

Unlocking Operational Efficiency in Office Districts: Lessons from Smart Energy Now[®]

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ABSTRACT

Operational efficiency has remained elusive despite the potential for 10-20% savings from low and no cost measures in many office buildings. This is because office building energy performance is shaped by the actions of multiple stakeholders, including the owner, facility staff, occupant organizations and office workers. These stakeholders control different aspects of energy use and have different interests. Furthermore, they all face social barriers such as the need for information feedback, process assistance, and social endorsement.

Smart Energy Now[®], an advanced metering and community engagement pilot in Charlotte NC, is one of the first programs to focus exclusively on operational efficiency in office buildings across an entire downtown. A preliminary evaluation reveals that the pilot has been successful in many of its activities, including gaining almost 100% owner participation, providing professional development for facility staff, and training more than 450 Energy Champions. Several other programs are also successfully using stakeholder-based strategies.

These programs reveal important lessons for implementing operational efficiency programs. Efficiency potential varies depending on each building's physical characteristics and organizational structure. Therefore, many programs are using flexible frameworks that establish a process for participation, but allow stakeholders to select the activities that make sense for them. Support from organizational leaders is essential for efficiency to become part of office culture. Facility staff also benefit from professional development and top-down endorsement to pursue efficiency. Finally, new program resources are needed to support both program outreach and process activities, and local implementation partners can help provide ongoing engagement.

Potential for Operational Efficiency

Operational efficiency has remained elusive despite its potential to generate immediate cost savings. Each building has varying efficiency opportunities, but most office buildings could reduce their energy consumption by 10-20% at little or no cost (Belzer 2009). Effective measures typically include changes in lighting and office equipment use, base building operations and maintenance, and purchasing practices. Building energy performance as compared to design also tends to fluctuate because of these factors.

Consumption levels may range widely among similar buildings, but energy use within each is typically highly patterned (Lutzenhiser 1993, 256). This is because energy use results from cognitive, emotional and social forces at work within an existing organizational and economic structure. Adjusting these dynamics can change energy consumption patterns.

Energy consumption in office buildings is shaped by the decisions and behavior of *owners, facility staff, occupant organizations* and *individual employees*. Each type of stakeholder has distinct roles and routines, controls different aspects of energy use, and may or may not be responsible for related costs. They all face social barriers to efficiency that are not directly related to financial concerns.

Office Building Stakeholders

On a daily basis, the occupant organizations, their employees, and facility staff shape energy consumption. Occupant organizations and office workers are responsible for about 60% of energy consumption through the use of lighting, office equipment and other plug loads, and data centers. Facility staff operate the HVAC systems and the base building equipment that is responsible for the remaining 40% (Belzer 2009), (D&R International 2009), (US EIA 1999), (Harris et al. 2012). Each stakeholder's daily routines and awareness of energy use is developed in the context of his or her role within the building. Efficiency incentives are thus introduced into settings with pre-existing energy-behavior "incentive structures" (Lutzenhiser 1993, 257).

Owners. Owners approve capital expenses, but may have differing interests, priorities and return expectations for investments in efficiency. Their view on the value of investment in efficiency may focus more or less on increasing rents, decreasing operating costs, or green branding. Owners may also be able to pass the majority of operating costs on to occupant organizations, which may decrease their return on capital investments and reduce their incentive for efficient operations. Owners may or may not also be the organization that occupies the building.

Occupant organizations. Organizations have varying levels of control over the energy systems in their workspace. They may or may not pay the related electricity costs, depending on their lease structure. Organizational culture strongly influences individuals' daily practices, and organizational support is needed to change purchasing practices and temperature set points.

Office workers. Workers can drive efficiency through their everyday habits, such as their use of lighting, office equipment, and the stairs and revolving doors. Workers are largely insensitive to energy costs and unaware of consumption. Even if they are motivated, they may not know the range of energy-saving actions that they could take and the relative impacts of each.

Facility staff. Staff members have the greatest direct control over building operations, but are rarely empowered to promote efficiency. Facility staff may work for a property management company or directly for the building owner, but their compensation is typically not related to the building's energy performance. The facility staff develops capital budgets and implements projects, but ultimately the owner makes investment decisions. Staff may even receive positive reinforcement from owners and occupants for prioritizing comfort or "keeping things running."

Social Interventions

Each stakeholder faces non-monetary barriers to efficiency such as a lack of contextualized information, a complicated process, and the need get buy-in from other stakeholders. These barriers can be addressed through three main types of interventions:

- **Information Feedback.** Metering and benchmarking can establish an energy performance feedback loop that provides meaningful, contextualized information. This can be combined with education and training to help better decision-making.

- **Process Assistance.** Implementation assistance makes the process less complicated and time consuming. Pledge and tracking systems help people set goals and evaluate progress. Rewards and recognition motivate individuals.
- **Social Engagement.** Top-down endorsement helps establish priorities and mobilize and coordinate stakeholders. Peer groups such as friendly competitions, green teams and professional networks provide a shared experience.

In theory, social interventions should be designed based on an understanding of which consumption-related decisions stakeholders control and what motivates them. Educational efforts must provide the information that matters to people in a format that resonates with them. This paper examines how these strategies are being applied in an office building setting.

Testing a Comprehensive Model: Smart Energy Now[®]

Smart Energy Now[®] (SEN), a new advanced metering pilot in Charlotte NC, is one of the first utility-led efficiency programs to focus exclusively on operational efficiency in office buildings. The program is customizing its outreach and engagement activities to the different stakeholders, their motivations, and the barriers they face. This paper provides a preliminary evaluation of program implementation to help identify successful activities. The findings are placed in the context of other current office district programs to reveal emerging best practices.

Program Design

Smart Energy Now[®] aims to reduce energy use in buildings in the Charlotte central business district (Uptown) by up to 20% by 2016, including 5% from no- and low-cost actions. The program is working with the 64 largest office buildings in Uptown, totaling 20 million square feet (98% of the target market). More than 300 organizations occupy these buildings, and more than 20,000 people work in them (Shircliff). SEN installed advanced metering systems in all of the buildings, which provide meter-level data for owners and facility staff. Interactive kiosks in all the building lobbies and a parallel web site display community-wide electricity consumption in real time, track the number of people that have pledged to take an action, and provide information and resources for program activities.

Initial outreach to owners focused on gaining approval for installing the meters and kiosks. In exchange, SEN offered owners information feedback and public recognition.

The program is conducting outreach to office workers through Energy Champion trainings and community-wide action campaigns. Duke Energy staff and local partners conduct a short training and brainstorming session in each building. Energy Champions are then encouraged to implement a project in their office and to talk to their coworkers about efficiency. The program helps develop a social network through the training experience and online forums. The web site also provides tools such as an office space audit, campaign ideas and blog stories. To date, the program has trained 450 Energy Champions in 41 out of 64 participating buildings.

The action campaigns are being used to rally the community around a few simple actions at a time. The first campaign, “Flipping Out [unnecessary lights]” ran from February 6 to April 20. Targeted actions included finding a light that could be turned off permanently, using more day-lighting, and “adopting a room.” Energy Champions reported undertaking more than forty five lighting-related activities in their offices. In addition, Duke Energy handed out over a

hundred “Flipping Out” toolkits including light switch reminders and a “Crab You’re It” game with plastic crabs for people to put in coworkers’ offices when lights were left on.

Smart Energy Now[®] provides facility staff with building-level information feedback in the form of 15-minute interval data provided through a web interface. Duke Energy also partnered with the local chapters of the International Facility Manager’s Association (IFMA) and the US Green Building Council (USGBC) to establish a professional group to convene and share best practices. The group has met twice to date with an attendance of about 45 people each time.

Through these activities, SEN aims to increase energy literacy, awareness of opportunities to cut energy waste, and the value assigned to efficiency, thereby encouraging people to change energy-related routines, behaviors, and purchasing practices. The ultimate goal is to drive changes in controls and settings, increased capital investment in efficiency, and spillover to businesses and homes outside of Uptown.

Why Smart Energy Now[®] is Unique

While several other programs are using a stakeholder-based approach to promote efficiency in office districts, the Smart Energy Now[®] pilot is innovative in several ways. Most friendly competition programs are working with a fraction of their target markets and are probably attracting early adopters. Because SEN is working with 100% of its target market, it revealed distinct challenges and opportunities among different types of participants.

In addition, Duke Energy was able to experiment with a metering and behavioral efficiency program because it is being implemented as part of the Save-A-Watt program portfolio. Most administrators of publicly funded programs are compensated based on program costs plus a percentage return that is sometimes adjusted based on performance. Through Save-A-Watt, Duke Energy is compensated based entirely on the measured outcomes, not the cost of specific program activities. Duke Energy can therefore undertake activities and spend money as it sees fit because it is at-risk for ensuring that savings are delivered. This has given it the freedom to experiment and the ability to adjust its activities based on the market’s response.

Smart Energy Now[®] is also being promoted as the first initiative of Envision Charlotte, a new collaboration between local government, non-profits and the largest employers and building owners. Envision Charlotte seeks to link economic development with sustainability and brand Charlotte as an “energy hub.” The initiative provides a framework for community engagement, fosters multi-sector collaboration, and allows for longevity beyond a single program.

Process-Based Evaluation

Smart Energy Now launched in November 2011. A preliminary process-based evaluation of Smart Energy Now[®] was conducted five months later, in March 2012. Process-based evaluations provide an understanding of how a program is being carried out. Since the pilot is early in implementation, the evaluation was meant to identify the ways that people have had contact with the program, the relative success of different activities, and how they can be strengthened. These findings will be used to help the pilot achieve its three-year goal.

The process-based evaluation used a sample of twelve buildings totaling 6.5 million square feet. The buildings are representative of all Smart Energy Now[®] participants in terms of building age, size and energy use intensity. The buildings are controlled by six different owners and are occupied by more than 100 businesses. The owners, occupant organization leaders,

facility staff, and workers were interviewed in each building. Focus groups were also conducted with a sample of Energy Champions and a randomly selected department within one building. In addition, an intercept survey was conducted with 100 office workers.

Several other efficiency programs are also using social interventions to target specific stakeholder groups in office buildings, including the Building Owner and Manager Association's (BOMA's) Kilowatt Crackdown and Carbon4Square friendly competitions, ICLEI and the City of Chicago's Green Office Challenge friendly competition, and the Environmental Defense Fund's (EDF's) Climate Corps summer fellowship program. Many companies also have internal sustainability programs, using tools such as the Practically Green platform. These programs are agnostic to the type of efficiency action undertaken, and therefore often result in low and no-cost actions, although capital measures are also sometimes undertaken. A closer look at Smart Energy Now[®] in the context of these efforts reveals success trends and the kinds of implementation partners and resources needed.

Lessons for Implementing Operational Efficiency Programs

An examination of Smart Energy Now's[®] early implementation efforts reveals several key lessons, which also align with best practices from other office district efficiency programs. The following six lessons could be broadly applicable when designing and implementing a stakeholder-based approach to energy efficiency in office districts.

Physical and Social Conditions Vary Among Buildings

Efficiency potential varies widely depending on each building's physical characteristics and organizational structure. In Charlotte, newer buildings with more modern systems and controls are likely to have less potential for operational efficiency than older, less automated buildings. Larger, more sophisticated organizations (that primarily occupy the Class A buildings) are also more likely to have existing commitments to sustainability and the capacity and resources to support new initiatives. Therefore, less sophisticated buildings and organizations may have both the greatest efficiency potential and greatest need for assistance.

The 64 buildings participating in Smart Energy Now[®] have a range of existing physical systems. Many of the modern "Class A" buildings were constructed in the 1980s and '90s and were recently renovated, or are of even more recent vintage. These buildings are more likely to have professional facility staff, building management systems, and automated controls for lighting and other energy-related uses in the workspaces. By contrast, the older, smaller buildings often do not have highly trained facility staff, a capital budget distinct from the organization's overall budget, or automated sensors and controls. These buildings have greater opportunities for low and no cost efficiency measures.

Just as Charlotte's buildings have varying physical baselines, the occupant organizations have varying cultures and existing commitments to sustainability. In some cases, sustainability aligns with the organization's brand, mission or commitment to corporate citizenship. These organizations have existing green teams and encourage volunteer activity. These efforts have high-level management support and internal communication channels such as web pages and email lists. Employees know that their supervisors will value participation in these programs. This makes it easier to integrate a new effort like Smart Energy Now[®].

Most organizational cultures are not as supportive of efficiency. Other priorities trump efficiency for office workers' time and attention. One interviewee said, "I think recycling is great, but I have other things to do," and another said, "Work is work, and we're not here to be hippies." Several people said they did not turn off their lights when leaving for meetings, because others would think they had "checked out" for the day.

Across Uptown, there is currently a very low level of awareness about energy consumption and motivation to be efficient. In the intercept survey, thirty of a hundred people stated they think about energy use at work and do things to save energy, primarily actions related to lights, computers or monitors, or the revolving door. The remaining seventy people said that they do not think about energy use at work. These findings were supported by comments made by other interviewees, who said, "People just don't think about it," "People are too busy worrying about their business," and "If it doesn't relate to my job then I don't have time."

As a result, companies that were already motivated to pursue sustainability are actively participating in SEN, while in others the initiative is getting lost in the shuffle. In these buildings, substantial top-down endorsement and implementation support may be needed.

The Community Needs a Flexible Framework for Participation

A range of program resources will be needed to address differences in existing conditions among buildings. Pledge, tracking and reward systems emerge as a clear best practice for integrating all program activities. These structures have three basic "game" components, including setting the baseline, establishing a reward system, and tracking progress over a set time. Different stakeholders can then select the resources they need and which efficiency actions to take. This provides a framework for delivering feedback, process assistance and engagement.

Many successful efficiency programs are tailoring pledge, tracking and reward systems to the target stakeholder groups. These programs use metrics that are meaningful to the participants, provide a challenging but achievable goal and timeframe, and allow people to compare and collaborate with their peers. SEN is still refining its participation framework for organizational leaders and facility staff. However, it has successfully encouraged Energy Champions to launch their own projects, many of which use pledge, tracking and reward systems.

Building-level participation frameworks. Many pledge, tracking and reward systems target building-level decision makers such as the owner and facility staff. For example, BOMA is running friendly competitions in both Seattle and Portland. The Kilowatt Crackdown in Seattle uses buildings' Portfolio Manager scores, while the Carbon4Square competition uses a point system to cover several aspects of sustainability. In both, buildings establish a baseline score and compete to improve it over the course of a year.

BOMA's competitions provide a structured process and a means of delivering technical assistance and education. Participants receive a free scoping study, access to a "coach" who can answer questions, and free engineering certification for buildings that qualify for an Energy Star label. The program staff conducts regular workshops and trainings on topics such as energy management system basics and making the business case for efficiency. Carbon4Square also uses an on-line progress-tracking tool, emails and reminders to encourage buildings to meet process milestones such as benchmarking energy use. At the end of the year, awards are given in several categories, and a media campaign recognizes the winners.

BOMA's programs have achieved significant market penetration and retention of participants. The 53 properties that competed in the first round of the Seattle Kilowatt Crackdown represent over twenty percent of the Puget Sound market, and their average Portfolio Manager score increased from 71.3 to 73.9 (Better Bricks 2009). In Portland, 85 buildings (twenty percent of the market) are participating in Carbon4Square (Davis 2011), which will conclude in June. More than 85% of participants in BOMA's competitions complete the process.

Chicago's Green Office Challenge also uses a friendly competition framework, but has different scorecards for property managers and tenant organizations. It even dedicates a category on the scorecard to their relationship with each other. All participants establish a baseline score in several resource categories, such as energy and water, then track their activities and earn points to improve their score. Participants can select which activities to undertake to achieve different levels of recognition. The first round of the competition was held in 2009-2010, and more than 150 property managers and tenant companies participated. Participants reduced their energy usage by an average of 7.9%, and collectively saved more than \$5 million. (ICLEI)

Smart Energy Now's[®] community-wide pledge and tracking system was designed to maximize participation among owners and organizational leaders, but had to create less stringent participation requirements to do so. The community-wide goal was effective in gaining support from the major employers: Bank of America, Wells Fargo, Duke Energy, and the City and County. Once these organizations agreed, the rest of the building owners followed. These organizations saw Smart Energy Now[®] as another project following in Charlotte's spirit of local collaboration and corporate citizenship. Moreover, owners said that SEN would not have the same level of excitement and involvement if there, "wasn't a bigger picture" than Duke Energy.

However, many owners did not want to publicly share their meter data due to "reputational risks." Owners were also concerned that they could not commit to a building-level savings target because they were not able to make capital investments and/or did not think their buildings had significant "low hanging fruit," given the vintage and quality of construction of their portfolio. A community-wide goal and tracking system addressed these concerns. Yet now buildings have access to program resources and are getting recognition, but are not being individually held accountable or rewarded for actively participating.

Programs for office workers. Many companies use pledge, tracking and reward systems for internal initiatives ranging from quarterly sales goals to holiday food drives. For example, EBay provides resources, centralized coordination and recognition for its Green Team program, but lets local chapters come up with their own project ideas, such as "funky mug" contests to encourage the use of reusable cups (Bray 2008). EBay's Green Teams grew from 40 employees in one office to over 23,000 employees in 23 countries in just two years (Fleischer 2009).

Web-based platforms such as Practically Green are now providing the structure for companies such as Seventh Generation and EnerNOC to roll out internal green team programs (Stevens). The Practically Green web interface uses a point-based system for tracking individual actions, such as carpooling and taking shorter showers. Participants can associate with teams, set goals, earn badges, and see what others are doing. Companies can put their brand on the interface, tailor it to focus on specific actions, create company-specific competitions and goals.

Smart Energy Now[®] is one of the first efforts to initiate employee engagement programs from outside of an organization. Their primary focus has been direct engagement with office workers through the Energy Champions program. But many Energy Champions have decided to

create pledge, tracking and reward systems in their own offices. These projects reveal the peer groups that workers relate to and the type of rewards they want.

To date, Energy Champions have submitted information on forty-five projects they have undertaken in their offices. Fourteen were friendly competition or collaborative goal programs. Competitions typically used a weekly or monthly timeframe, and rewards were often a lunch or ice cream party. Groups were often organized by department or floor. Four Energy Champions targeted groups of less than 20 people, thirteen projects worked with groups between 20-50 people, and only seven worked with groups or buildings of more than 100 people.

For example, one Energy Champion created a competition in which coworkers could give each other “Energy Star” cards for reducing waste, and the person with the most cards won a lunch with the director of their group (Duke Energy). Another Energy Champion created a collaborative goal program called “Watt Counts!” She conducted an office space audit to identify energy waste and then created a chart to track progress. She held a kick off lunch with coworkers, and now provides efficiency tips and progress updates at staff meetings. At the end of the year, the department will hold a celebratory lunch if the goal is achieved (Duke Energy). Yet another building is holding a “Race to Reduce” competition between floors to turn off monitors at night. At the end of the month, the winning floor received a free breakfast.

Pledge, tracking and reward systems enable stakeholders to compete among peer groups that are relevant to them, whether they are other property owners in the same market or departments in the same business. Participants get feedback on their individual and collective impact, and can compare their progress with others’. While rewards are necessary, they can be as simple as branded reusable cups or free lunch. “Bragging rights” are a powerful incentive for owners, facility staff and office workers alike.

Work with Occupant Organizations to Create a Culture of Efficiency

Operational efficiency efforts only work when they have organizational support. Many office district programs take this for granted because participants self-select. The Environmental Defense Fund’s Climate Corps works primarily with sophisticated organizations such as large corporations, local governments and universities. In fact, EDF will not send a summer fellow to work with an organization unless both the leadership and facility staff have committed to the process. The BOMA program staff reports that the participants in its friendly competitions tend to be either “beginners” or “experts,” but that the majority are regional third party management firms with a vested interest in their brand and market position (Davis 2011).

SEN’s Energy Champions program is achieving active participation from motivated individuals. All of the participants in the Energy Champion focus group made statements about their commitment to sustainability, such as “I am really passionate about environmental protection.” Interviewees said they learned about new things in the training, such as vampire energy and the energy saved by using the revolving door, and reported changing their own behaviors as a result. Through the Energy Champions program, SEN has engaged the “early adopters” who are most motivated to promote efficiency. The majority of Energy Champions’ projects were primarily an individual’s responsibility, such as adopting common area lights, turning off one’s monitor at night, and changing settings on office and kitchen equipment.

Energy Champions’ success getting their colleagues involved varied depending on the level of organizational support. The fourteen pledge and tracking projects discussed in the last section all had implicit organizational buy-in through integrating activities into staff meetings

and providing funding for the rewards. But in other organizations, several Energy Champions said that it was hard to roll out ideas to their coworkers because they were too busy doing their job. One Energy Champion said, “As the only one on my floor it’s difficult to do anything.” For example, the “Crab You’re It” game had varying success. Six Energy Champions reported using the game in their offices, and one interviewee said that there was, “a noticeable number of offices that are dark during the day. Now I can’t assume the light reflects whether they are there.” But another interviewee said, “Crabs don’t work in office culture, just can’t see it in a serious office atmosphere where people wear suits and make lots of money.”

Overall, workers tend to identify with their organization and follow its priorities. A staff person, who is primarily involved in business operations, sent an invitation for the Energy Champions training to her organization of several hundred people and received two responses. She reported this to the head of the organization, who decided to “nominate” specific individuals, and they all attended. Many interviewees made comments like, “when the head of the division says something is going to happen, it happens” and “if your boss tells you to, you normally do.”

The interviews and focus groups in Charlotte revealed that many people do not feel their organization is making efficiency a priority. Even if workers knew that their organization or building was participating in SEN, it frequently did not feel relevant to daily activities. One person said, “You are twenty-two managers in; the layers are so deep that the managers don’t support it even though the message is clear at the top... It gets lost in the gray area.” Another said, “We’re still waiting for someone to say, ‘Let’s do it!’”

Making efficiency an organizational priority can exert a powerful influence on individual behavior. Practically Green found that people are more strongly influenced by the behavior of their colleagues than their friends or neighbors, because work is a place where people seek to fit in (Stevens 2012). Moreover, Practically Green and the Climate Corps both report that organizations benefit from a culture of sustainability because it helps attract and retain workers by fostering a collaborative and enjoyable work environment.

SEN’s initial efforts focused on getting building owners to allow the advanced metering systems to be installed. Once owners agreed to participate, day-to-day responsibility was delegated to facility staff. But Smart Energy Now[®] recently launched a “Declaration of Commitment” campaign for organizational leaders that includes expectations for participation, best practices to achieve organizational and behavioral change, sample templates for communications with employees, and a toolkit of resources to run campaigns in their offices.

Train and Empower Facility Staff

Some facility staff would benefit from additional training in fault detection and efficient operations, particularly in less sophisticated buildings, but the greatest challenge that facility staff face is keeping other building stakeholders happy. This often drives energy-related building operations more than cost concerns. Facility staff would therefore benefit from greater support from building owners and occupant organizational leadership. Successful programs are also using professional networks to empower and recognize facility staff as champions of efficiency.

Smart Energy Now[®] has affected facility staff differently depending on whether they work for a property management company in a large building or are for an owner-occupant organization in a smaller building. Property management companies are participating in Smart Energy Now[®] because they see efficiency as a branding opportunity and value-add they can

provide clients. They did not benefit as much from the interval meter data because their buildings were likely to have more sophisticated systems in place already.

By contrast, the information feedback was helpful for older or smaller buildings without BAS systems. One building found that an air handler was running over the weekend, and another building found that an AC system was running overnight on one floor. But staff in less sophisticated buildings also tended to have less professional training, and some had difficulty interpreting the interval meter data and using it for fault detection. One interviewee said, “We had a big blip in our power bill, and I was trying to figure out why... I saw that there was an overall increase; it was continual, not at one time. We think it’s the chiller, but we’re still investigating.” This reveals that more education and training may be helpful.

Facility staff consistently stated that they appreciated the opportunity to build a local professional network. SEN’s partners, USGBC and IFMA, recognized that effective outreach to facility should focus on facilitating dialogue among peers. Participants in the forums discussed recent projects in their buildings and shared advice about the best equipment brands and vendors. The staff from property management organizations said they liked sharing their experience with the staff of smaller buildings. One interviewee said “Our role as a good corporate citizen is to share a lot of knowledge and bring others along. Our folks can train other people’s folks.”

Facility staff all struggle to balance the interests of owners, tenants and workers, and keep everybody happy. Many facility staff said that their biggest headache was “hot and cold calls.” Interviewees griped, “We have set points for a reason,” and “Wear a sweater!” Occupant organizations often determine key policies such as temperature set points and building operating hours. Facility staff prefer to concern themselves with equipment operations and respond to tenants’ preferences, rather than try to convince them to change. One senior facility staff member said, “We are all champions of sustainability. That’s not a question, but we have different roles.”

Building owners and occupant organizations can empower facility staff by making efficiency a stated priority. Both the Climate Corps and the Green Office Challenge have processes intended to help organizational leaders and facility staff communicate better and work together to achieve efficiency. Once stakeholders are aligned in support of efficiency, facility staff are happy to make changes to temperature set points and other energy-related operations.

Use Distinct Resources for Outreach and Process Activities

Personal interactions may be most effective for outreach, while web sites and other media resources are more useful as a process tool. Both Smart Energy Now and the Climate Corps recruit participants through direct outreach to owners and organizational leadership. The BOMA programs recruit facility staff from their existing membership, and SEN also conducted outreach through professional organizations such as the USGBC and IFMA. Similarly, Energy Champion recruitment was most successful when conducted through internal organizational channels.

In contrast, SEN’s lobby displays and mass marketing have not been as effective for outreach. The main page on the kiosk and website display Uptown’s total consumption and the number of people participating in the program. It prompts people to “join them today and help make a difference” (Duke Energy). About 8,000 people interacted with the kiosk and web site in the first four months of the program, but only 500 pledged to take an action. This is approximately the same level of participation as in the Energy Champions program and probably includes significant overlap. In the intercept survey, forty-two people reported having looked at

the kiosk, but twenty-five of them said it was only once or in passing. Ultimately, the kiosk is serving mostly as a banner for the metrics rather than an outreach tool.

Nevertheless, the community-wide consumption number that is used to track progress is too high level and abstract. One interviewee said of the number, “It’s sort of like looking at the national debt. You see you it ticking. We’re using a lot of energy. Well ok, what does it mean to me?” and another said, “You see all those 0’s. It’s like a Zimbabwean dollar. I have no idea what that means. You have to put it in terms people understand.” As a result, the program is now exploring ways to help participants track their progress at a more granular level, such as enabling organizations, departments and individuals to see how they are doing compared to peers.

Once people decide to participate, they are more likely to avail themselves of online resources. The web sites of the BOMA competitions, Chicago Green Office Challenge, and Practically Green are dedicated to providing process resources such as office audits and project ideas. The programs also provide status boards that track participants’ progress compared to others. Practically Green reports achieving over 80% sign up rates with participating companies, and more than half of its participants visit the site at least once a month (Stevens 2012).

The portion of SEN’s web site that is accessible to registrants has been more successful. Visitors that register on the web site get access to resources such as a Mini Audit for an office space and a list of campaign ideas from previous Energy Champion training sessions. Energy Champions have been using the web site to access these resources and report on their activities.

Local Implementation Partners are Essential

Social interventions are really an ongoing engagement strategy not a one-time transaction. Therefore, efficiency programs need to build relationships with the organizations and individuals that are important to building stakeholders. Building owners, occupant organizations and property managers care about professional networks, pay attention to what competitors are doing, and want to maintain positive relationships with local public and civic entities. The case study programs partnered with local governments as well as trade associations and non-profits such as IFMA, BOMA, the USGBC and EDF. These organizations provide a trusted brand, technical expertise, and existing local networks.

All Charlotte stakeholders agreed that top-down endorsement within organizations was essential. Office workers often made comments like, “When the head of the division says something is going to happen, it happens.” One facility staff person said, “We got to talk to our peers [at the networking event]... and we all basically came up with the same thought process. It has to come from the executives, and then it’s accepted.” And an occupant organizational leader said that co-branding was needed because it “puts a stamp that we are serious.” Integrating program efforts into existing organizational and community cultures and processes will help align social forces towards efficiency.

Conclusions

This early feedback evaluation reveals that the Smart Energy Now[®] pilot has been successful in many of its interventions with stakeholders, including gaining almost 100% building owner participation, providing interval meter data and professional development for facility staff, and engaging more than 450 office workers in the Energy Champions program.

These social interventions have helped facility staff and office workers change the aspects of energy use that they control.

Yet while owners have committed to participate, efficiency has not yet been clearly established as a priority for facility staff or within occupant organizations. Stakeholders are struggling with the aspects of energy use that involve working with others. This reveals a need to work through existing processes and relationships to achieve scale and lasting impact.

Occupant organizations have perhaps the largest influence on both base building operations and occupant behavior. While they may care about operating costs, efficiency is more likely to be appealing from a branding and worker satisfaction perspective. Achieving more active participation will require the endorsement of senior leadership, a clearly defined participation process and implementation resources, such as benchmarking tools and recommendations for IT practices.

Even though facility staff operates equipment on a daily basis, they see themselves as implementing the decisions of owners and occupants. Facility staff can benefit from better building performance information, but this needs to be coupled with education. Professional networks can also be effective mechanisms to provide trainings, networking, and recognition.

Office workers follow the culture and priorities of their organizations. Programs can work through organizations by encouraging top-down support and integrating efficiency into existing processes and activities. Organizational leaders initiate most “green team” programs.

Social interventions have the potential to help energy efficiency be adopted at a faster pace, while making operational efficiency less elusive and increasing owners’ confidence in savings from capital measures. Program participants have reported achieving millions of dollars of savings. While the savings have varying levels of verification, they are sufficient proof of concept. These programs are laying the groundwork for a comprehensive program design that delivers effective interventions to different stakeholders.

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