I Will If You Will: A Replicable Strategy for Tenant Behavior Change

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ABSTRACT

In August 2013, Shorenstein Realty, an owner/operator of commercial office properties, initiated a tenant engagement program, I Will if You Will. Inspired by the World Wildlife Fund's Earth Hour campaign of the same name, the program seeks to catalyze sustained reductions in tenant plug loads through behavior change. Results from the pilot program indicate 22-34% savings relative to baseline electricity demand. Shorenstein also expects the program will result in lower operating costs and increased tenant satisfaction and retention. This paper details the strategy Shorenstein developed for a replicable, low-cost behavioral intervention.

Multi-tenant commercial office buildings present many barriers to energy efficiency, especially when targeting employee behavior, including split incentives, perceived immateriality of energy use, limited locus of control, and savings measurement. As an additional challenge for Shorenstein, the program would need to be implemented in dozens of buildings nationwide by Property Managers without experience in behavioral interventions.

To address these challenges Shorenstein developed a 3-month program utilizing proven techniques for achieving durable behavior change. Key elements to the intervention include employee commitment and goal setting, procedural guidance, direct measurement and feedback, and performance incentives. Results from the pilot program indicate the program is successful and the methodology is transferable to other property managers seeking to reduce plug loads and raise environmental awareness among tenants. Shorenstein is currently implementing the program across 30 tenant offices, representing nearly one million square feet of tenant space.

Company Overview and Program Rationale

The benefits of energy efficiency for commercial office buildings are well established. Tenants enjoy lower utility bills and property managers realize decreased vacancy rates and higher average rental income (CBRE 2012). Yet long-standing barriers to energy efficiency in this sector persist. Chief among them, split incentives prevent property owners and tenants from pursuing many cost-effective projects and conventional electricity meters make accurate attribution of savings difficult. While there are solutions to these technical challenges, ensuring tenant satisfaction is always top priority for property managers, and changing long-standing business practices in the real estate industry has proven slow work.

For property managers that have undertaken energy efficiency retrofits, a new challenge has emerged. After improving the energy efficiency of common areas and building systems, tenants still control a large percentage of energy consumption through use patterns and equipment settings. Shorenstein Realty estimates that tenants control 70% of electricity loads in its buildings, which has proven a challenge for achieving corporate sustainability goals. As a corporate partner in the U.S. Department of Energy's Better Buildings Challenge, Shorenstein committed to reducing energy use 20% by 2020, and was more than halfway toward that goal at the end of 2013. ENERGY STAR scores for Shorenstein buildings were typically in the 80s and

90s, meaning that these properties were more efficient than the vast majority of office buildings. Closing the remaining gap in Shorenstein's savings target would require tenant participation.

Shorenstein initiated a tenant engagement program in 2011, dubbed *Flip the Switch.* The program began with a presentation series to all tenants to illustrate actions tenants can take to save energy and money through energy efficiency. Following this series, Shorenstein conducted targeted outreach to tenants who exhibited an interest in further engagement. Seeking to further this dialogue through a "gamefied" approach to saving energy, in the summer of 2013, Shorenstein launched *I Will if You Will* as the third phase of *Flip the Switch*. Inspired by the World Wildlife Fund's *Earth Hour* campaign of the same name, *I Will if You Will* seeks to achieve two primary objectives: 1) save energy in tenant spaces; and 2) engage tenants in a meaningful dialogue on energy use with the hope that this dialogue leads toward a sustained partnership to reduce energy loads. Specifically, this program targets plug loads, end uses over which property managers have no control and little influence. The program name refers to a partnership between the tenant and management company: if the tenant meets an agreed upon plug load reduction goal, Shorenstein will offer tenants a reward for participation.

The Case for Targeting Plug Loads in Tenant Spaces

In office buildings plug loads average about 20% of all electricity consumption and can reach up to 50% (Moorefield, L. et al. 2008, Berton, B. 2012). Nearly all of this consumption occurs in tenant spaces, which makes targeting the energy efficiency of plug loads challenging for property managers. Additionally, the magnitude of plug loads is largely dictated by the way that equipment is used, such as turning it off at night or engaging low power settings. For example, a field study has shown that 59% of desktop computers and 20% of monitors are left on during afterhours (Sanchez et al. 2007). Experience with behavior change campaigns in the workplace suggests savings in the area of 4-5% of total building electricity loads (Bin 2012).

Behavioral Strategies Employed in *I Will if You Will*

I Will if You Will employs six motivational techniques to influence tenant behavior: goal setting and commitment, procedural guidance, social proof, performance incentives, direct measurement and feedback, increasing locus of control, and creating intrinsic motivation. These techniques work in concert to create the initial motivation to act and reinforce positive behavioral outcomes. We categorize these motivators into two categories, pre-action motivation and behavioral reinforcement. Pre-action motivation variables are employed at the beginning of the program to provide the initial incentive to act. Behavioral reinforcement variables provide the ongoing incentive to continue behaviors during and after the program. Of the three reinforcement variables, only direct measurement and feedback are the result of direct action by the program administrators. The other two variables result from participant actions. While there is crossover between the pre-action motivation variables and the behavioral reinforcement variables, we use this categorization to illustrate both the process by which we sought to motivate participants and the feedbacks that occur within the process. Figure 1 details the model of behavior change we employed to influence behavioral outcomes. In the following section, we review the literature that supports use of these variables to influence behavior change.

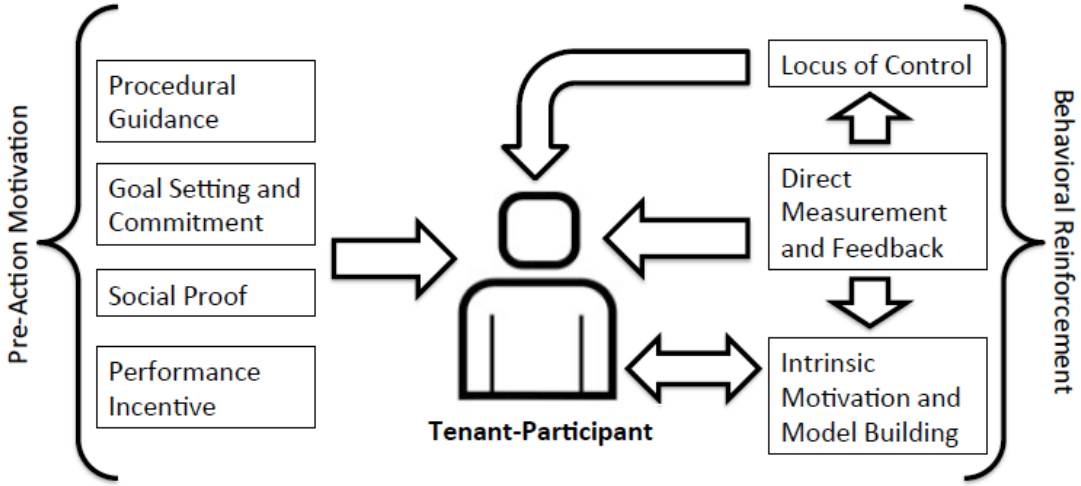

Figure 1. Model of behavioral action.

Pre-Action Motivation

Goal Setting and Commitment

Setting specific goals and committing to these goals verbally or in writing increases participation rates in behavior change programs (Becker L. 1978, Katzev 1986). In particular, setting specific, challenging goals results in higher degrees of performance (Becker 1978). The effect on participation strengthens when goals are measurable and combined with direct feedback on performance (Ibid). By contrast, vague goals such as “try hard” do not induce high rates of performance and participation. In addition to higher participation rates, goal setting and commitment may lead to higher rates of internal justification for behavior (e.g. I saved energy because I believe it is the right thing to do) rather than external (e.g. I saved energy because I was told to do so) (Katzev 1986). Additionally, the act of planning specific actions for specific times can help break old habits and foster creation of new ones (Holland 2006).

Procedural Guidance

Even for seemingly simple actions such as turning off energy-consuming equipment and engaging low power management settings, providing clear procedural guidance is essential to ensure program participants engage in the most impactful behaviors and do so effectively. After all, many people do not know which devices use the most energy and might focus only on the most salient devices such as lights, while neglecting other loads like printers and copiers. This knowledge of “action strategies” and “action skills” serves as a key predictor variable for engaging in positive environmental behavior (Hines et al. 1987).

Social Proof

Social proof refers to the influence social approval for a particular action can wield on an individual’s behavior (Cialdini 2001). This influence is strongest when the proof is demonstrated by someone similar to the individual, such as a peer (Ibid). While similar to social norms, social

proof does not relate to an individual's desire to be liked by others. Rather, social proof relates specifically to an individuals desire to act appropriately or "fit in" when in an unfamiliar setting.

Performance Incentives

Incentives have been shown to induce behavior change but are also associated with non-durable change and diminishing savings when offered at length (Darby 2001, Katzev and Johnson 1987). This duality complicated the decision about whether or not to offer tenants incentives for participation. Ultimately, we decided that offering non-financial incentives would induce higher rates of participation and that the benefits of higher participation rates outweighed the risk of non-durable savings. Given the competing demands for employee attention at work, we reasoned that an incentive would increase both tenant-manager and tenant-participant inclination to engage in the program.

Behavioral Reinforcement

Direct Measurement and Feedback

Study shows that energy use feedback can influence electricity consumption (Fischer 2008, Darby 2001). When used, this feedback should be "based on actual consumption," "appliance-specific," "given frequently…[and] over a long[] period," "link specific actions to their effects," "involve historical or normative comparisons," and be "presented in an understandable and appealing way (Ibid.)." Savings resulting from this feedback can vary considerably from 5-12% (Ibid.) up to 25%, in the case of a recent experiment conducted in office buildings (Mercier and Moorefield 2011). In our model of behavioral motivation, energy use feedback is provided to tenants directly, but the motivation to act arises from the influence of feedback on tenant locus of control and intrinsic satisfaction.

Locus of Control

A common feeling about engaging in environmentally positive behavior is that one individual's actions do not make much difference. This "drop in the bucket" mindset (or low locus of control) may be the most challenging barrier to improving behavior. Research suggests that this locus of control is a strong predictor of an individual's decision to take an action (Hines et al. 1987). By contrast, behavioral programs that offer vague notions of the impact of behavior on the environment tend not to influence behavior to a great degree (DeYoung 1993 as cited in Parnell et al 2005). Our model posits that feedback on energy savings will increase a participant's locus of control, reinforcing the motivation to act.

Intrinsic Motivation and Model Building

Put simply, people like to feel competent in their actions, and when one's actions yield positive results, one is more likely to continue engaging in that action. In relation to environmentally positive behavior, much research in recent years has focused on the degree to which achieving positive results from behavior can increase one's feeling of competence and ability to effect positive changes in a broader environmental context (DeYoung 2000). The "intrinsic satisfaction" that results from realizing a positive impact is strongly correlated with durable behavior change (DeYoung 1996).

Model building refers to the mental models individuals use as frameworks to anticipate the outcomes of one's actions (Kaplan and Kaplan 2009). Individuals constantly update these models as they process new information (Ibid.). This model building results from any success or failure. Individuals anticipate the consequences of an action and choose a course based on that assumption. When one's intuition is correct or incorrect, this action can either reinforce one's mental model or contradict it, resulting in new model building. In the context of behavior change, when an individual realizes the positive impacts of behavior, as through feedback or increased competence, one incorporates this into new models, which can influence future action. In our model of behavioral motivation, intrinsic satisfaction and model building feedback with the tenant-participant's actions reflecting this process of model building.

I Will if You Will: Implementation Process

There are four key stakeholder groups in the implementation process: the sustainability manager at Shorenstein headquarters, the property manager at each office building, the Modlet manager overseeing implementation, and the tenant-participants (see Figure 2). One of the key challenges we faced in implementing IWIYW is the "three degrees of separation" between the sustainability manager and the tenant-participants. Overcoming this challenge required a high degree of simplicity and clarity in the implementation process so that each stakeholder in the process could carry out the given task. Despite the challenges inherent in the three degrees of separation, this structure is also an essential part of the process. For one, it is logistically impossible for the sustainability manager to oversee implementation of the program in each building. Also, by working through established networks in each office building, the barriers to adoption are lowered because a certain degree of buy-in and trust are implicit (social proof).

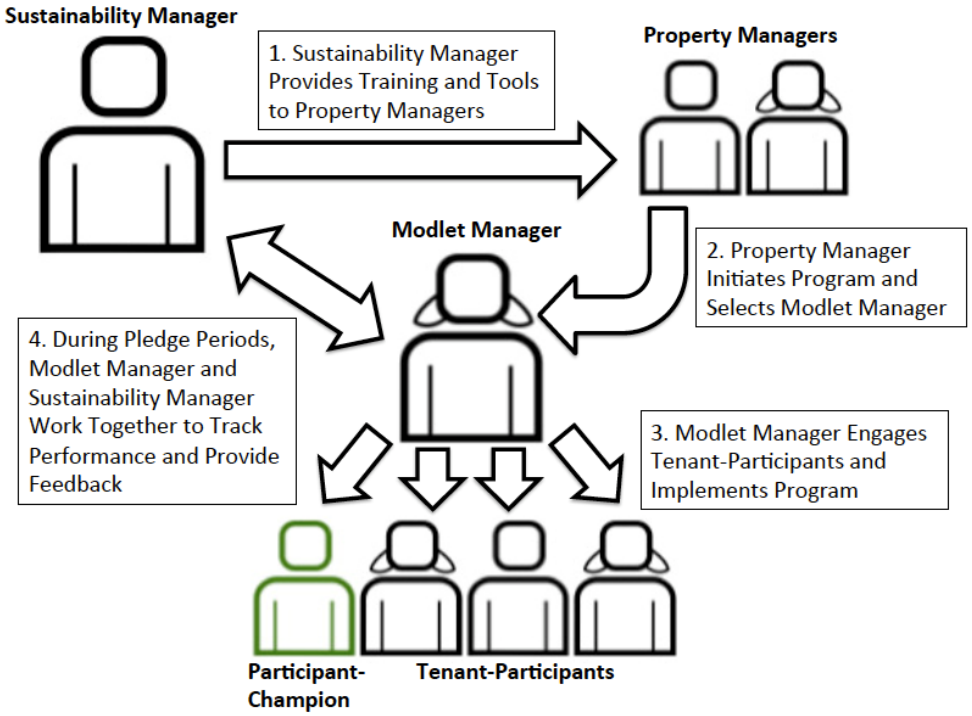

Figure 2. I Will if You Will: Engagement Process.

Step 1: Property Manager Training

The program begins with a kick-off presentation to participating property managers detailing the program rationale and role of the property manager. Property managers serve as the link to tenants by identifying the tenants to engage, providing the tenant-partner all program materials, hardware, and rewards, and assisting with Modlet installation.

Step 2: Program Initiation and Modlet Manager Training

The property manager identifies a tenant to participate, holds an initial meeting with the tenant manager to initiate the program, and selects a Shorenstein employee to serve as the "Modlet manager." The Modlet manager is a staff member who regularly interfaces with the participating tenant. The sustainability manager trains the Modlet manager on the installation process, program procedure, and guidance on selecting devices with the potential for high energy savings. This is the central training point and the time at which the sustainability manager offers the majority of guidance during the process. At this time, the managers work together to establish the program timeline, pledges (goal setting and commitment), and reward structure.

Step 3: Modlet Manager Participant-Champion and Engages Tenant-Participants

The Modlet manager oversees on-the-ground program implementation and is the technical expert on Modlet installation and data collection and management. The Modlet manager first seeks out a tenant employee to serve as a participant-champion to assist in recruiting program participants and implementing the program. In some cases participants are volunteers, while in other cases employees are selected by their manager to participate. In either case, the tenant company selects participants internally rather than Shorenstein.

Engaging tenants indirectly through the Modlet manager and participant-champion serves two purposes. First, participant recruitment through a coworker serves as social proof to tenant-participants that this is a worthwhile program. Second, it suggests that this is a tenant-driven initiative rather than a top-down mandate from the property management company. While Shorenstein wants the tenant to understand that Shorenstein supports the program, it is important that tenants feel a sense of ownership in the program. Research shows that emphasizing that a program is a partnership between the participants and the administrators encourages participation and increases performance (Parnell 2005).

Tenant-autonomy is also emphasized in the implementation process. For example, the Modlet manager selects performance incentives with the tenant in mind to ensure that the participants value the reward.[1] This valence is essential for incentives to motivate participation. Rewards increase in value in each subsequent pledge period to entice sustained participation. Also, tenants are given procedural guidance in the form of instructive pamphlets detailing which plug loads offer the highest potential for savings (e.g. turning off computers), but tenants also have the autonomy to monitor whichever devices they choose. This allows participants to experiment and learn about the electricity loads of various devices. In our program, tenants chose to monitor some devices over which they had little control, such as refrigerators. Tenants also receive information regarding the typical energy savings that result from elected actions.

[1] Typical incentives include gift cards and office ice cream and pizza parties. Shorenstein Property Managers could also create custom rewards for a tenant, depending on tenant needs and available budget.

During program implementation, posters promoting the program are hung around the tenant's office to show support for the program and serve as a visual prompt or reminder for participants to sustain behaviors.

Step 4: Performance Tracking and Feedback

During the baseline measurement period and each subsequent pledge period, Modlet manager tracks energy consumption and relays this information to the sustainability manager at the end of each pledge period. The sustainability manager analyses the data and assembles reports detailing the environmental impact of electricity savings and sends a report to the Modlet manager, who then relays this information to tenant-participants (direct measurement and feedback). These reports provide feedback on both individual and aggregate tenant performance. Participants can also log onto the Modlet online dashboard at any point in the program to assess their own performance and that of their peers. Provided that feedback indicates that tenants are participating and saving energy, it can establish an office norm for sustained participation.

Feedback is a key tool to increase tenant motivation for ongoing participation in the program. Feedback is provided both in absolute terms (kWh saved) as well as metrics that relate to daily life. Feedback has been shown to be most effective when provided using language that resonates with program participants (Parnell 2005). For this reason, we translated kWh savings into appliance usage rates for refrigerators and clothes washers (e.g. days of use and number of loads, respectively) as well as emissions from an average car (miles traveled) and the carbon sink value of trees (number of trees). We used several metrics in order to both show the relative magnitude of various activities as well as to increase the chance that a metric would resonate with the tenant-participant.

Our model of behavioral action proposes that when tenants see the impact of their behavior through feedback, this will increase their locus of control and create intrinsic satisfaction, based on the positive environmental impact of their behaviors. Finally, discovering the impact of energy-conserving behaviors and achieving success in meeting savings goals can lead to new model building.

Electricity Savings Measurement

We used a two-step process for evaluating electricity consumption. First, data is collected in a central online dashboard using the Modlet system. Second, we export this data into an Excel model to evaluate monthly savings and compute carbon equivalencies.

The Modlet is a plug load meter produced by ThinkEco that connects to and replaces a conventional outlet. Electricity consumption data is sent wirelessly to a central USB drive on a master user's computer. This data is then automatically updated to an online monitoring dashboard that allows real-time visualization and download of consumption data. Modlets also allow users to set the plug load meter to turn power on and off automatically, although this functionality was not used in this program. A Modlet starter kit costs about $370 and includes 5 Modlets, or enough to monitor 10 devices.

We selected the Modlet for two reasons. First, the wireless connectivity makes it easy to install many plug load meters throughout a tenant office and create a network of devices. Second, the online dashboard allows the program administrator (sustainability manager) to access data from every Modlet in real time.

Baseline and Savings Measurement

Baseline consumption is based on one-week of electricity consumption in which all connected devices are powered on 24 hours per day. While this method overestimates consumption, it allows for a consistent baseline across buildings and avoids the risk of tenants changing their behavior before the program starts, simply because they know they are being monitored. Additionally, gathering these measurements for each device helps to makes clear to tenant-participants the impact of turning off devices when not in use. Savings are calculated during the first week and each subsequent month during the pledge periods based on actual electricity consumption during each period.

Given that this baseline overestimates consumption, we evaluated two methods for adjusting savings downward to more accurately reflect energy saved. First, we assessed feedback from our post-program survey and found that among respondents, plug load devices were left on 70% of the time. While this self-reported data was specific to program participants, we only had five respondents, which may not be a representative sample of participants. Therefore we chose a second method that utilized data from Sanchez et al. 2007. This study found that computers are left on 59% of the time, monitors 20% of the time, printers 34% of the time, and other devices a weighted average of 33% of the time. We multiplied these values by our measured savings for each end use to establish an adjusted savings value (see Table 1 and Figure 3). We note that this methodology results in savings figures that are estimates, not precise measurements.

Pilot Program Results

Results from the pilot programs were very promising. Savings ranged from 22-34% relative to baseline consumption (see Table 1). Interestingly, in each of the three pilots, savings increased over the 2-3 month duration, suggesting that feedback was effective at motivating tenants to proactively reduce electricity loads. This effect was pronounced, reaching as much as 18% over just two months in the case of Pilot B. Absolute savings across all three buildings for the entire program was 602 kWh. While modest, this figure does not account for future savings nor does it account for other tenants who may have participated in the program informally.

With a Modlet starter kit costing $370 and program rewards adding about $300 more, this program is not directly cost-effective (although the Modlets can be used again for subsequent campaigns). Rather, the primary benefit of the program from a financial perspective is advancing the energy efficiency conversation, building capacity for *Flip the Switch*, and creating a framework for saving energy. In other words, this program makes salient the potential energy savings that we hope will lead to broader action on the part of tenants.

Table 1. Electricity savings estimates

Pilot	Partici-pants	Devices Monitored	Baseline (kWh/wk.)	Savings Mo. 1	Savings Mo. 2	Savings Mo. 3
A	4	Printer, Paper Shredder, Computer (2), Monitor (3), Coffee Maker	46	15%	22%	23%
B	8	Printer (2), Cordless Drill Charger, Power Strip (3), Task Light (3), Television, Laptop, Monitor (2), Personal Heater, Projector, Power Supply, Refrigerator	90	4%	22%	N/A
C	15	Laptop, Printer (7), Computer (14), Monitor (8)	85	28%	31%	34%

Savings varied markedly across end uses, from a low of -2% for computer monitors up to 51% for computers and laptops. Computers were highly targeted by Shorenstein, so we are encouraged that this end use saw substantial savings. On the other hand, it is counter intuitive that savings would be negative for any devices. While we do not know for sure what caused this increased consumption, we suspect that computer monitors had low-power management setting activated during the baseline period, which is common for modern computer monitors. Thus, energy consumption was already low and increased consumption may have resulted from coworkers using their monitors slightly more during the savings periods. The increased monitor consumption on an absolute basis was fairly negligible at about 2 kWh over three months.

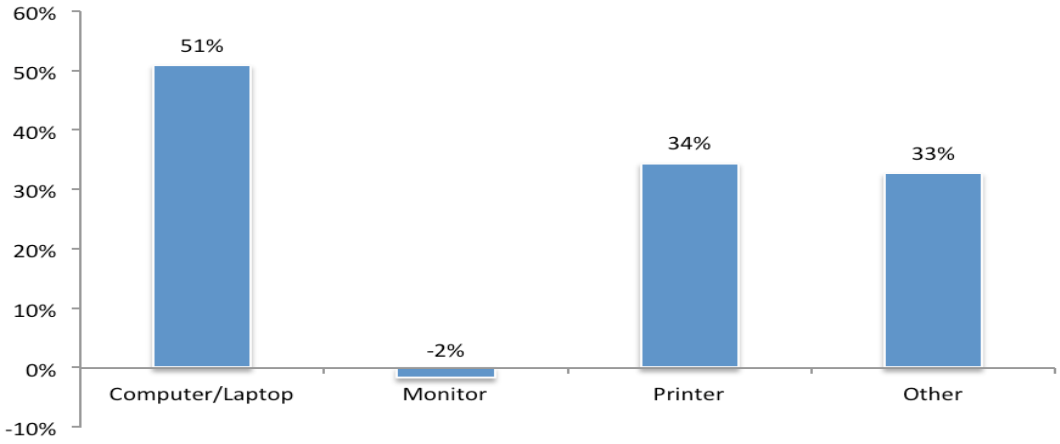

Figure 3. Savings percentage by end use.

Tenant Surveys

Following the pilot program, Shorenstein sent follow up surveys to tenant-participants to better understand baseline consumption, durability of behavior change, and the perceived impact of the program (see Table 2). We received two responses from Pilot A and three responses from Pilot C.

While we cannot draw concrete conclusions from this small sample size, the survey indicates several interesting results. First, tenants did not turn off devices frequently prior to the program, which reinforces findings from other surveys (Sanchez et al. 2007). Second, tenants plan to continue the behaviors after the program. While planning does not guarantee action, it is a meaningful indicator of future action (Holland 2006). Third, all participants indicated that the program made either some impact or a large impact on their behavior in the workplace. Last, four of the five participants indicated that that they continued the behaviors at home. One participant remarked, "I think this is a great program and has impacted more than just my work life but has brought energy usage practices home. The other office of our company has been very intrigued with the Modlets and has looked into getting a program like this going for their buildings as well."

It is possible that only the most motivated participants chose to take the survey, which would caution against reading too much into these results. Still, we find the tendency toward positive results promising.

Table 2. Tenant-participation surveys

Question 1	Before the Challenge, how often did you turn off electronic devices, or use sleep/hibernation mode, at the end of the day?				
	Never	Infrequently (<25%)	Sometimes	Frequently (>75%)	Always
	1	2	2	-	-
Question 2	During the Challenge, how often did you turn off electronic devices, or use sleep/hibernation mode, at the end of the day?				
	Never	Infrequently (<25%)	Sometimes	Frequently (>75%)	Always
	-	-	-	1	4
Question 3	Following the Challenge, how often do you plan to turn off electronic devices, or use sleep/hibernation mode, at the end of the day?				
	Never	Infrequently (<25%)	Sometimes	Frequently (>75%)	Always
	-	-	-	1	4
Question 4	How would you characterize the impact of the Challenge on your energy management practices at the office?				
	No impact	Some impact	Big impact		
	-	2	3		
Question 5	Has your participation in the Challenge impacted your energy management practices outside of the office?				
	No	Yes			
	1	4			

Program Limitations

During implementation, we encountered several limitations and challenges. First, we did not have the resources to maintain a control group in addition to program participants, requiring an estimated baseline calculation derived from field studies on tenant behavior.

Second, teaching dozens of people to operate a new technology (both hardware and software) proved challenging. Program administrators and tenants are busy and do not have much extra time to devote to learning to use equipment. We overcame this barrier by providing assistance both directly and through the ThinkEco team, who were helpful in providing troubleshooting support.

Third, achieving buy-in from both senior management at Shorenstein and tenant management was at times difficult. Since this program was not directly cost-effective, we needed to make clear the business case for engaging tenants in a broader dialogue on energy savings. We underscore that while the savings from the program itself are noteworthy, we anticipate that the larger payoff will come from future tenants actions.

Finally, in one building we achieved tenant participation far exceeding the number of Modlets available to monitor devices. As a result, tenant feedback will underrepresent actual savings and may not provide the same level of motivation to tenants as achieved in other buildings. Results from this tenant's program are not yet available.

We anticipated that we would encounter pushback from tenant IT departments regarding turning off equipment at night. Many companies install updates during afterhours, which requires that computers be left on at these times. While Shorenstein employees did need to speak directly with IT departments at times, this has not yet proven to be a major hurdle to program adoption. ThinkEco also provided helpful support in overcoming this potential barrier by speaking directly with tenants and providing guidance documents to simplify synchronization with IT procedures.

Conclusion and Next Steps

This paper demonstrates that behavior-based tenant engagement programs can save substantial energy and raise tenant awareness about energy use in the workplace. Moreover, the program was successfully replicated across numerous buildings and tenant spaces, achieving consistent savings that increase throughout the program period. These results indicate that behavioral interventions can serve as useful tool for commercial property managers to engage tenants in a partnership to reduce energy waste.

Shorenstein is in the process of implementing *I Will if You Will* across the rest of the buildings in its portfolio. In addition to the three completed pilot programs, there are nine buildings with programs in various stages of implementation (representing 82 participants and 121 devices monitored), eight buildings with tenant commitments to participate, and ten buildings in the tenant solicitation phase. Altogether, these tenants represent nearly one million square feet of tenant space. In one building, the number of tenant participants is more than double the number of monitored devices, indicating substantial tenant interest in the program.

In April 2014, Shorenstein received the Innovative EARTH Award from the Building Owners and Managers Association (BOMA) San Francisco chapter for *I Will if You Will*. This annual award is offered to property management companies that implement creative solutions to advancing sustainability in commercial buildings. Looking forward, the sustainability manager plans to build on the success of this campaign by replicating the program with additional tenants and packaging the campaign as an "out-of-the-box" office challenge for all tenants to utilize. Shorenstein also seeks to share the program with other real estate management companies, with the ultimate goal of increasing tenant adoption of energy efficient behaviors across the industry. More program information will soon be available at www.greenshorenstein.info. Interested parties may contact Jaxon Love, Shorenstein Realty Services.

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