The Role of Awards Programs in Stimulating Energy Efficient Behavior: A Study of Award Winners

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ABSTRACT

Do awards for outstanding energy efficiency projects foster long lasting, institutional change and reductions in energy use? Or do they function as a one-time slap on the back for one-off projects that don't necessarily affect behavior throughout an organization? This paper delves into these questions by reporting on an analysis of interviews with 22 Department of Energy Federal Energy Management Program (DOE FEMP) award winners. Interviews with individuals and teams of award winners shed light on the roles that awards programs can play in stimulating energy efficient behavior, especially with regard to institutional dimensions of such behavior. Award winners identified institutional facilitators and barriers in their projects and programs as well as factors in their implementation processes, thus providing information that can guide other efforts. Although only one of the interviewees affirmed that winning an award was a direct motivating factor for their projects, awards do validate often-hard-won achievements through recognition and, in some cases, smooth a path to additional resources. Finally, award winners' responses demonstrated the importance of behavioral and institutional change in energy efficiency and how these factors can be more difficult to address than technological improvements.

Introduction

Guidance for programs to promote energy efficient behavior often recommends giving awards for changed behaviors that achieve energy savings. In the U.S. Federal Government, awards programs (sometimes paired with competitions) are often included in awareness campaigns to promote energy efficiency. Awards as one form of incentives are discussed in the Department of Energy (DOE) Federal Energy Management Program's (FEMP's) *Creating an Energy Awareness Program: A Handbook for Federal Energy Managers* (FEMP 2007, p. 17):

> Non-financial, ongoing incentives might include such things as certificates of achievement, public recognition such as having names of energy savers listed in the organization's newsletter, recognition of military personnel by chains of command, the opportunity to be held up as an energy leader or mentor on site, and school award programs. Consider recognizing outstanding contributions by presenting in-house energy management awards.

Awards may take many forms, from on-the-spot certificates or badges (such as the "caught being green" badges at the Centers for Disease Control) to competitions among groups to formal awards programs. This paper focuses on formal awards programs sponsored by Federal agencies or other organizations whose goals include energy efficiency, with a specific analysis of the current outcomes and potential for institutional change in the DOE FEMP awards program, based on an interview study of award winners from 2012-2013.

One objective of the study was to identify the value of an awards program to the sponsoring organization. Most of the national-level awards programs for energy efficiency (see list in Appendix 1) state as their motivation that the organization wishes to recognize and honor those who have made outstanding achievements in energy efficiency—as Heath and Heath (2010) say, to "find the bright spots." The Association of Energy Engineers adds a motivation of advancing the industry, presumably by publicizing the state-of-the-art in energy efficiency. Other motivations may be to publicly raise awareness of energy efficiency as something of value and to encourage both the winners and others to continue and build their energy efficiency programs. For some organizations, awards ceremonies can be events that demonstrate to funders how well the organizations' programs are working.

However, there are some suggestions in the literature that awards may have some negative consequences, as well. U.S. Department of Defense focus groups, while acknowledging that recognition is important, also reflect the view that rewards should not be given for doing a job that one is paid to do (Skumatz & Freeman 2013). Ashraf, Bandiera, and Lee (2014) add another dimension: "Our results suggest that awards can have a negative effect on performance as they facilitate social comparison, even though they have a positive effect through employer recognition and enhanced social visibility." Moreover, criteria for awards may not take into account differences among shops, functions, duties, and the scale of jobs (Ashraf et al. 2014).

The awards programs in Appendix A are oriented toward specific achievements, as is the DOE FEMP program. Before 2012, most, if not all, of the DOE FEMP awards were given for achievements in technology adoption and consequent energy savings[1]. During 2011, consultation with a group of social scientists from DOE's National Laboratories led to including a criterion for *institutionalization*. That is, an award winner must show that he, she, or the team has made progress towards weaving energy efficiency into a new "business-as-usual", for instance, by expanding or cloning projects or by changing the rules of contracting or operations. Thus, the motivations for this awards program have expanded to include recognizing and fostering institutional change that furthers energy efficiency for the longer term.

The inclusion of institutionalization in the awards criteria prompted us to evaluate the use of institutional change principles in award winning programs and to assess other human dimensions aspects of these programs. In this paper we address the following questions:

1. What characteristics of institutional change are most prevalent in these award winning projects?
2. What are the obstacles faced by award winners?
3. Do the awards motivate projects?
4. Are there benefits or consequences of this award?

[1] Official Goals of the FEMP awards program, from http://energy.gov/sites/prod/files/2013/10/f3/fs_fewm_award.pdf

Goals/Objectives: Accelerate energy savings, cost savings, technology transfer, strengthen our national security, and help America decrease our dependency on foreign sources of energy; Recognize and encourage agency staff who are implementing game changing energy and water management practices that support meeting Federal energy management goals. The awards focus particularly on projects or programs that use innovative technologies and financing strategies and institutionalize energy and water savings; Improve awareness among senior management officials about the individuals and projects for continued support of their important work; and Encourage innovation and replication.

Methods

Twenty-two award winners from 2012 and 2013 were interviewed (of a total of 59 winners in the two years). The armed forces are disproportionately represented in winning (and submitting) awards. To gather data from a variety of agencies, we did not use a random sample but selected some projects that were less common types or from smaller agencies, alongside the more typical projects and departments. The interview protocol consisted of twenty-four questions that centered on the institutional aspects and human dimensions of their projects, rather than the technical aspects. Seven of these questions (see Appendix B) were coded to assess whether previously identified institutional change principles were used. The questions that were not analyzed pertained to specific feedback for FEMP on communications resources and the awards program, such as ease of application to the awards program and use of communication materials (Malone et al. 2014).

Responses were coded into eight categories, reflecting eight principles of institutional change. These principles were gathered from the social science literature on what motivates behavior and organizational change in energy efficiency projects (Malone et al. 2011). Table 1 lists the principles we used as codes and their definitions, and provides one or two examples of that principle from the interview data.

Table 1. The 8 principles of institutional change for energy efficiency programs

Principle	Definition	Example
Social Network and Communications	See or hear of others (individuals, groups, institutions, firms) behaving differently	"We use a newsletter as one of our main communications tools with GSA building managers in the Region. We draw on existing service center competitiveness. Energy is the focus of the new manager so they focused their newsletters on energy. It includes a 'monthly energy tracker' showing the energy use for each service center. The newsletter was so effective that when other newsletters were discontinued and banned within the branches, they made a case for theirs and were able to keep it."
Multiple motivations	Doing things for more than one reason, provide different and combined appeals.	"Siting was a principle aspect of making the building 'green.' Would be accessible by walking and biking, which sealed the deal for siting the visitors' center... It helped that a green/sustainable building was aligned with USFWS mission. For example, a notable feature is the public display showing how much energy being produced by the PV. This aligned with the USFWS mission of educating public about the environment."

Principle	Definition	Example
Leadership	Workplace rules change and visible leadership communicates management commitment; demonstrate commitment	"The interconnection process was the largest obstacle and it required intervention and advocacy from political representatives to become reality."
Commitment	Make definite commitments to change, especially when those commitments relate to future conditions ("save more tomorrow"); specific and public	"They wanted the building to be recognized for all the work they were doing. When they were told they couldn't retrofit a 16-year-old building to be EnergyStar rated, it only motivated them to pursue it. It took 3-5 years of work to move through the entire process."
Information and feedback	Receive actionable information and feedback	a) "Utility data was key. It took about 3 years of reviewing their utility data and looking for ways to reduce usage to get from a score of 38 to a score of 75." b) "They monitor the project, beyond verifying the technical performance. They ask, 'How have the staff who use the building reacted? Have they noticed? Are they having any problems?'"
Infrastructure	A changed infrastructure compels new behaviors that are easy or desirable, e.g., defaults changed, incentives to use infrastructure more efficiently.	"They put a water system in to change water effluent from the city… Took potable water out of the irrigation system and returned 2% of the city's potable water back to them."

Principle	Definition	Example
Social Empowerment	Desirable social goals; people of all levels involved in program design and processes.	a) "He stresses collecting ideas from users, reaching out to facility managers to see what they had been trying to reduce energy use, and getting public recognition for those doing the right thing." b) "Talked to [staff] who deal with HVAC and found out from them what they thought would be low cost/no-cost ideas. She gave voice to leadership for their ideas."
Continuous Change	Plan for a multiyear process that creates, grows, and clones workplaces, processes, and products that build sustainability	a) "3 LEED buildings, a black-water project, and a solar project." b) "Of the 211 vehicles, 36% converted to electric originally, and now 45% are."

Responses to the question about obstacles encountered in project planning and implementation were also coded using categories that emerged in analysis. These were then consolidated into five types of obstacles: lack of resources, rules, psychological barriers, lack of information, and communication problems. The remaining questions, which assessed awards as motivation and outcomes of getting the award, did not require a coding system.

Results

Q1: What characteristics of institutional change are most prevalent in these award-winning projects?

The table below shows the number and percentage of projects that demonstrated the principles. As most of the projects were oriented toward technology, infrastructure was the highest ranked principle, followed by multiple motivations and leadership. Least demonstrated were the principles of commitment and social empowerment. Examples of these principles in action in award winning projects can be seen in Table 1, above.

Table 2. Frequency of institutional change principles in FEMP award winning projects

Principle	Number of cases*	Frequency as a percentage of participants
Social Networks	12	55%
Multiple motivations	17	77%
Leadership	17	77%
Commitment	2	9%
Information and feedback	15	68%
Infrastructure	20	91%
Social Empowerment	9	41%
Continuous Change	14	64%

*Total number of award winning groups interviewed = 22

While all award winning projects are exemplary models of successful energy efficiency projects, some projects appear to be more successful in fostering institutional change—in changing policy, business arrangements, or other "sticky" features that will stay in place and foster energy efficiency on a continuous basis. Reviewing the interviews, we identified five cases that stood out as models of energy management excellence in this sense. These projects generally used more of the principles than the other projects - only three projects in the entire sample used a total of seven principles and these three were among the five stand-out cases. Using more of the principles could indicate greater success in implementing institutional change to save energy, although this requires further study. Quality, not quantity certainly matters; the two remaining excellent cases used five and six principles each. Given that all five groups used five or more principles does suggest that greater engagement with the principles does favor better outcomes in terms of institutional change.

Q2: What are the obstacles faced by award winners?

Award winners faced numerous institutional challenges in planning and implementing their projects in primarily five categories: lack of resources, problematic rules, psychological barriers, lack of information, and communication problems. The table below lists the frequency of these obstacles as experienced by the 22 award winners, with examples of each drawn from their interviews.

Table 3. Obstacles encountered by FEMP award winner sample

Obstacle	Number of cases	Example
Lack of resources	9	a) Lack of funding generally b) Lack resources to train staff or hire needed staff c) Lack of maintenance funds and finance tools to do maintenance
Rules	8	a) Agency is not allowed to make a long-term contract; utility had to get state approval to change contract terms b) "Even if money is available, there were hurdles to get the funds approved to be spent. Lots of documentation and signatures were required."
Psychological barriers (attitudes such as skepticism, worry, disinterest; lack of leadership support; norms)	7	a) "Trying to get people to turn their computers off at night, but IT kept telling people they had to leave them on. They looked into it and they have automatic turn-on at 4:30am for updates. Talked to leadership and they said it is true but IT is afraid that if there is a failure they'll never be promoted." b) "#1: Attitudes—wanted to keep what they had, no matter how old the system was." c) "Certain tenants have a strong sense of entitlement."
Lack of information (lack of familiarity with technology, need for training)	7	a) "Decision makers on the team were skeptical about the VRF system, because it does not allow for the usual level of control... the civil engineers worried about malfunction. They were convinced by data on successful systems." b) "Some of the tech with the LEED buildings require more training than they expected to repair and maintain them."
Communication problems	4	a) Lack of communication between building managers and tenants b) "They are not taking in base input."

The most often cited (n=9) obstacle was a lack of resources, especially funding. Rules were identified in eight cases as creating a barrier to institutional change. These rules include complicated sets of regulations that require high level or legislative change (e.g., interconnection standards and rules), purchasing rules, securing multiple approvals, and budget policies (e.g., if an office saves money, then the next budget is reduced by that amount).

Rules are not only obstacles, though. Changing rules and having policies in place that set goals for saving energy or using renewable energy were also cited as helpful and as a way to overcome other barriers.

Tied for third in obstacle frequency (n=7) are an array of psychological factors and lack of information. The psychological factors include skepticism, feelings of entitlement, fear of change, lack of leadership interest, and social norms that prevent behavior change. Lack of information was often linked to a lack of training being made available to staff or building

occupants. In one case, feedback data was sent to staff who had no training to interpret the data and so the feedback was not used. Here information was available, but the knowledge to use it was missing. Congruent with this finding, we note that some award winners were unaware of the FEMP resources or could not find what they were looking for on the FEMP website.

Lastly, communication problems were noted as an obstacle. This included lack of communication between different levels of an organizational hierarchy. For military base and office building managers, communication with tenants was sometimes problematic. On military bases, the transience of their energy users and needing to repeatedly train new residents was seen as a barrier.

Q3. Do the awards motivate projects?

Only one interviewee stated outright that the FEMP awards program was a motivation for the winning project. While many of those who answered this question stated that the primary motivation for their projects was intrinsic, that they saved energy because that what was valued in their office or that was the mission of their job, they also would note that awards were helpful and valued outside of their office. As one winner said, "We're intrinsically motivated. If the awards didn't exist, we'd still be doing what we're doing. The awards help on the DOD side. The military folks go crazy for awards. 'Cuckoo for Cocoa Puffs' type crazy!" Other external motivations included LEED certification, Energy Star rating, and the Presidential GreenGov award.

This is self-reported motivation which admittedly gives a very limited perspective on the full range of motivating factors, especially those that are either not socially desirable or not operating at the conscious level. To better assess motivation in this program, an experimental model would be welcome, but was not possible within the scope of this study.

Q4: What are the benefits/consequences of this award?

The FEMP award benefited awardees in several ways including increased attention and connection to leadership, adding credibility to one's efforts, "feeling vindicated," morale boost, and better access to funding. Some unexpected benefits included getting new ideas from other award winners at the ceremony in DC and using part of the application document for other purposes.

Conclusions

From this study of institutional change elements in a sample of FEMP award-winning projects, we found that award winning programs do employ strategies derived from principles of institutional change, with change to infrastructure being the strategy most often employed, followed by using multiple motivations and securing backing from leadership. We have identified under-utilized principles, namely social empowerment and commitment, that agency managers could incorporate into their programs to increase the effectiveness of their energy efficiency efforts. Both of these principles have strong social science evidence to support their efficacy in appropriate situations, so their increased use would likely increase the margin of success for many projects.

Five categories of institutional obstacles were identified in the interview data. The most often cited obstacle is lack of resources, especially funds. Lack of funds is an obstacle to

implementing tools that can facilitate institutional change, such as training or communication efforts. It is also notable because availability of funds was also cited as key to starting a planned project that had been on the shelf until funds were available, such as when ARRA funds were distributed. (Six of the 22 projects/programs were ARRA-funded.) If continuous change is a critical aspect of institutional change, it is also critical to have funds available to maintain existing projects and to begin new ones. In addition, socially determined factors such as perception of importance or subjective assessments of value influence budgets. Lack of resources is especially acute for "products" like training or travel to conferences that expand peer networks or routine maintenance (since these are less tangible than new infrastructure, such as solar panels or electric vehicles). If requests for resources for these kinds of less tangible and less attention-getting measures were given equal consideration, then there could be longer-lasting institutional change than when major, "one-off," but more exciting projects are funded for a limited time. While funding can rise easily to the tops of energy managers' minds as a primary obstacle, they were also quick to identify many other obstacles that were rooted in institutional rules, social dynamics, psychological factors such as attitudes and group norms, and other non-technological aspects of a program.

This awards program does not directly motivate managers to start new energy efficiency projects; however, there is evidence that within some federal agencies, awards and other types of external motivations (e.g., certifications) are highly valued. As a consequence, awards serve a function within the agency's system of validating a manager's work and thus validated, potentially opening the door to more resources, faster approval of future projects, and moving more quickly past institutional barriers. There are intrinsic benefits as well, including building up a sense of pride within a group or the satisfaction of demonstrating mastery. This is supported by evidence in the literature. Ariely (2009) makes the point, based on experimental evidence, that non-monetary awards are more effective than monetary awards; this is consistent with Pink's (2011) assessment of the research showing that primary motivations of much of human behavior are mastery, autonomy, and connection to a higher purpose. These extrinsic and intrinsic benefits of awards programs are inherently social benefits that can affect institutions as well as individuals. These benefits, taken together with award winners' use of strategies that address human and organizational behavior to create successful projects and overcome obstacles, demonstrate the importance of behavior and institutional change in reducing energy use. Emphasizing institutional change as an important feature of successful projects opens a pathway to enhancing the value of awards programs and can assist energy managers in achieving lasting energy efficiency through institutional change.

References

Ariely, D. 2009. *Predictably Irrational: the Hidden Forces that Shape Our Decisions*. New York: Harper.

Ashraf, N., O. Bandiera. and S. Lee. 2014. Awards unbundled: evidence from a natural field experiment. *Journal of Economic Behavior and Organization*. http://dx.doi.org/10.1016/j.jebo.2014.01.001.

FEMP (Department of Energy, Federal Energy Management Program). 2007. *Creating an Energy Awareness Program: A Handbook for Federal Energy Managers*. http://www1.eere.energy.gov/femp/pdfs/yhtp_ceap_hndbk.pdf

Heath, C. and D. Heath. 2010. *Switch: How to Change Things When Change Is Hard*. Crown Business.

Malone, E., C McDermott, A. Wolfe, R. Diamond, C. Payne, T. Sanquist, J. Reed and J. Dion 2014. *Interviews with FEMP Award Winners: Feedback on the FEMP Awards Program and Communications Resources*. PNNL-23170. Pacific Northwest National Laboratory, College Park, MD.

Malone, E., T. Sanquist, A. Wolfe, R. Diamond, C. Payne and J. Dion. 2011. *Evidence-Based Background Material Underlying Guidance for Federal Agencies in Implementing Strategic Sustainability Performance Plans*. ORNL/TM-2013/107. Oak Ridge National Laboratory, Oak Ridge, TN.

Pink, D. 2011. *Drive: The Surprising Truth about What Motivates Us*. Riverhead Books.

Skumatz, Lisa A and D Juri Freeman 2013. Social marketing in an unusual environment – the military. A case study in ready, fire, aim. 2013 Internal Energy Program Evaluation Conference, Chicago.

Appendix A

Awards programs:

ACEEE: http://aceee.org/about/awards (no statement of the intent of the awards)

Alliance to Save Energy, Stars of Energy Efficiency: http://www.ase.org/events/2013-evening-stars-energy-efficiency-awards-dinner
("The Star of Energy Efficiency awards are bestowed upon individuals, organizations, companies, learning institutions, and government programs that have demonstrated a significant and tangible commitment to the cause of energy efficiency both in the United States and abroad.")

Association of Energy Engineers: http://www.aeecenter.org/i4a/pages/index.cfm?pageid=3345
("By identifying those who exemplify the very best in their fields, energy professionals are honored and the industry is advanced.")

Department of Energy, Federal Energy Management Program Awards (Better Buildings, Federal Energy and Water Management): http://energy.gov/eere/femp/articles/awards-saving-energy
("recognizing individuals and organizations for outstanding contributions toward saving energy and water in Federal facilities.")

Energy Efficiency Integration Awards: http://www.savingsbydesign.com/energy-efficiency-integration-awards-eeia (to honor those who integrate energy efficiency into building designs, sponsors are utilities)

Energy Star Awards: https://www.energystar.gov/about/awards (to recognize)

Inspiring Efficiency Awards (Midwest Energy Efficiency Alliance): http://mwalliance.org/conference/inspiring-efficiency-awards (to recognize)

Platt's 2013 Global Energy Awards: http://geaweb.platts.com/CategoriesDetail/energyefficiency (criteria for judging, intent to honor and recognize awardees)

White House GreenGov Presidential Awards: http://www.whitehouse.gov/greengov/presidential-awards
(From the Executive Order on Federal Leadership in Environmental, Energy and Economic Performance, honoring Federal civilian and military personnel, agency teams, agency projects and facilities, and agency program in several categories.)

Appendix B

Interview questions analyzed:

1. Can you briefly describe the process of your FEMP award winning project?
2. How did you start? What were the factors that led to the initiation of the project or program?
3. Were FEMP materials or conversations with FEMP folks part of the decision to go ahead with the project?
4. Was the awards program a motivating factor in the decision to start the project or program?
5. In the process of making your project happen, were there people that were particularly helpful?
6. Were there policies in place that were helpful?
7. What were the obstacles?
8. What are your plans to continue monitoring your project and/or to help others to do something similar?