(1), Energy Management Requirements for Federal Agencies.

4. EPACT, Sec.543, Energy Management Requirements.

5. EPACT, Sec. 152(a), Federal Energy Management Amendments.

6. Executive Order (E.O.) 12902: Energy Efficiency and Water Conservation in Federal Facilities, Sec.302(b) Comprehensive Facility Audits.

7. The Interagency Energy Management Task Force, established under Sec. 547 of the National Energy Conservation Policy Act (42U.S.C.8257), was polled for agency interest.

8. EPACT, Sec.545(b), Federal Energy Efficiency Fund.

9. FEMP SAVEnergy Request Form for Federal Agencies available through FEMP Help Desk or Regional Support Offices.