Energy Efficiency through Tenant Engagement: A Pilot Behavioral Program for Multifamily Buildings

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Contents

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Abstract

Behavioral change interventions are being implemented more widely to achieve residential energy savings. In 2014, ACEEE launched a pilot program to test a variety of behavioral strategies for promoting energy efficiency among tenants in low- to moderate-income multifamily housing in Takoma Park, Maryland. This program included behavioral messaging, events, educational information, and the distribution of energy-saving devices. We measured energy use in the months before and after the pilot. While the program did not achieve the desired energy savings, we gained insights that can be applied in the development of future behavioral change programs. Here we provide recommendations for determining the best engagement strategies for targeted communities, utilizing relationships with building managers, finding trusted community influencers, and creating a comprehensive program that reflects the diversity of the community. The City of Takoma Park used the successes and lessons learned from this pilot program to create the Takoma Park Neighborhood Energy Challenge, a behavioral energy-saving program. This program will run until March 2016 and has already garnered significant community engagement.

Background

Program administrators who have integrated behavioral approaches into their programs to reduce energy use or demand can realize verifiable savings. Behavioral strategies have expanded to include community-based messaging, mass media, home energy reports, educational programs, games, and social norms. A growing number of field studies and experiments have evaluated these strategies (Karatasou, Laskari, and Santamouris 2014).

Building on recent advances in behavioral science, ACEEE completed a pilot program to test a mix of low-cost behavioral interventions and measures for promoting energy efficiency among tenants in low- to moderate-income housing. We combined educational messaging with additional nudges, challenges, and energy-saving devices aimed at reducing energy use. This report assesses the design and implementation of the pilot, analyzes pre- and post-program energy use among the participating buildings, and draws lessons learned. In addition to evaluating the success of the pilot, we also provide insights on the potential for replication by programs with limited budgets.

Review of Behavior Change Techniques

Energy-efficient behaviors are shaped by factors such as price, awareness, trust, and a sense of moral obligation to the community (Kang, Cho, and Kim 2012; Owens and Driffill 2008). Over the past decade, behavior programs have moved away from simple mass media campaigns to more diverse behavioral intervention strategies (Dietz et al. 2009; Owens and Driffill 2008; Abrahamse et al. 2007). Technical advances like smart thermostats have produced a new set of opportunities for reducing energy consumption (Jessoe and Rapson 2012).

Another programming innovation is an approach called gamification—that is, turning a real-world activity into a game to encourage behavior change. Utilities and third parties have developed a variety of games to motivate people to save energy. A recent ACEEE analysis of nearly 50 energy efficiency games found preliminary evidence that gamified energy efficiency programs can achieve energy savings of 3–6% (Grossberg et al. 2015).

To take one example of gamification, several cities and municipalities have adopted neighborhood energy challenges in order to incentivize energy savings in their communities. For instance, in 2013 the city of Chicago launched a program called the Chicago Neighborhood Energy Challenge (CNEC), a six-month pilot competition among a set of apartment buildings to engage residents on simple steps they could take to reduce energy usage. Focusing on affordable multifamily housing, the program used prizes and awards to drive ongoing participation throughout the competition. The Challenge surpassed its goal of reducing electricity, gas, and water usage by 5–10%. Buildings achieved savings across all three categories—5% on electricity, 10% on gas, and 45% on water—and a $54,000 savings in utility bills, with an average of $110 per family (City of Chicago 2014). Similar programs have encouraged energy savings in cities including Baltimore, Rochester, Denver, Albany, and Charlotte.

In 2013, ACEEE published the *ACEEE Field Guide to Utility-Run Behavior Programs*, which established three categories for behavioral interventions—cognition, calculus, and social interaction. Cognition strategies deliver information and include general and targeted

communications, social media, classroom education, and training. Calculus approaches encourage customers to make economically rational decisions based on energy use feedback, home energy audits, incentives, and installations. Interaction strategies encourage energy efficiency through social interaction via games, eco-teams, online forums, and the involvement of community leaders (Mazur-Stommen and Farley 2013).

Researchers have concluded that the most effective behavioral strategy combines all three of these approaches into a multimodal program (Mazur-Stommen and Farley 2013; Gynther, Mikkonen, and Smits 2012; Dietz et al. 2009; Owens and Driffill 2008; Abrahamse et al. 2007). Programs are most effective when they meet the needs of diverse communities, taking into account their norms, resources, and motivations (Lopes, Antunes, and Martins 2012; Abrahamse et al. 2007; Gynther, Mikkonen, and Smits 2012). Researchers have also highlighted the value of including trusted community influencers (e.g., local government representatives, religious leaders, and community groups) in disseminating energy efficiency information and the power of social norms in engaging the public (Bichard and Thurairajah 2013; Dietz et al. 2009; Lucas et al. 2008; Constanzo et al. 1986).

Program Design

We designed a quasi-experimental project to test how a layering of behavioral interventions would affect tenant energy savings. Our aim was to demonstrate a simple set of tools for program implementers seeking to promote energy-saving behavior among multifamily customers. We estimated that participating households would, on average, reduce their energy use by 4%.[1]

Partnering with the City of Takoma Park, we identified a set of similar multifamily buildings in the community. The selected group consisted of multifamily buildings that are submetered for electricity and in which tenants pay their electric utility bill. We selected buildings that housed moderate- and low-income residents and that varied in terms of income eligibility and rent stabilization requirements. An overwhelming majority of the households were renters with incomes at or below 80% of the area median income. In total, 13 buildings comprising 366 units participated in the program. Table 1 itemizes the buildings included in our sample.

[1] The 4% savings goal is in line with findings from Chicago's Neighborhood Energy Challenge and some of the other studies discussed above.

Table 1. Multifamily buildings included in pilot

Property	Type	Units rented	Units owned	Total units
Building 1	Garden	22	0	22
Building 2	Garden	21	1	22
Building 3	Low-rise	20	0	20
Building 4	Low-rise	21	0	21
Building 5	Low-rise	27	0	27
Building 6	Low-rise	28	0	28
Building 7	Mid-rise	19	0	19
Building 8	Mid-rise	18	0	18
Building 9	Mid-rise	28	0	28
Building 10	Mid-rise	33	0	33
Building 11	Mid-rise	6	40	46
Building 12	High-rise	36	0	36
Building 13	High-rise	46	0	46
Total		325	41	366

Our multimodal approach consisted of several low-cost activities and measures, including a combination of cognition programs (information campaigns), calculus programs (incentives), and social interaction programs (games, outreach events, and face-to-face discussions). We also involved city staff from the community as trusted partners and incorporated strategies geared toward community engagement as well as the delivery of low-cost energy-saving measures.

We supplemented tailored messaging with events, a building-wide energy challenge, and energy-saving devices. We implemented behavioral interventions across all buildings (including a letter of introduction, behavioral messaging pieces, and an event invitation), with a subset receiving additional materials (including energy-saving devices, a second event invitation, and an invitation to participate in a building-wide energy-saving challenge). These interventions are described in detail below. We chose the subset of buildings that received all the materials based on building access. The landlords of these buildings allowed us to enter and communicate with tenants in ways other than direct mailings.

All 13 buildings (366 units) received:

1. *Introduction letter.* All residents received a welcome letter explaining the goals of the pilot program and bearing the "Power Smart | Takoma Park" branding logo of the city's Sustainability Office. For residents who would be invited to participate in the game (see subset below), we also noted that in the introduction letter.

2. *Behavioral messaging pieces*. We administered three messaging pieces specifically designed for this program, using the Power Smart | Takoma Park branding across all buildings. This included a thermostat hanger with information on appropriate settings for cold/warm seasons, a refrigerator magnet with messaging on turning off/unplugging common household appliances, and messaging in the shape of a holiday ornament with information on converting to LED or CFL lightbulbs. See Appendix B for images of the three tailored-messaging pieces.
3. *Event invitation*. Soon after the launch of the program, residents received an invitation to our first event, which aimed to garner participation and interest among residents. We made the theme of the event "Back to school" and aimed it toward families. The event, held at the Takoma Park Community Center, included educational movies for youth on reducing energy use and several interactive games to promote energy-efficient behavior. See Appendix C for the introduction letter and event invitation.

In addition, a subset of eight buildings (239 residential units) received:

1. *Game invitation*. We invited the residents in the subset of buildings to participate in a building-wide energy challenge using the online platform Cool Choices. This is an interactive and easy online card game that helps residents save energy. Playing alongside neighbors, residents compete in teams to make the most "cool choices" at home, which include simple actions such as turning off lights or powering down certain devices. Participation in the game was intended to spur neighborly competition and serve as another means for delivering energy-saving information to residents. See Appendix D for the game invitation.
2. *Second event invitation*. We invited households within this subset to an additional, Halloween-themed Vampire Power event, also at the community center. The goal of this event was to share information, through activities and demonstrations, on leaking electricity or phantom load when appliances or other electronics are turned off or in standby mode but continue to draw power through the wall socket. We included a flier advertising this event in the mailing of the magnets to the participating residents. We also advertised the event in common spaces and elevators throughout each building. See Appendix E for the event invitation.
3. *Energy-saving devices*. Subset households also received a smart power strip in connection with the Vampire Power event. Invitations to the event were attached to the power strips, along with additional educational messaging, and delivered to the tenants' doors. We knocked on doors and spoke with residents, but if no one was available, we left the materials outside their doors. A month later, these households also received one Phillips SlimStyle 10.5W lightbulb, delivered in the same fashion. We delivered these along with the Light Right Power Smart | Takoma Park holiday ornament messaging piece.
4. *Holiday light exchange*. We concluded the pilot program by holding a series of holiday light-exchange events in the common rooms of this subset of buildings. At these events, we exchanged residents' more energy-intensive holiday lights with energy-efficient LED strands, and we also handed out general tips for renters to save energy.

These events lasted about one to two hours per building. We placed fliers advertising the holiday light exchanges in LED lightbulb gift bags, delivered to people's doors in the participating buildings, and we posted additional fliers in common areas and building elevators. We also went door-to-door to engage residents and increase participation. See Appendix F for the event invitation.

We conducted all behavioral interventions from September 2014 through December 2014. Appendix A provides a list of the interventions that occurred in each multifamily building or set of buildings and the month in which the intervention was administered.

Our initial program design included several other interventions that did not make it into the final design. We had hoped to recruit a few residents from each building to act as a green team to encourage action among neighbors. However staffing and time constraints made this challenging. We had also hoped to make use of whole-building, real-time energy use data to foster competition among buildings around energy use reductions. However we were unable to get access to whole-building energy use data soon enough and often enough to make this work.

Data Collection and Analysis

We used utility billing data to test whether our behavioral program resulted in energy savings. Pepco, the electric utility, provided us with anonymized monthly electricity use data for each of the participating apartments from May 2013 through July 2015. While the data were anonymized at the building and unit levels, Pepco did identify whether a building was among those that received all program measures or only limited measures. In the utility bill analysis, we included only the buildings that received all the program interventions in our final analysis of energy savings. We were most interested in examining the effect of introducing a mix of behavioral interventions. This resulted in a sample size of 182 units.[2]

In an effort to better isolate the effects of our program, we identified a control group of buildings from the neighboring town of Silver Spring, Maryland. These buildings are similar in size, age of building, occupancy, and income of residents and are individually metered. Pepco also provided data for the same time frame for this set of buildings. Our two Silver Spring control buildings had a total of 338 units, but 112 units contained data anomalies, leaving 226 units in the control group for analysis.

In order to measure the effect of the pilot on tenants' energy use, we compared each apartment's energy use during the six months after we administered the interventions (January–July 2015) to the same months in the previous year.

[2] We removed households with anomalies in their data (e.g., missing data for certain months) from the sample. In total, we had data for 239 units but removed 57 due to data anomalies, leaving us with 182 units in our experimental group.

We used two calculations to determine the percentage change in energy use from pre- to post-intervention. We first calculated kWh per day for each of the pre- and post-pilot months, based on how many days were in the billing cycle. The second calculation involved normalizing the data for the cooling months (May through July), as the households in the experiment tended to use additional electricity in the summer to run air conditioners.

To perform the normalization, we obtained cooling degree day (CDD) data from the High Point Homes weather station in Beltsville, Maryland.[3] We used 74°F as the base calculation for cooling degree days. As part of our program, we recommended this temperature as the ideal summer indoor temperature (see Appendix B). We then determined each apartment's average energy use during the shoulder seasons (March–May and September–November) and normalized the extra energy use in the summer months by cooling degree days. We compared the ratio of CDDs in 2014 to those in 2015 and adjusted the extra energy use during the cooling months accordingly.

It is important to note that utility bill analysis alone cannot isolate program-induced savings from other changes that may have occurred at the participating properties during the course of our program. Therefore, we set out to examine only whether there was a general decrease in energy use following our program intervention. Additionally, as a complement to the utility bill analysis, we identified several factors that may have contributed to or hindered the effectiveness of our behavioral pilot. These insights, which we gleaned during implementation, may inform future efforts to design and implement behavioral programs aimed at reducing energy use in affordable multifamily buildings.

Results

UTILITY BILL ANALYSIS

In table 2, we present the average percentage change in energy use from 2014 to 2015 across the subset of buildings that received all interventions. For comparison, we also present the average percentage change in energy use across the units in the control buildings located in Silver Spring. We provide two sets of analysis in this table. The first set refers to the results when we normalized monthly kWh by utility billing days in the cycle. The second set of data is the same analysis but controlling for cooling degree days in the months of May through July.[4]

[3] Data were downloaded from www.degreedays.net, which obtained temperature data from www.wunderground.com.

[4] These homes have gas heat, and therefore we did not adjust electricity use for heating degree days. While there may be some supplemental use of electricity for heating in these apartments, heating degree days were similar in the first half of 2014 and the first half of 2015.

Table 2. Percentage change in energy use from 2014 to 2015 for the Takoma experimental and Silver Spring control buildings

Calculation type and location	Jan–Feb	Feb–Mar	Mar–Apr	Apr–May	May–Jun	Jun–Jul
Takoma Park experimental buildings (kWh/days)	18.30%	19.69%	9.03%	45.45%	29.79%	4.39%
Silver Spring control buildings (kWh/days)	–1.80%	4.23%	–5.15%	11.40%	33.90%	5.32%
Takoma Park experimental buildings (kWh/days, adjusted for CDD)	18.30%	19.69%	9.03%	45.45%	11.69%	8.85%
Silver Spring control buildings (kWh/days, adjusted for CDD)	–1.80%	4.23%	–5.15%	21.57%	6.52%	13.14%

Overall, we found increased energy use in both Takoma and Silver Spring buildings in 2015 as compared with 2014. The increase was generally more in experimental buildings than in the control buildings, providing no evidence the interventions saved energy. On the other hand, it is unlikely the interventions caused energy use to increase substantially; other factors were probably at play. Results show considerable month-to-month variation and spikes in energy use compared with the previous year. This could reflect changes in occupancy within units. Additionally, we have identified two factors that may have affected the observed increase in energy use. First, 2015 was a hotter year and had significantly more cooling degree days that likely resulted in higher cooling use. Our normalization might not have captured the total effect of warmer weather on energy use. Second, the billing cycles for 2014 and 2015 do not perfectly align. This is especially important for the shoulder months of May and September, where shifting the billing period from the beginning to middle of the month could vastly change the number of cooling degree days included in the period. It may be partly due to these factors that we did not achieve the expected savings.

TENANT ENGAGEMENT

In addition to delivering information and messaging to promote energy-saving behaviors, we aimed to generate tenant engagement and interaction to further encourage such behaviors. As described above, this included holding events and organizing an online venue for friendly neighborly competition. However resident engagement proved to be our biggest challenge.

Besides the holiday light exchange that we held inside each participating building, residents did not attend events or participate in the game. We suspect that tenants' time constraints played a role in this low turnout. We held the events on weekday evenings starting at 6 p.m. Many residents of the participating buildings were likely unable to attend due to work or household constraints. At 6 p.m., residents may have been still working or commuting home, which could have hindered attendance.

Due to low turnout at the initial event, the program team decided to distribute the power strips and lightbulbs within the participating buildings. We knocked on doors, and if a resident was not home, we hung the devices on the doorknob, accompanied with our branded educational messaging. Through door knocking and distribution of energy-saving devices, the program team interacted with around one-third of the participants. In some cases, residents expressed feedback and interest. Several residents, for example, asked for tips on installing and using the new bulbs and power strips or inquired about where they could purchase more. While door knocking allowed us to engage with some residents, it did not foster interactions among residents as we had intended. However we do believe the door knocking helped to encourage greater participation in the holiday light exchange events. By the time the holiday light exchange rolled around, many residents were familiar with the program and team, particularly the City of Takoma Park and its Sustainability Office who branded all messaging related to the pilot.

We had the greatest turnout among participants at the holiday light exchange. This event not only gave us the opportunity to swap inefficient for efficient lights, but also allowed us to again explain the purpose of our program and disseminate more energy-saving tips. We held these events in each building's common area on weekends, which may have also accounted for increased participation. Several residents from each building appeared at the specified time, and several others stopped by our table on their way in or out of the building. This highlighted the importance of holding events at a convenient location (at the residence rather than the community center) and at times when residents are available. Giveaways of tangible items (e.g., holiday lights, efficient bulbs, power strips) may also drive attendance. The back-to-school event and Halloween event did not advertise free energy-saving items.

BUILDING MANAGERS AS GATEKEEPERS

A key challenge to reaching residents in multifamily housing is gaining access to buildings. As mentioned, we designed the program to foster social interaction between residents and the program team, as well as among the residents themselves. In order to reach residents, it was crucial that we gain the support of the building managers. Building managers also proved to be a valuable source of information on the best times and methods for reaching residents in their buildings. For example, some managers told us that English was not the first language for many of their residents and that Spanish and Amharic were common. This knowledge led us to translate some of our messaging and outreach materials. In addition, some building managers allowed the program staff to utilize common-space areas for events like the holiday light exchange. The cooperative managers also allowed us to knock on doors and post fliers in public spaces and the elevators. Residents of the buildings in which managers allowed this type of access received all the intervention materials, providing them with the most diverse and well-rounded intervention program.

Overall, we found that building managers were often the gatekeepers of multifamily buildings, and where they were accepting of the program and our efforts, we had the greatest interaction with residents. Future programs should involve building managers from the start, especially where managers have a strong relationship with their tenants. This would not only facilitate access to buildings but also increase trust between the program team and residents.

TRUSTED COMMUNITY INFLUENCERS

From the start, we involved the City of Takoma Park as the primary messenger, relying on the tenants' familiarity with the city. All of our outreach material included branding from the City of Takoma Park's Sustainability Office. This provided legitimacy to our efforts, which was reflected by positive feedback from residents during the door-knocking events. By partnering with the City of Takoma Park's Sustainability Office, we were able to interact with tenants who already had knowledge of and trusted the city for other, non-energy-related issues. Future program implementers should utilize trusted community organizations to increase trust and program participation.

DIVERSITY OF THE COMMUNITY

The diversity of the tenants who participated in this program also proved challenging at times. Low-income communities, like most communities, are diverse, and the materials tailored for them cannot be generalized to an entire population. In this program, we found language to be an especially challenging factor, as many tenants did not speak English as their first language, but rather Spanish or Amharic. As a result, we presented the game invitation in all three languages (see Appendix D). We did the same for event fliers that we distributed and hung in common areas. Language and culture issues also arose in relation to the themes of the events, as "back-to-school party" and "vampire power" do not easily translate or convey the same meaning in other languages.

We also learned that many of the residents did not celebrate Christmas or own holiday lights, which may account for less participation in the holiday light exchange. For future programs, a wider diversity of interventions should be utilized. For example, participation would have likely been greater if there were an option to trade normal lightbulbs for more efficient alternatives. The themes of the events may also have hindered participation, as not all tenants had children going to school and not all tenants celebrate Halloween. Future programs may want to hold events that have more general themes that can apply to a wider variety of residents.

Post-Pilot Program Development

In March 2015, the City of Takoma Park's Sustainability Office launched the Takoma Park Neighborhood Energy Challenge (NEC), which built off the successes and challenges of the pilot program. The NEC grew out of the city's commitment to reducing emissions in its 2014 Sustainable Energy Action Plan as well as its participation in the Georgetown University Energy Prize competition. As of November 2015, Takoma Park was in the top 10 semifinalists in the Georgetown competition, which will award $5 million to the community that best educates its residents about energy efficiency and decreases residential energy use.

The Takoma Park NEC will run until March 31, 2016, after which prizes of $2,000 will be awarded to the most efficient neighborhood and most efficient building. The prize money can be spent on items that will benefit the building or community, to be chosen at the discretion of the winners. The NEC uses many of the same nudges tested in the pilot program, such as messaging, free efficiency devices, events, and face-to-face communication. The program also used the same designers as those used in our pilot

program to create messaging materials. By maintaining similar messaging, the Takoma Park NEC appears as a continuation of the pilot program, fostering continuity, consistency, and trust.

From April through August 2015, city employees canvassed every household in Takoma Park with information about the NEC. Through this effort, the city reached nearly 1,700 households. Of those who were at home, about half were receptive to talking to the canvassers about the program. This allowed city employees direct interaction with residents in promoting the new program. Many apartment buildings also gave their permission for the city to canvass door-to-door, which is not usually the case for multifamily buildings. This permission may have been due to the legitimacy of the City of Takoma Park as well as the familiarity residents and building managers gained with the city due to our pilot program. From March through November 2015, more than 700 households (20% of all Takoma Park single-family households) signed up for the program, and 40 have earned a Green Home Certification. We were unable to access data on multifamily participation.

The Takoma Park NEC segmented participants in order to better address their diversity. Residents who directly pay their utility bills received messaging about controlling their energy use for monetary savings, while buildings in which owners pay the energy bill received messaging about the $2,000 prize. The pilot program targeted only buildings in which residents paid their own utility bills, but by adding owner-paid utility buildings, all Takoma Park residents could be included in the program.

The Takoma Park NEC also encourages trusted community influencers to help promote efficiency among their neighbors. The pilot program lacked engagement of community influencers other than the City of Takoma Park, which we recognized as an area of opportunity for future programs. Under the NEC, team leaders from the community have volunteered to help promote the program and encourage their neighbors to participate. Influencers have been found through the community newsletter, word of mouth, and public information meetings. These influencers sponsor meetings in their homes, where energy-saving devices such as efficient lightbulbs and power strips are given out to encourage attendance, something we found to be effective during the pilot program.

From March to October 2015, residents held 13 neighborhood meetings with about 7 to 20 people per meeting and a total of 150 individuals in attendance. Some team leaders have organized groups that have met only once; other groups have met two or three times. In one case, a team leader organized several meetings on consecutive nights, which led to attendance of 8 to 10 different individuals on each night. By providing a more flexible schedule for meetings and events, residents are able to more easily overcome obstacles to attending. The City of Takoma Park plans to reward community influencers and team leaders with gift cards and other awards when the program concludes.

Since the launch of the NEC, the City of Takoma Park's Sustainability Office receives daily emails and questions about energy efficiency, such as inquiries about energy audits, rebates, and reputable contractors. Before the challenge, the department received no communication about energy issues. The Takoma Park NEC has helped to spread the word about the

Sustainability Office's services, and more Takoma Park residents are now engaging with the office and looking for information about how they can save energy.

Conclusion

While we did not achieve the energy savings we had expected, this pilot program provided valuable insights into effective strategies for behavioral interventions in affordable multifamily buildings. The pilot explored energy-saving interventions in a unique and diverse community and ultimately uncovered opportunities and challenges for tenant engagement around energy-efficient behaviors. We found that the key areas of focus for designing successful programs were fostering tenant engagement, building relationships with building managers, involving trusted community influencers, and catering to the diversity of the community. These factors should be considered together when designing future behavioral intervention programs for low- to moderate-income communities.

Due to a limited budget, we did not follow up with residents regarding their experience with the program. Therefore, we did not collect feedback that might explain low participation at events or shed light on residents' level of satisfaction with energy saving information and devices. Feedback on messaging and communication is particularly important given the various languages that were involved. Future behavioral programs should include follow-up evaluation to collect information about how the program was run and its effectiveness. By speaking directly with tenants to obtain feedback, programs can be adjusted to reflect the actual rather than perceived needs of the community members.

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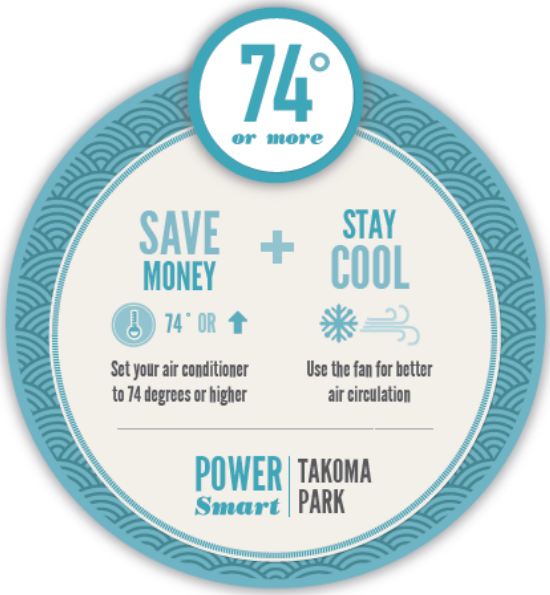
Appendix A. Intervention Timeline

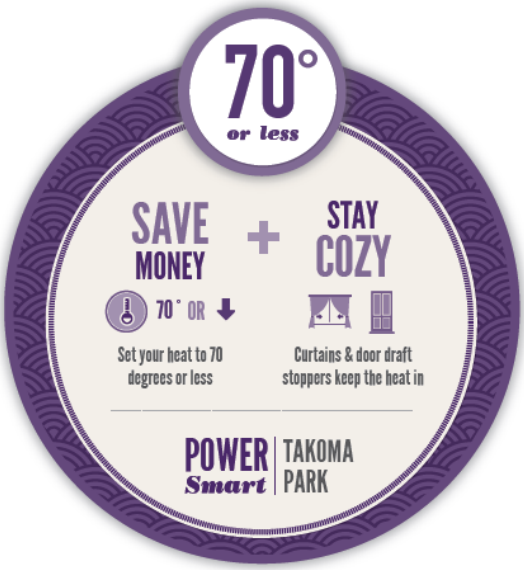
Table A1. Multifamily behavioral interventions and timeline

Property	*Power Smart|Takoma Park* back-to-school event	Thermostat hanger	Power down magnet	Light Right ornaments	Cool Choices invitation	*Power Smart|Takoma Park* Vampire Power event	Smart power strip	LED lightbulb	*Power Smart|Takoma Park* holiday light exchange
Month administered	September	September	October	December	September	October	November	December	December
Building 1	X	X	X	X					
Building 2	X	X	X	X					
Building 7	X	X	X	X					
Building 8	X	X	X	X					
Building 11	X	X	X	X					
Building 3	X	X	X	X	X	X	X	X	X
Building 4	X	X	X	X	X	X	X	X	X
Building 5	X	X	X	X	X	X	X	X	X
Building 6	X	X	X	X	X	X	X	X	X
Building 9	X	X	X	X	X	X	X	X	X
Building 10	X	X	X	X	X	X	X	X	X
Building 12	X	X	X	X	X	X	X	X	X
Building 13	X	X	X	X	X	X	X	X	X
Total households	366	366	366	366	239	239	239	239	239

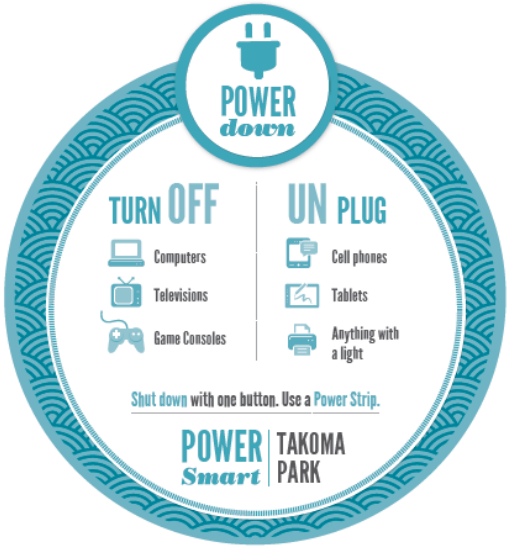
Appendix B. Messaging Pieces

Thermostat hanger





Power down magnet



Light Right ornaments

Appendix C. Introduction Letter to Tenants and Invitation to Back-to-School Event

The City of Takoma Park

Dear Resident,

On behalf of The City of Takoma Park, I am pleased to let you know you have been selected to participate in a new program for residents living in apartments and condos, called "**Power Smart, Takoma Park.**" This new program aims to:

- ✓ Provide useful items and materials FREE of charge
- ✓ Reduce your electric bill
- ✓ Make a difference in your community
- ✓ Set a positive example for other people and communities

Over the next few months, you will periodically receive FREE items from us. These items include educational materials, invitations to special events, and free energy saving products. There will also be a game, and an invitation to join your neighbors as Energy Team members, helping your community save energy.

GAME: The game is easy to play on your laptop, tablet or phone: In addition to daily energy-based challenges, the game features photo sharing opportunities, a leaderboard and prizes! Go to the URL, sign-up, and start claiming points for your sustainable actions. The url is -- ***coolchoices.us*** The registration code is: **TakomaPark**.

The City of Takoma Park has partnered with the American Council for an Energy Efficient Economy to help residents save money and energy. The project is being funded through a special grant. To be eligible to receive the benefits from this program your annual household income must be below *$55,564.80*.

To affirm that you are eligible for **Power Smart, Takoma Park** please sign your **name** and **date** below, and either mail to the address below, or you can take a picture of the signed form with your phone and email it to ginam@takomaparkmd.gov.

Signature_____ **Date**_____

Printed Name_____

Address_____

Email_____

Sincerely,

Gina Mathias, Power Smart, Takoma Park
Sustainability Manager, City of Takoma Park


Free back to school party!
¡Gratis a fiesta de la escuela!
Actividades para los niños & aperitivos & invitado especial
Lynne Cherry, Realizador de cine para niños.
September 25, 2014
6:30 pm– 8:30 pm
Takoma Park Community Center Auditorium
7500 Maple Avenue
RSVP: Text Name & Address to: 301-466-3988
RSVP por texto: 301-466-3988
Kids activities & snacks PLUS special guest children's author and film maker, Lynne Cherry.

Appendix D. Invitation to Cool Choices Game

Power *Smart* Takoma Park

Play the Takoma Park Cool Choices game!

Go to www.coolchoices.us to sign up. Use code: TakomaPark

Play every day to earn points & win prizes!

¡Juega el "Takoma Park Cool Choices" para ganar *premios!*

Ir a www.coolchoices.us y enrolar te. Código: TakomaPark

!Juegas cada día para obtener puntos y forma una equipo para mas diversión!

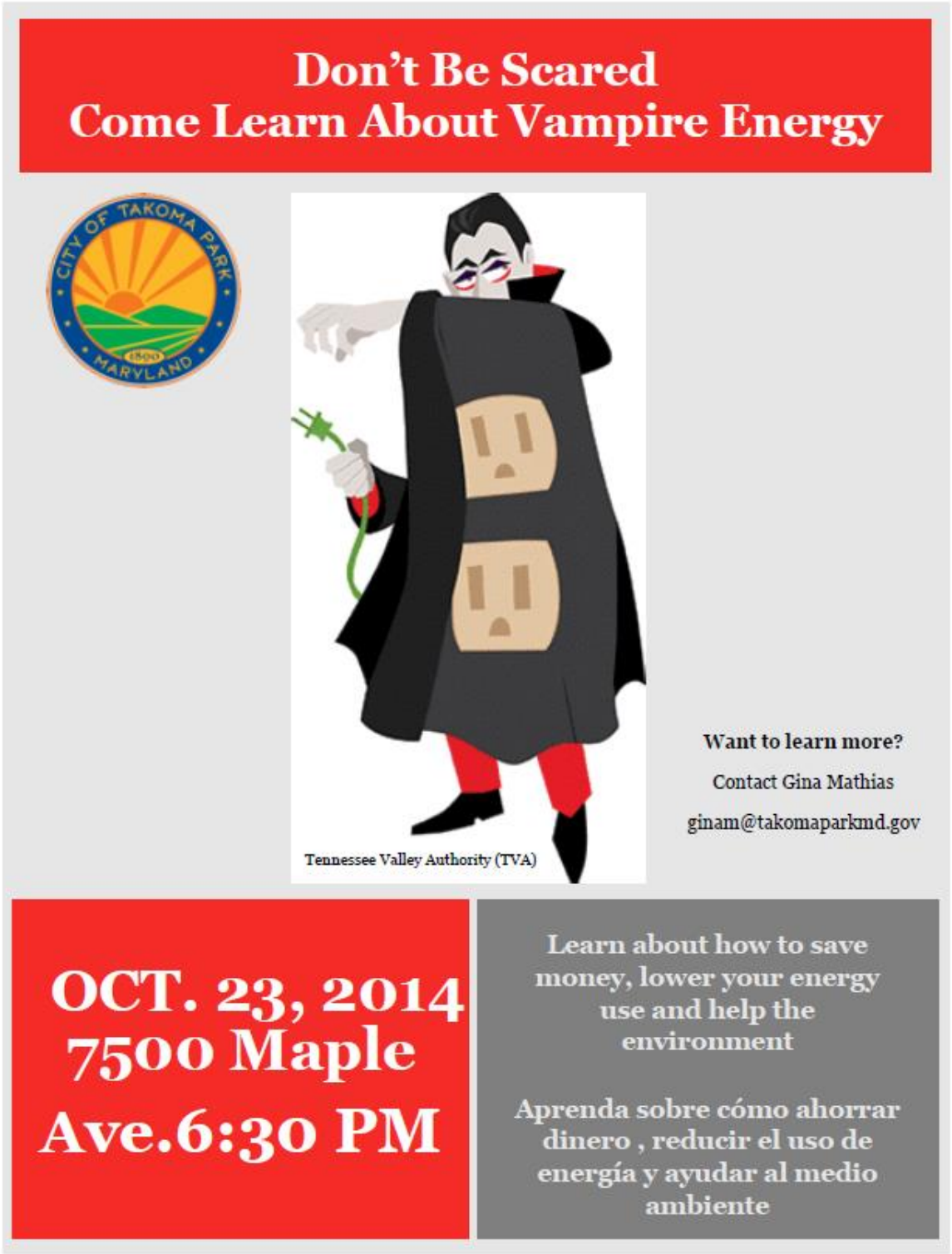
የታኮማ ፓርክ ኩል ቾይሰስ ጨዋታዎችን በመጫዎት የተለያዩ እጣዎችን ያሸንፉ

ወደ www.coolchoices.us በመሄድ ይመዝገቡ።፣

ኮድ፣ TakomaPark

በየጊዜው በመጫወት ነጥቦችን ያስመዝግቡ እነዲሁም ቡድን በመመስረት የበለጠ ውጤት ያግኙ!

Appendix E. Invitation to Vampire Power Event



Appendix F. Invitation to Holiday Light Exchange Event