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The FEMP Awards Program: Fostering Institutional Change and Energy Management Excellence

May 2014

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Prepared for the U.S. Department of Energy
under Contract DE-AC05-76RL01830

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Summary

This report assesses the use of institutional change principles and the institutional impact of award-winning projects through interviews with 22 Department of Energy Federal Energy Management Program (DOE FEMP) award winners. 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.

We found that award winners do use strategies based on eight principles of institutional change, most frequently in terms of making changes to infrastructure, engaging leadership, and capitalizing on multiple motivations for making an energy efficiency improvement. The principles drawn on the least often were commitment and social empowerment.

Award winners also faced five major types of obstacles that were institutional in nature: lack of resources, constraints of rules, psychological barriers, lack of information, and communication problems.

We also used the seven categories of Energy Management Excellence (EME) as a lens to interpret the interview data and assess whether these categories relate to established institutional change principles. We found that the eight principles reflect *strategies* that have been found to be useful in improving energy efficiency in organizations, whereas the EME categories capture more of a blend of social contextual factors and strategies. The EME categories fill in some of the social context gaps that facilitate institutional change and energy management excellence, for example, personal persistence, a culture that supports creativity and innovation, and regular engagement with tenants, contractors, and staff at all levels. Taking together the use of principles, EME criteria, and obstacles faced by interviewees, we make recommendations for how FEMP can better foster institutional change in federal agencies.

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1.0

Introduction

Guidance for programs to promote energy efficient behavior often recommends giving awards for changed behaviors that achieve energy savings. For example, 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.

In the U.S. Federal Government, awards programs, sometimes paired with competitions, are often included in awareness campaigns to promote energy efficiency. The Department of Defense (DoD) and Department of Homeland Security (DHS) Strategic Sustainability Performance Plans (SSPPs), among others, state an intent to establish competitions and awards programs. However, DoD focus groups in one study (Skumatz and Freeman 2013) indicate that not all awards programs motivate individuals and that they may be counterproductive in situations where saving energy should be part of the job. Two summaries of comments illustrate these mixed attitudes:

Facility-level / local rewards (even fairly token rewards that would be visible to facility users) would provide motivations (suggestions included gym equipment, tee-shirts, pizza parties, or other items).

Recognition might be a motivator; however, simple metrics might not be meaningful given the variety of activities on the site. Others wondered why there should be a reward when you get paid to do a job. They were concerned that recognition of strong performance, when shops, functions, duties, and "scale" are all different, would be hard to assess.

A brief analysis of the stated goals of nine current energy efficiency awards programs show that most are oriented toward rewarding specific achievements over specific time periods (see, Appendix A for list of programs), rather than institutionalizing energy efficiency as "business as usual." This raises a question: do awards for outstanding energy efficiency projects foster long-lasting, institutional change and reductions in energy use? Or do they function as a reward for one-off projects that don't necessarily affect behavior throughout an organization? This paper delves into these questions, specifically the use of principles that favor institutionalization and the institutional impact of award-winning projects, by reporting on an analysis of interviews with 22 Department of Energy Federal Energy Management Program award winners. For the DOE FEMP, previous to 2012, the awards criteria favored achievements in technology adoption and consequent energy savings. Transferability was considered but not given as much weight in the evaluation of nominees¹. During 2011, consultation with a group of social scientists

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 [continued on next page]
- 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
- Encourage innovation and replication

from DOE's National Laboratories led to strengthening a criterion for *institutionalization*. That is, an award winner must show that he, she, or the team has made progress towards weaving project results into 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 greater recognition of and fostering of institutional change that furthers energy efficiency.

In this paper, we report on an assessment of the FEMP Energy and Water Management Awards Program to identify the institutional elements of award-winning projects and programs and to assess the relative emphasis placed on these elements. (A companion report [Malone and McDermott et al. 2014] focuses on elements that reflect program communications and effectiveness.) The next section discusses our methodology. Then we report findings from the analysis of institutional elements. Next, we apply a proposed framework for assessing excellence in energy management to two examples of the award-winning projects and programs. We then draw conclusions about elements that agency managers could utilize more to increase the effectiveness of energy efficiency efforts and assess the diagnostic framework.

2.0 Research Questions

1. What characteristics of institutional change are most prevalent in these award-winning projects?
2. What are the obstacles faced by award winners? Are there institutional factors that play a role creating obstacles? What role do institutional change factors play in removing obstacles?
3. How do the principles of institutional change fit a model of energy management excellence?

3.0 Methods

Twenty-two award winners from 2012 and 2013 were interviewed (of a total of 59 winners in the two years). The interview protocol consisted of 24 questions that centered on the institutional and human dimensions rather than the technical aspects of the projects. Seven of these questions 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 and McDermott et al. 2014). The questions analyzed were:

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

Responses were coded into eight categories, reflecting eight principles of institutional change (Malone et al. 2013, Malone et al. 2011). These principles were drawn from the social science literature on what motivates individual behavior and organizational change in energy efficiency projects. Table 1

lists the principles and their definitions, and provides one or two examples of each principle from data. Initially, the responses were coded as well to assess three contextual features of projects that are important to fostering institutional change: rules, roles, and tools. Responses were also assessed for their fit into seven Energy Management Excellence (EME) categories that were developed by FEMP (Dion 2013), drawn from social science research and informed by their experience with federal energy programs. The three contextual categories and the EME categories were determined to not be useful in this analysis as part of the coding scheme, since they encompassed several variables at one time, making them difficult to analyze.

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 coding.

Table 1. The Eight 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 National Capital Region (NCR). We draw on existing service center competitiveness,” said an interviewee. Energy is the focus of the new manager so they focused their newsletter 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; providing different and combined appeals.	“Siting was a principal aspect of making the building ‘green.’ [It] 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 [is] being produced by the PV. This aligned with the USFWS mission of educating public about the environment.”
Leadership	Change workplace rules as a visible leadership communicates and demonstrates management 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"); commitment should be 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.”

Principle	Definition	Example
Information and feedback	Receive actionable information and feedback.	“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 a score of 75.” “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	Through changed infrastructure, compel 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.”
Social Empowerment	Tie into desirable social goals; people of all levels involved in program design and processes.	“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.” “Talked to NCOs 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.”

4.0

Results

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

Table 2 below shows the number and percentage of projects that demonstrated the principles outlined above. As most of the projects were oriented toward technological improvements, it is not surprising that 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 22 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

Q2: What are the obstacles faced by award winners? What role do institutional change factors play in removing obstacles? Are there institutional factors that play a role creating obstacles?

Award winners faced numerous institutional challenges in planning and implementing their projects in 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 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, and 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, not surprisingly, a lack of resources, especially funding. While lack of funds is not typically considered an institutional factor, it is notable as an obstacle to implementing tools that can facilitate institutional change, such as training or communication efforts.

In eight cases, rules were identified 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 can facilitate change. 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 (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 billing data were 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. While many award winners showed that they used the principles of leadership (n=17) and information and feedback (n=15) it is notable that these issues still present as barriers in organizations. Use of principle-based strategies could also help address the other psychological barriers, such as improving communication with skeptical parties and including them in feedback loops to give them more accurate information. Public commitment, another underutilized strategy, could also be used to shift social norms, especially including public commitment from leadership in organizations that are hierarchically structured, as federal agencies are.

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 the need to repeatedly train new residents was seen as a barrier. It is noteworthy that social empowerment, i.e. listening to the suggestions of those in the field and engaging all levels of an organization in a project, is one of the least used principles and would be helpful in addressing communication problems.

Q3: How do the principles of institutional change fit a model of energy management excellence?

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. Use of the institutional change (IC) principles analyzed above can be indicative of a project successful in fostering institutional change, but they are not comprehensive. Specifically, IC principles are primarily manifest as strategies and do not include important contextual factors that make energy management excellence possible. In an effort to benchmark and measure an organization’s capability to meet the requirements of various Federal mandates in the area of energy efficiency and sustainability, FEMP managers have developed a set of seven Energy Management Excellence (EME) criteria, shown in Table 4 (Dion 2013).

Table 4. Energy Management Excellence (EME) Criteria

EME Category	Elements Included
Demonstrated Results	<ul style="list-style-type: none"> Green on Scorecard Goal achievement Innovative processes Facility design and measured performance Awards Energy, water and dollar savings Goals, strategies, plans, resources
Organized and Managed	<ul style="list-style-type: none"> Accountable Continuous effort Systematic processes Connected to facility/building levels Connected to utilities/ESCOs and industry Strong communication
Technical Expertise and Knowledge	<ul style="list-style-type: none"> Strong technical capability; access to expertise Deep knowledge of facilities, energy use, technologies, opportunities, resources Diverse teams (technical, legal, procurement, policy) Sound analytical processes

EME Category	Elements Included
Leadership, Passion, Commitment	Strong support from organizational leadership Commitment at all levels Visible passion and commitment from leaders and team members Awards and recognition for success “All on board” awareness and training
Engaged with Organization	Communication/training to all staff/occupants Focus on workforce needs Reporting and feedback -specific for performance, general for stakeholders Incentives/disincentives in place “Innovate, adapt, overcome” Accepts challenges
"Can do" savvy	Persists to overcome barriers Creates new organizational relationships/structures -- changes business models Understands context – no “one size fits all” Works around barriers/roadblocks – uses influence and informal networks
Mission Connected	Demonstrated “Value to Mission” (gets leadership buy in) “More fight, less fuel” (DoD, Army, Air Force) Energy is mission critical; energy security is mission capability Blurred line between facilities and operations

Initially the EME categories were part of the coding system used to analyze the interviewee data. Coding is effectively a method that transforms qualitative data into a more quantitative analysis-friendly form. However, it became apparent that the categories contain multiple concepts within a single category, making them not reliable as a way of coding data. As an alternative for the EME analysis, we used a more qualitative approach with each researcher considering each project as a whole, not coding for specific concepts. Each researcher analyzed the projects for fit with the EME categories and compared notes to see which cases best fit an EME model. Through this process we identified five cases that stood out as models of energy management excellence. When comparing an EME model to IC principles, we found that these five projects used more IC principles than other projects. Three of the five EME stand-out cases each used seven IC principles, and these were the only cases in the entire sample to use so many principles. 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 IC principles each. Given that all of the cases identified as fitting best with the EME model used five or more strategies based on IC principles does suggest that greater engagement with the principles does complement conditions that favor energy management excellence.

Complementing the above analysis of EME fit, we conducted a more in-depth examination of two projects that exhibited a high number of strengths in the areas covered by the eight principles discussed in the previous section. If such projects demonstrated strengths in the EME criteria, the analysis should indicate that the criteria will be a useful tool in analyzing both the readiness of an organization to succeed in energy efficiency and sustainability efforts, and in identifying areas of strength and weakness.

EME Analysis of Individual Winner, David Morin at Laughlin Air Force Base

David’s energy efficiency work is a combination of projects, maintenance, and promoting individual conservation efforts. He has seen a 29% reduction in energy, 24% reduction in water, and 49% reduction in petroleum use (compared to 2005). 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. Thus, he has **demonstrated results** and is highly **engaged in the base organization** by involving maintenance staff, facility managers, and contractors in efficient operations while supporting

their efforts through, for example, researching to find the most efficient products and processes for their use. He has the **technical expertise and knowledge** from his career experiences, a degree in mechanical engineering, and extensive use of FEMP resources (including training, conferences, materials for Energy Action Month and contacts with FEMP staff). His efforts are **mission connected** in that he created a channel for the base Commander to recognize good ideas and accomplishments; he has also tapped into the competitive culture of the Air Force in bringing his base from last to first in energy efficiency among the 12 bases in the Command. He has **organized and managed** from the bottom up, with continuous efforts to change facility and utility practices mainly through communication and collaboration; he also set up tiger teams in areas such as leak detection. His outreach efforts range from giving out simple information to drawing energy from elliptical machines in the gym, holding contests, and developing an energy “flash mob.” This creativity and breadth of approach illustrates his **“can do” savvy**; this is bolstered by **leadership, passion, and commitment** starting with a personal commitment to saving energy and inspiring that value in others.

U.S. Department of Agriculture/Forest Service Solar Installation and Utility Agreement

A NetZero facility was developed by replacing the original 1965 HVAC system and installing efficient boiler, lamps, plug load strips, and occupancy sensors. A major feature is a photovoltaic (PV) system connected to Southern California Edison (SCE) grid. These PV panels generate more than 100% of their energy needs and receive credits for excess generation.

Notable **demonstrated results** are the achievement of a net-zero energy Technology and Development Center at San Dimas, CA; the extension of a GSA Schedule contract to include an investor-owned utility; and an interconnection agreement with Southern California Edison that allows excess energy to be credited to the San Dimas facility. To achieve these results, **technical expertise and knowledge** were marshaled from the facility, the regional USDA office, the legal office in San Francisco, and staff at FEMP, GSA, Veterans Administration, U.S. Forest Service, and others. The team **organized and managed** the long process by drawing in support, including agencies that would also benefit from the utility agreement, and each member of the core three-person team credits the **leadership, passion, and commitment** of the others in persisting through difficulties and delays. The project illustrates **“can do” savvy** in creating a new business model available to other facilities and agencies and meeting the challenges that arose, and the buy-in of multiple agencies’ leadership as well as political leadership at the state level shows **mission connection**. (Note that one EME criterion, **engaged with organization**, is not demonstrated by this specific project.)

5.0 Conclusions

The eight principles reflect *strategies* that have been found to be useful in improving energy efficiency in organizations, whereas the EME categories capture more of a blend of social contextual factors and strategies. The EME categories fill in some of the social context gaps that facilitate institutional change and energy management excellence, for example, personal persistence, a culture that supports creativity and innovation, regular engagement with tenants, contractors, and staff at all levels. Interviewees such as the two cases highlighted above fit many of the EME categories, as well as using strategies derived from the principles of institutional change, suggesting that evidence based strategies complement EME contextual factors, but more research is required to establish and refine these factors.

This analysis also indicated that there is a need to sharpen the differences between EME categories, as there was considerable conceptual overlap between categories and with the eight principles. It also suggested that some of the eight principles could also be refined, such as clarifying the difference

between engaging a social network and using social empowerment. While the data were not coded using EME categories due to the categories needing greater refinement, we did review award-winning programs to identify ones that appear to exemplify the EME categories. In this review, we noted that explicit mission connection is not a strong finding. However, there were cultural values connected to the missions of an organization that played a clear role in motivating their projects. For example, a cultural value was used in agencies with an environmental conservation oriented mission that was also public facing, such as in a National Wildlife Refuge visitor center.

Considering barriers to implementing energy efficiency projects, five categories of institutional obstacles were identified in the interview data. The most often cited obstacle is lack of resources, especially funds. While lack of funds is not typically seen as an institutional factor, it is notable as an obstacle to implementing tools that can facilitate institutional change, such as training or communication efforts. It was 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 American Recovery and Reinvestment Act (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, social factors 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 and exciting 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 study design raises a question as to whether there may be a selection bias having an effect on these results, in that we do not know whether or not nominees who did not win awards use IC strategies in their projects. In other words, we do not know whether using IC strategies is a hallmark of successful projects or not. Nominees who do not win awards could be using IC strategies but do not write as compelling a submission narrative as winners, or perhaps save smaller amounts of energy but have bigger IC impacts that are overshadowed. FEMP could be missing these projects when this step in creating institutional change is a foundation for making larger energy savings. FEMP could pursue a study to investigate this by conducting a study similar to this one but with a random sample of winning and non-winning participants and assess correlation between successful projects and use of IC principles.

6.0 Recommendations

In addition to recommendations made in *Interviews with FEMP Award Winners: Feedback on the FEMP Awards Program and Communications Resources* (Malone and McDermott et al. 2014) (see Appendix A.2 for the full list), we have the following recommendations for FEMP to help promote institutional change in federal agencies:

1. **Encourage underutilized strategies:** Looking at the two least used principles, we can identify ways FEMP could potentially help agencies by encouraging them to use these underutilized strategies. Commitment was only used in two of the award winning programs, and social empowerment was used in just nine. FEMP customer service and other program offices can offer clients strategies that emphasize making a public commitment to and publicizing the commitment to staff when they

choose a new strategy or tool to improve energy efficiency. FEMP staff can also recommend to clients that they practice more outreach to operations, maintenance or other staff ‘in the field’ in all stages of a program, from collecting ideas, creating a plan, and implementation.

2. **‘Alumni’ network:** FEMP could also foster social networking and social empowerment among peers by leading a “community of practice” where energy managers can learn from one another, as suggested in an earlier report. This could build on their identity as connected to each other through FEMP. In the interviews, some participants mentioned they appreciated getting to meet other winners and network at the award ceremony, but that after there was no clear way to maintain connection. As an example, on the lower end of resource use, FEMP could create and moderate a listserv, to the extent that FEMP ensures people don't abuse the network, etc. A similar idea requiring a bit more effort could include FEMP sending out a monthly highlight of a project to the group, with the contact info for the awardee noted so others can contact them directly. Since the awards community is small with diverse interests, it might be a challenge to create a network with high levels of participation. To encourage engagement with this community, FEMP could encourage award winners to organize a bi-monthly webinar presented by an award winner, either on an existing project or future project for which they'd like feedback. This could provide an incentive to participate by having access to a wider audience. In alternate months, the alumni network could meet and plan the next webinar and exchange ideas. The IC team could assist them by helping them to analyze the institutional and organizational aspects of their projects. In any form, this could provide a benefit to both the awardees and FEMP. If FEMP program heads are part of the network, they could reach out to clients more easily and serve as a more easily accessed resource when awardees have questions about new projects.
3. **Case studies highlighting how people overcame institutional barriers:** Seeing that obstacles are encountered by every award winner and that many obstacles are institutional in nature, not technical, FEMP could act in the role as advisor and strategic problem solver using an institutional change approach. When FEMP clients present the customer service team or other staff with obstacles they are facing, FEMP could suggest strategies derived from the eight principles and the EME categories. Case studies of successful projects where institutional barriers are overcome can provide some examples of this and serve as a jumping off point for helping a client think through IC based strategies that could help them.
4. **FEMP digest featuring a FEMP award winner of the month:** To highlight successful use of IC strategies, the FEMP Digest could feature a FEMP award winner of the month, giving a short description of the project, highlighting the IC components, and including contact information for award winners who agree to be resources to the FEMP community.
5. **Refining EME categories:** If FEMP would like to use the EME categories for future research, it would help to “unpack” them and possibly add more categories so that each category reflects one idea. FEMP may also consider including two contextual factors that emerged as relevant to successful projects in a few cases in the EME categories: valuing conservation (n=7) and valuing achievement (n= 3). Valuing conservation is defined as organizational emphasis on conservation of resources, environmental or energy. Valuing achievement reflects an organizational emphasis on achieving goals. Recognizing both of these values when they are part of an institution can help energy program managers more effectively appeal to what motivates people in their organization and to align energy efficiency goals with organization mission.
6. **IC evaluation of award submissions:** Either the IC team can evaluate nominations specifically on the institutional change criteria or the IC team can train judges on how to better assess the institutional change components of a project.
7. **Evaluate the award application as to how it can better solicit details of IC aspects:** The IC team could take a new look at the application form to see how more of the process of the project, e.g., the

obstacles encountered, who played different roles in the project beyond the applicant team, whether they took steps otherwise not identified to implement a technology or policy, or highlight changing energy culture as a measure of success even when large amounts of energy are not yet saved.

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 pathways to enhancing the value of awards programs. Explicit attention to institutional change factors helps both to increase the potential for successful energy efficiency efforts and improve the prospects for lasting changes. Examples of how award winners (and others) met institutional challenges and used evidence-based strategies can assist Federal managers in achieving lasting energy efficiency through institutional change. FEMP's use of evidence-based strategies can enhance the awards program, e.g., by making winning strategies known (with appropriate caveats re the constraints and opportunities of specific situations) and by creating capability through development of knowledge-sharing groups.

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Appendix A

Appendix A.1

Awards Programs

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

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

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)

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.”)

White House GreenGov Presidential Awards: <http://www.whitehouse.gov/greengov/presidential-awards>

Alliance to Save Energy, Stars of Energy Efficiency: <http://www.ase.org/events/2013-evening-stars-energy-efficiency-awards-dinner>

Appendix A.2

Recommendations from Earlier Study of FEMP Awards program

Recommendations from Report PNNL-23170, Interviews with FEMP Award Winners: Feedback on the FEMP Awards Program and Communications Resources

The suggestions that follow come directly from participants and are put into context by the institutional change team, contributing insights based on evidence based literature.

- 1. Create a community of practice:** The awards program offers a unique opportunity to form a community of practice (a group of people in similar professions). All of the FEMP award winners were enthusiastic about being part of an online community of other award winners and other federal workers working on similar projects. Many people expressed interest with a caveat about time constraints and so would welcome an opportunity to find other federal workers with expertise in an area they have questions about or who could find them with similar requests. People would like to connect in person and learn from other people working in the field, but budgets for travel are small to nonexistent. Encouraging a community of practice could help fill this gap and desire to build a network, and could take the form of 1) a shared email address list with notes about people's areas of expertise, 2) a LinkedIn group (if accessible by all members), or 3) a listserv where a winner's work is briefly described once a month so others would be aware of the expertise they offer or whatever is most feasible yet provides an opportunity for award winners to connect to one another in an ongoing manner. One participant suggested creating "a federal energy communications working group using SharePoint."
- 2. Shine a light on bright spots:** The awards program also offers a potential for FEMP to shine a light on energy efficiency "bright spots" and provide a source of models for other FEMP programs. This could be potentially most useful for the FEMP customer service team, being able to connect clients interested in certain types of projects with federal workers who have already had success in these projects.
- 3. Targeted outreach to those with momentum:** There was a surprising number of award winners who had very little interaction with FEMP, or were not even aware of FEMP until they had applied for the award. And after receiving the award, much of their contact with FEMP is limited to receiving the FEMP Digest, which many of them find interesting, but they feel limited in terms of time to read through it or look up more information on topics in it. Reaching out to award winners, and possibly even to nominees who do not win, to support their ongoing and new projects could be very worthwhile as these groups have demonstrated interest in reducing energy use and have gotten a toehold in their organizations. Some organizations have very good internal resources, and DOD offices, in particular, may have specific requirements and internal resources they must use. Reaching out to them may be less important than to those agencies with fewer resources and limited exposure to energy efficiency opportunities outside of their office. Many award winners do take advantage of FEMP trainings and technical information. Following up with those who take part in trainings and webinars could be helpful to them.

4. **Move beyond information dissemination for Energy Action Month:** A few award winners who received Energy Action Month materials commented that the information/awareness materials can feel a bit staid or did not fit their organization – or, in one case, literally did not fit their light-switch plates. One person stated that he would appreciate a FEMP-produced template for an interactive Energy Action Month booth, offering ideas for demonstrations and activities that could be used to engage various audiences. Another suggested adopting a contest that she sees on her base in Germany, where they have an energy poster contest with local schools and the public votes on submissions by children. The winning submission becomes the poster for energy month. This could be done as a calendar, with information about the winning child artist on the calendar. She noted, “People pay attention to stuff from kids!” While this is anecdotal, it is consistent with social science research that has shown it is easier to catch someone’s attention with a message from a surprising source. Also, messages from a likable, personalized source can be more persuasive.

One strategy is to begin with an awareness campaign, such as what one might do at an energy fair booth, and move on to action; this would be a stratified action campaign. Stratifying actions can target a specific area, i.e., identifying an area where action to save energy can be taken and developing a series of actions that build upon each other; this is a way to better engage office staff or residents. For example, if “vampire” plug loads are a problem in a building, a campaign could be developed where employees are asked to identify energy vampires – with examples in an email, or displayed with watts used at an energy fair booth. This could be followed up with a smart power strip handout, including the option of displaying a “vampire slayer” badge (a simple printout on paper). Leadership could be especially encouraged to display their vampire slayer badge of commitment on their office doors. The next action step would be for energy managers to follow up with staff, letting them know how much less energy was used in the building after 1 month, 6 months, and a year after the smart strips were implemented.

To further engage staff, energy managers can adopt an “Easter egg hunt” approach, identifying the hidden treasures of energy efficiency, e.g., brainstorm how managers and occupants can use less energy, and find ways to make saving that wasted energy part of their job, not an exceptional action. The focus in this kind of activity is for energy managers to provide new structures that make it possible to for staff to do the things managers want them to do to save energy.

It would also be helpful for energy managers doing outreach to ask “What can we do?” – not just “What can staff do?” Energy managers can make a dropbox of suggestions part of an energy fair booth activity, asking staff where do they see wasted energy or problems in a building? This can be particularly effective for offices that have two energy action months, or fairs for both energy action and Earth Day. During the second fair, there is an opportunity to follow-up with these suggestions, showing what improvements have been made and then asking staff to make a commitment to change an action of their own that they identify as wasting energy.

5. **Put yourself in their shoes:** An idea that emerged in the interviews was that materials and resources would be improved if the ultimate user was kept in mind in development of these resources. Specifically, this surfaced in discussions of implementation, and a need for greater assistance from FEMP in implementation. This could be in the form of how to implement contracts, or maintenance and operations of equipment, or monitoring and validation. Understanding implementation needs can also be enhanced by talking to those in operations.

Another area where this approach would be beneficial is in the organization of the website. The website navigability and internal search function came up frequently as a barrier to taking advantage of FEMP’s resources. And lastly, the Digest could be tailored more specifically to a user. Interviewees stated that they appreciated the Digest but were overwhelmed by it and often, it was “to

be read later,” a time that never arrived since they had competing demands on their attention. If it could be possible to allow a user to mark the areas of energy management resources they are interested in receiving when they sign up for notifications, they would then only get news related to their interests. Or perhaps the Digest could indicate specific content better, so that users could know right away if there were items of interest for them or not. This would reduce their cognitive load, making it more likely they could take in information about the one or two items of interest to them.

6. **Be aware of software limits and make resources accessible to all:** Related to understanding user needs, understanding user limits is also needed. Agencies with low Information Technology (IT) budgets or security constraints (primarily in DOD offices) have difficulty accessing resources that require special software, plug-ins, or executable files.
7. **Encourage teamwork, especially with people in the field:** The planning stage of a project is when award winners most often used FEMP resources. Several interviewees also emphasized the importance of building relationships throughout their chain of command, particularly including people in the field, in operations and maintenance. Encouraging FEMP resource users to build a strong team to tackle their project, making a point to include people in the field who will be affected by proposed changes, during the planning phase of their project could help more projects succeed. In addition, some award winners noted how they developed ideas for projects based on asking people in the field for ideas; another key to the planning stage.



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