Successful Energy Management: An Electric Utility Perspective*

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ABSTRACT

Given the strong concern for the environment, a national desire to be energy independent, and a need to reduce corporate expenses, the stage is set for corporate energy management initiatives to be more successful than ever. Implementing a corporate energy plan can be challenging, and a number of important factors will primarily determine the effectiveness of these initiatives. This article presents recommendations for developing a successful energy management program from the perspective of an electric utility representative.

THE ENERGY MANAGER

The success of any energy management program will primarily be determined by the energy manager's ability to positively collaborate with others in the organization and to quantify and communicate the results of energy management initiatives. Corporate energy managers generally cannot mandate actions, but instead they must use both technical and people skills to convince others to champion and support their efforts. The effective energy manager is technically competent, crosses functional lines easily, and has the ability to compromise when necessary.

The most effective energy managers take their duties beyond just reducing energy consumption and reducing the expense of energy. Energy management initiatives can also produce benefits in areas such as employee productivity, safety, improved product quality, increased sales, customer satisfaction, and environmental stewardship.

As a starting point, the energy manager understands the corporation's business, goals, and cost structure well enough to recognize and quantify

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the energy and non-energy benefits of an energy efficiency initiative. It's certainly possible that an energy efficiency initiative could produce benefits associated with an increase in product sales or employee productivity that are much larger than the energy savings.

The next step is to quantify and communicate both the energy and non-energy related benefits. Once the various functional areas understand that the energy manager can help them achieve their departmental and corporate goals, the energy manager will be invited to provide input to the business unit decision-making process. Achieving the position of valued business partner to the corporation's business units should be a goal of all energy managers.

EXECUTIVE SPONSOR, GOALS, PLANS, AND BUDGET

It's always best to have an executive sponsor for the energy management function. The executive sponsor will give the energy management function organizational importance and influence. An executive sponsor can secure budget dollars for the energy management function or help smooth the way in dealing with a territorial functional manager.

Executives prefer goals which are easily understood, quantifiable, and achievable by the end of the year. The energy manager should develop annual energy goals and be fully prepared to achieve them, and a detailed energy plan should be provided to the executive sponsor at the beginning of the year. The executive sponsor should be informed regarding significant energy management successes, and a list of accomplishments and the value of each should be presented to the executive sponsor on a quarterly basis. Finally the energy management function needs a detailed annual budget.

Developing goals, plans, and budgets and reporting to executives may not appeal to every energy manager, but if the corporate energy manager doesn't do these things well, it may not be possible for the energy management function to survive in the long term.

SAFETY, EMPLOYEE PRODUCTIVITY, CUSTOMER SATISFACTION, AND PRODUCT QUALITY

Under no circumstances should energy efficiency initiatives adversely impact safety, employee productivity, customer satisfaction, or product qual-

ity. Implementing an initiative which harms one of these important areas could be disastrous. Following are suggestions for these important areas:

Safety

When developing any energy efficiency initiative, safety should be the first priority. As an example, various building areas may require a minimal lighting level at all times for employee safety. So when developing a lighting system, confirm that occupancy sensors will not create an unexpected and hazardous situation for employees.

Employee Productivity

Finding ways to retain employees and increase employee productivity is critical for organizations. The most common issue that arises for the energy manager in this area is thermostat settings. Energy managers will find that a thermostat setting that makes one employee comfortable may make another employee very uncomfortable. As the energy manager attempts to satisfy all employees, the building energy consumption may increase, but the gains in employee productivity will be worth it.

Customer Satisfaction

Customers pay the bills, and what the customer experiences and the resulting customer satisfaction and loyalty are very important. A lighting system that provides poor color rendition or lower than expected light levels can harm the customer shopping experience. An aggressive night setback program that causes a retail location to be uncomfortable to morning shoppers will drive customers away. Remember, satisfied customers mean business.

Product Quality

Product quality can mean that candy doesn't melt in the warehouse or that refrigerated cases are free of unsightly condensation. In any case, if additional equipment is needed to improve and maintain product quality, the energy manager should recommend the most energy efficient equipment possible.

PROMOTE AND COMMUNICATE

Effective energy management has become a popular way to improve a company's financial performance. As an example, turning off 80% of of-

fice lights between 9 p.m. and 5 a.m. has a high return on investment and will quickly increase net income. Most employees are not inconvenienced by such a practice, and this initiative is certainly more appealing than suspending salary increases, discontinuing matching 401(k) contributions, or laying off employees.

Energy management is good for net income, but it's also good for the environment and good for the country. Even with all of these positive factors working in the energy manager's favor, it's still important to promote energy management and communicate the benefits energy management initiatives are producing.

At any time the energy manager may be requested to attend a departmental meeting to discuss energy management. The energy manager should develop a comprehensive presentation that includes all completed and ongoing energy efficiency projects, along with all other energy management activities. Energy management activities are initiatives which typically fall under the areas of routine maintenance, operational best practices, or environmental stewardship.

The following will also cost effectively communicate the energy efficiency message and keep it in front of employees and occupants:

- Publishing an electronic energy newsletter sent to employees and occupants
- Hosting an "Energy Day" or "Energy Fair" at various locations
- Soliciting and communicating best energy practices from across the corporation
- Dedicating a tab on the corporate web site to energy topics

INFORMATION AND TRAINING

New energy efficient equipment and facilities are often very sophisticated and unique. To ensure successful implementation, the energy manager should make plans to fully explain new systems to occupants, operations personnel, and maintenance personnel. Occupants need to know what to expect and how to interact with new processes and systems. If occupants aren't informed in advance of how the new system or facility is different—and better—they could become frustrated when they encounter unexpected difficulties.

Operations and maintenance personnel should know how to oper-

ate, maintain, and repair the system or facility before they take it over. If possible, begin the communication and training process for operations and maintenance personnel well before the occupants and staff enter the building. Over-communication will prevent future problems, and it's always appropriate for the energy manager to encourage occupants and staff to call immediately if there are problems or concerns.

LOCAL CHAMPIONS

Energy managers can only spend a limited amount of time in widespread facilities, so it's important to have energy efficiency champions in each facility. These champions are ideally those especially interested in energy, the environment, or just reducing the expenses associated with their facility.

Just as many facilities have a safety committee, it's suggested that each facility have an Energy and Environment Committee to keep energy efficiency at the forefront and to give the energy manager a connection to the facility. As a matter of courtesy, confirm that the facility site manager is agreeable to establishing a committee and allowing employees to meet during business hours.

The Energy and Environment Committee should send meeting minutes, recommendations, and best practices to the corporate energy manager for review and discussion. It's always wise to recognize the contributions of the committee and to share best practices across the organization. If possible, the energy manager should also periodically attend these meetings.

A great way to grow energy efficiency champions is through energy efficiency education and certification programs. Offering Certified Energy Manager (CEM), Leadership in Energy and Environmental Design (LEED), or other education opportunities will involve others in the energy management process and grow technically competent champions.

PILOT PROGRAMS

Prior to beginning an energy efficiency retrofit, it's always best to conduct a pilot program before undertaking an entire system change-out. Install a few new pieces of equipment to gauge the response of occupants, employees, and customers. Prior to installing the equipment, communicate

the specifics of the pilot to the impacted occupants. Install the new equipment in a number of different test areas, and give the pilot the appropriate amount of time to observe results. Also solicit feedback from those impacted by the installation. If a new lighting system doesn't meet expectations, it's better to discover it during a pilot, so other products can be tested and evaluated. After obtaining the necessary feedback, the energy manager can make the appropriate adjustments and even conduct another pilot if needed.

One of the worst energy management mistakes is to complete an expensive, wholesale retrofit which does not perform and upsets building occupants and others. In the end, a well run pilot will save money and avoid the ill will that goes along with a system that doesn't work or doesn't fit the needs of the building occupants.

Once a wholesale change-out is underway, it's best to complete it in well-planned phases. The primary advantage of a phase-in is flexibility. A phase-in can be stopped or modified as needed, and if improved technology is available, the second phase can receive the newer technology.

NEW CONSTRUCTION

New construction projects provide the energy manager with the best opportunity to incorporate energy efficient equipment and practices into a facility. The sooner the energy manager becomes involved in planning the new facility the better. Designers never want to redesign their original design, so find a way to become involved in the conception and planning stages of a new project.

Typically, in new construction the energy manager will communicate his preferences to architects and engineers who are also receiving input from many others regarding the new facility. It's important to be clear and concise regarding recommendations for energy efficient equipment and practices. Make it as easy as possible for the designers to specify the desired energy efficient equipment and design features.

Once construction begins, periodic walk-throughs by the energy manager to inspect systems and installations is always a good idea. Simple things, like an exterior door that needs to be adjusted to reduce infiltration, can be identified during a walk through. During construction, the wrong equipment can sometimes be delivered and installed. Make it clear to the appropriate job site representative that critical pieces of equipment such as

HVAC and lighting systems should be checked to confirm that the equipment meets specifications.

As a matter of courtesy and professionalism, always obtain permission from the appropriate party to make job site walk-throughs, and also follow the approved job site communications process to request changes and corrections.

BUILDING COMMISSIONING

Building commissioning is highly recommended for new construction projects, and commissioning should include the building envelope, HVAC systems, and lighting systems. Commissioning ensures that the building and its systems are constructed as specified and that the building systems perform as intended. As part of commissioning, a systems manual and training should be provided to those operating and maintaining the facility. Part of the commissioning process should include a follow-up meeting with operations and maintenance personnel at an appropriate time after the building is completed to resolve any issues the staff may have.

MEASUREMENT AND VERIFICATION

After a facility is completed, it's prudent to conduct measurement and verification activities to confirm that the building and its systems are performing as projected in the design phase. If the building isn't performing as expected, then the energy manager can set about to identify the problem. If similar buildings are to be constructed in the future, the results of the measurement and verification process will be very valuable, and hopefully the next facility constructed will perform as expected.

OPERATIONS AND MAINTENANCE

When a beautiful, new energy efficient building has been constructed with the latest energy management system, it's time to maintain the building and its equipment to ensure it performs as expected. For the building to perform as expected, operations and maintenance personnel must have the direction, training, and resources to do their job correctly. To complicate

matters further, it's very possible that operations and maintenance personnel do not report to the energy manager. With the appropriate permission, it's certainly recommended that the energy manager monitor and review the activities of operations and maintenance personnel to confirm that systems are actually being operated and maintained to promote energy efficiency. In this situation a positive working partnership between the energy manager and the operations and maintenance functions will be needed.

SCHEDULED WALK-THROUGHS

In this time of sophisticated energy management systems, it's easy to become distant from the basics of energy management. To get the very best results, energy managers have to periodically walk through and check things. During the walk-through, the energy manager may find that the new energy management system is simply not managing energy as intended. Sometimes the programmable thermostat has lost its program, or the timers are bringing equipment on and off at the wrong times. Sometimes the lights in the basement storage room have been on for two weeks, when everyone thought they were off. Also, it's not uncommon to find that scheduled maintenance is not being performed on schedule. We have to *inspect* what we *expect*, and periodic walk-throughs to check things are recommended.

PARTNERING WITH UTILITY REPRESENTATIVES

Utilities want customers to be financially healthy for the long term, and utilities will support energy efficiency efforts which benefit their customers. A strong partnership with utility representatives will make an energy manager's job much easier. Some utilities have national accounts representatives who work closely with corporate energy managers, and these relationships have proven to be very productive. Most utilities can also help energy managers secure historical energy consumption information which will be very valuable in evaluating and monitoring the performance of buildings.

It's always recommended that the energy manager ask the utility representative for a periodic review of the corporation's accounts and discuss the various rate schedules and programs which may apply to their facilities. Likewise, energy managers should become very familiar with the

utility's web site and the incentives, rate schedules, programs, and service policies shown there.

SUMMARY

After observing corporate energy management programs for over twenty-five years, it's this writer's suggestion that energy managers should especially emphasize planning, teamwork, and communication as they carry out their duties. It's also important that energy managers never lose focus of the primary business drivers such as safety, employee productivity, customer satisfaction, and product quality. An energy manager with a business focus and track record of successful projects will become a key player in the overall success of the organization.

ABOUT THE AUTHOR

Mark Johnson holds a B.S. degree in mechanical engineering from Mississippi State University and an MBA from the University of Southern Mississippi. He is a Certified Energy Manager and LEED AP. Over the past 25 years, Johnson has held various positions in customer service, sales, marketing, and finance with Alabama Power Company and Mississippi Power Company, which are subsidiaries of Atlanta-based Southern Company. He received an Edison Electric Institute Award for his work on a major building renovation that employed a double-bundle heat recovery chiller for space conditioning. The US Navy also presented Johnson with a commendation for providing a cost effective and innovative solution for supplying shore steam to ships. He resides in Montgomery, Alabama, with his wife and two children. He can be reached at mpjohnso@southernco.com or 888-395-0159.