

akAB Theory: Moving from Theory to Application

Mersiha S. McClaren, Research Into Action, Inc., Portland OR

Alexandra Dunn, Research Into Action, Inc., Portland OR

Jane S. Peters, Research Into Action, Inc., Portland OR

ABSTRACT

The energy efficiency community has long assumed that if energy efficiency programs can increase awareness or knowledge about energy efficiency (ak), then customers' attitudes (A) toward energy efficiency will change, and energy-efficient behaviors (B) will follow. This paper presents the results of two market research studies conducted in California and Vermont that included indicators for assessing *awareness/knowledge* of energy-related issues (ak), *concern* and *personal responsibility* attitudes about energy use (A), and *intention* to act on a behavior (B). The two market research studies focused on very different energy efficiency programs - a residential appliance rebate program in California and an extensive home energy retrofit program in Vermont.

In the California study, we found that program nonparticipants who had not planned to buy an ENERGY STAR® appliance had similar levels of *awareness/knowledge* and *attitudes* toward energy use as did the program participants. In the Vermont study, we found that respondents who had dropped out of the whole house/comprehensive upgrade program and nonparticipants who were not interested in installing a renewable energy system were more *concerned* about the financial impacts of energy use than program participants and nonparticipants who considered installing a renewable energy system.

Findings from both studies demonstrate that *awareness/knowledge*, *concern*, and *personal responsibility* are effective in explaining some participant and nonparticipant differences or similarities. As for the *intention* indicator, further research is needed to refine this measure.

Introduction

Since the energy crises of the 1970s, policy makers, regulators, utility program staff, academics, and energy professionals working in the non-profit and private sectors have been trying to understand consumers' decisions around energy use. Given this interest, various questions have been raised about how people think about energy, why they would choose to conserve energy, and which interventions in the marketplace encourage them to do so. Several prominent reviews of the research done around these questions suggest that energy-using behavior is subject to many influences, including those that are under consumer's control and those that are not (Lutzenhiser 1993, Wilhite et.al. 2000, and Wilson & Dowlatabadi 2007). This study uses the akAB framework developed by Randazzo and Peters (2011) to explore a couple of psychological motivations for investing in energy-efficiency home upgrades, which are deemed to be under consumer's control.

Randazzo and Peters (2011) have based the akAB framework on several key concepts common to these five theories that have been researched extensively:

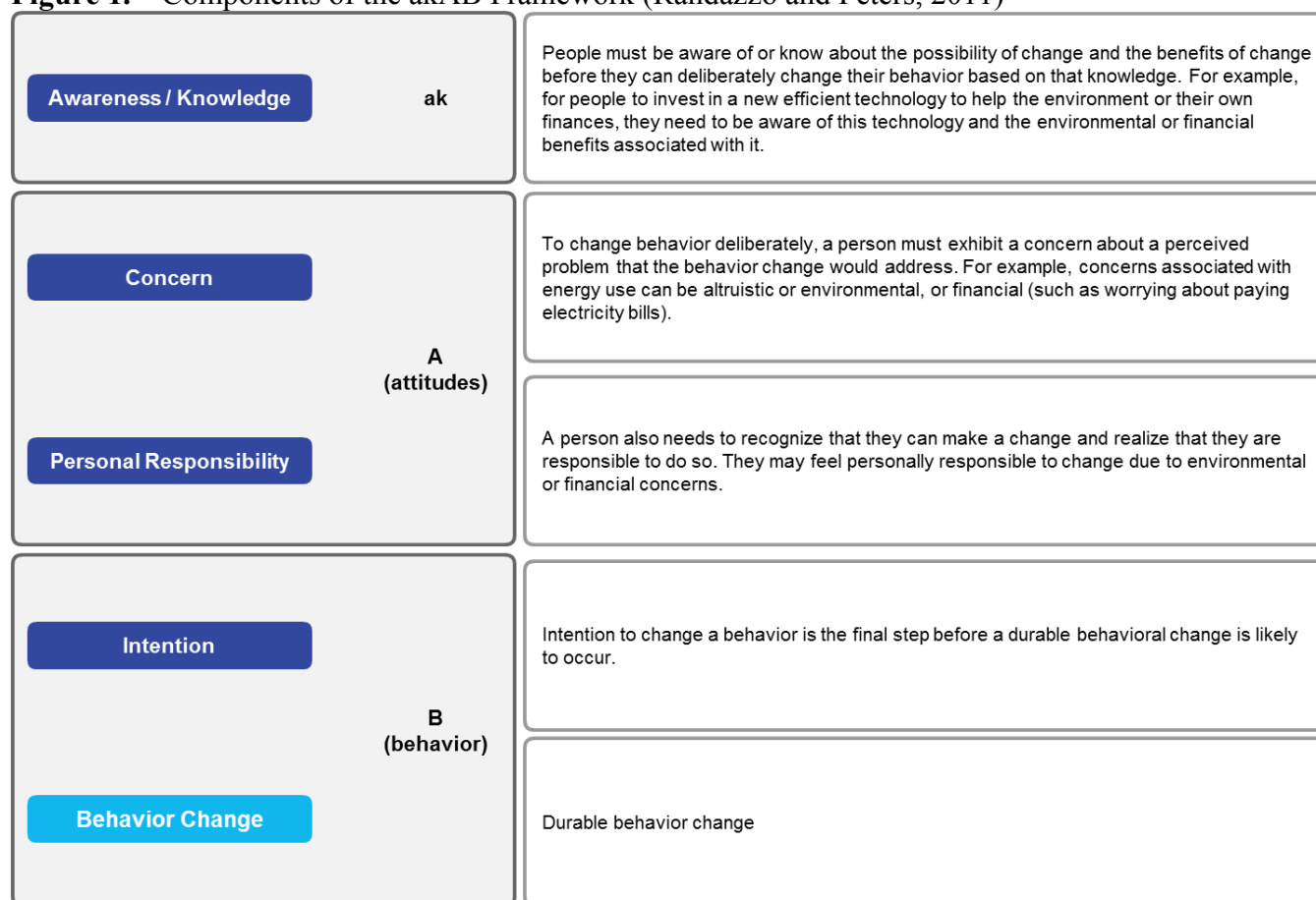
- Theory of Planned Behavior (Fishbein & Ajzen 1975 and Ajzen 1991). This theory suggests that attitudes and subjective norms¹ predict behavior intention, and behavior intention can predict behavior.
- Norm Activation Theory (Schwartz, 1977). This theory suggests that individual's personal norms about an object (i.e., valuing something such as the environment's well-being) are activated when a threat to that object is perceived.

¹ Subjective norms are individual's beliefs of what the relevant people in his/her life think about issues or behaviors.

- Value-Belief-Norm Theory (Stern et al., 1999). This theory extends the logic of the Norm Activation theory by suggesting that behavior change is likely to occur when beliefs about consequences toward an object of value and personal responsibility to do something about it are present within an individual.
- Transtheoretical Model (Prochaska and Velicer, 1997). This theory suggests that people go through the pre-contemplation, contemplation, and preparation decision-making stages prior to adopting a behavior.
- Diffusion of Innovation Theory (Rogers, 1962). This theory suggests that adoption of a new technology occurs through certain communication channels over time among a social group and that there are five steps that members of a group must go through before they can adopt a new technology: awareness, interest, evaluation, trial, and adoption.

Through a careful reading of the energy-efficiency and relevant decision-making literature in support of these five theories, Randazzo and Peters (2011) integrated key concepts common to these theories and defined the stages whereby individuals or households adopt an energy-efficient behavior that is intentional and durable. These stages, as shown in Figure 1, are the key components of the akAB framework. The akAB framework suggests that *awareness/knowledge* of an issue or technology, *concern* about an issue or technology, *personal responsibility* to do something about an issue or technology, and *intention* to act are important steps before a behavior change can happen.

Figure 1. Components of the akAB Framework (Randazzo and Peters, 2011)



Purpose of the Study

The purpose of this paper is to examine whether certain indicators developed based upon the akAB framework could help program designers, implementers, and evaluators more effectively characterize those who participate in energy efficiency programs and those who do not. Specifically, this paper examines whether levels of *awareness/knowledge* of energy-related issues, levels of *concern* and *personal responsibility* about energy use, and levels of *intention* to act on a behavior explain membership in a group. We have chosen to explore this question in the context of the participants and nonparticipants of two very different residential energy efficiency programs; one was a residential appliance rebate program in California, while the other was a whole house retrofit program in Vermont. Research Into Action and its subcontractors conducted market studies of the two programs.

For both studies, we conducted telephone surveys. We accessed both cell phone and landline samples, by purchasing RDD lists with landline and cell phone contacts. Both studies contained analogous indicators based on the akAB framework and demographic questions. This allowed for comparisons between program participants and nonparticipants.

Market Research Methodology

Scale Development

Research Into Action and its subcontractors conducted two pre-tests prior to the full-scale fielding of the California and Vermont market studies to develop indicators for assessing the environmental and financial reasons that could motivate people to invest in energy efficiency. Specifically, we used the akAB framework to identify survey items that could reliably measure *awareness/knowledge* of energy-related issues, *concern* and *personal responsibility* attitudes about costs of energy and energy use impact on the environment, and *intention* to conserve energy at home. Each pre-test consisted of 200 completed surveys with a randomly selected sample of California residents. California residents who agreed to take the pre-test survey rated how much they agreed with various statements using a scale from 0 to 10, where 0 meant “not at all agree” and 10 meant “completely agree.” We linked these statements with the appropriate concepts underlined above. For example, survey contacts had to tell us how much they agreed with the statement: “I often worry that the cost of energy for my home will increase.” This statement was associated with the *concern* for finances attitude.

During the pre-tests, we tested 67 survey items. Of those, we identified 13 statements as valid and reliable measures² of the given concepts. Next, we computed several environmental and financial indicators from the responses to these 13 statements, using the data from the two market studies. This was done by averaging the responses to certain statements to create a score for each individual. For example, respondents’ ratings of “I sometimes worry whether there is enough money to pay my energy bill” and “I often worry that the cost of energy for my home will increase” were averaged to produce a “concern for finances” score. A lower score indicates that a respondent was *less concerned* about energy use on their personal finances, while a higher score indicates that they were *more concerned*.

² We conducted reliability tests (Cronbach’s Alpha tests) to determine which items reliably measured a given belief or attitude. Cronbach’s Alpha values range from 0 to 1 and are higher when the correlations between items increase. Generally, values of 0.7 and no higher than 0.9 are good indicators of reliability.

California Study

The first of our two market research studies attempting to explore customers' *awareness/knowledge, concerns, personal responsibility, and intention* responses relating to energy use was the General Population Study (GPS) of California residents. The GPS was designed to explore responses to questions about energy use by those who said they had purchased an appliance in the past two years with or without a utility rebate.

The GPS study sample represented the general population of California.³ We conducted the GPS survey in conjunction with the 2011-2012 process evaluation survey of participants in the Home Energy Efficiency Rebate (HEER) program offered by investor-owned utilities in California. We surveyed 928 customers who had not participated in the HEER program, and 507 customers who had participated in the HEER program and had received a utility rebate for the purchase of an efficient appliance.

Vermont Study

The market research study, of the Vermont Single-Family Existing Buildings market, explored *awareness/knowledge, concerns, personal responsibility, and intention* relating to energy use among utility customers who did and did not invest in comprehensive energy efficiency improvements in their homes. We amended⁴ the *awareness/knowledge, concern, personal responsibility, and intention* questions from the California study to ensure that they were applicable to conditions in Vermont.

The Vermont study relied on data gathered from a general population survey of 615 homeowners who were deemed eligible to participate in whole house upgrade programs in Vermont.⁵ The market research analysis also used a subset of the data gathered from two program evaluation surveys of 361 homeowners who participated in and of 111 homeowners who dropped out of whole house upgrade programs in Vermont.

Analysis and Results

California Study

For the first step of our analysis, we divided the respondents from the GPS and HEER surveys into relevant behavior-based groups. We determined these groups based on the following logic:

- If respondents received a utility rebate for purchasing a highly efficient appliance, they were classified as **“Participants.”**
- If respondents reported recently buying an appliance (Room AC, Refrigerator, Clothes Washer, or Water Heater) without a utility rebate but said they had planned to buy an ENERGY STAR® appliance when they bought that appliance, they were categorized as **“Nonparticipants seeking ENERGY STAR appliance.”**⁶
- If respondents reported recently buying any of the appliances referenced above without a utility rebate and had NOT planned to buy an ENERGY STAR appliance when they bought

³ We applied post-stratification weights to the final sample to ensure that it appropriately represented the population per key demographic characteristics. For more details, see Peters et.al. (2012).

⁴ We adjusted the wording of the 13 statements used in the California study. Specifically, all mentions of “energy costs” or “energy bills” were substituted with “heating costs” or “heating bills” since in Vermont energy demand for heating is high in the winter. For more details, see Moran et.al. (2013).

⁵ We stratified the nonparticipant sample by population density and screened out homeowners with household incomes below 60% of the state median income by household size.

⁶ We did not know whether these respondents actually bought an ENERGY STAR appliance because we only asked them whether they planned to buy an ENERGY STAR appliance when they were purchasing that appliance.

that appliance, they were categorized as “**Nonparticipants not seeking ENERGY STAR appliance.**”

Next, we examined whether participants and both nonparticipant groups had different levels of *awareness/knowledge* of energy-related issues, levels of *concern* and *personal responsibility* about energy costs and the impacts of energy use on the environment, and levels of *intention* to act on a behavior. Specifically, survey respondents rated their agreement with various environmental and financial statements that measured the extent to which they were:

- Aware of the effects of energy use on the environment
- Concerned about the impact of energy use on the environment
- Concerned about the impact of energy use on their personal finances
- Personally responsible for using less energy to help the environment
- Personally responsible for using less energy to help their personal finances
- Intending to conserve energy at home

When we compared the environmental indicators⁷, the analysis revealed that nonparticipants seeking ENERGY STAR appliances were more *aware* of, and felt a greater *personal responsibility* for the environment than did participants (Figure 2).⁸ This indicates that appliance purchasers who were motivated to buy ENERGY STAR products on their own without going through the program cared more for the environment than appliance purchasers who bought appliances through the program. The analysis also revealed that nonparticipants not seeking ENERGY STAR appliances had similar levels of *awareness*, *concern*, and *personal responsibility* about the environment as did participants,⁹ but lower *intention* to act on the behavior than participants¹⁰ (Figure 2). This further suggests that the program was reaching customers who were similar to those who did not seek to buy an energy-efficient appliance (i.e., the right types of customers).

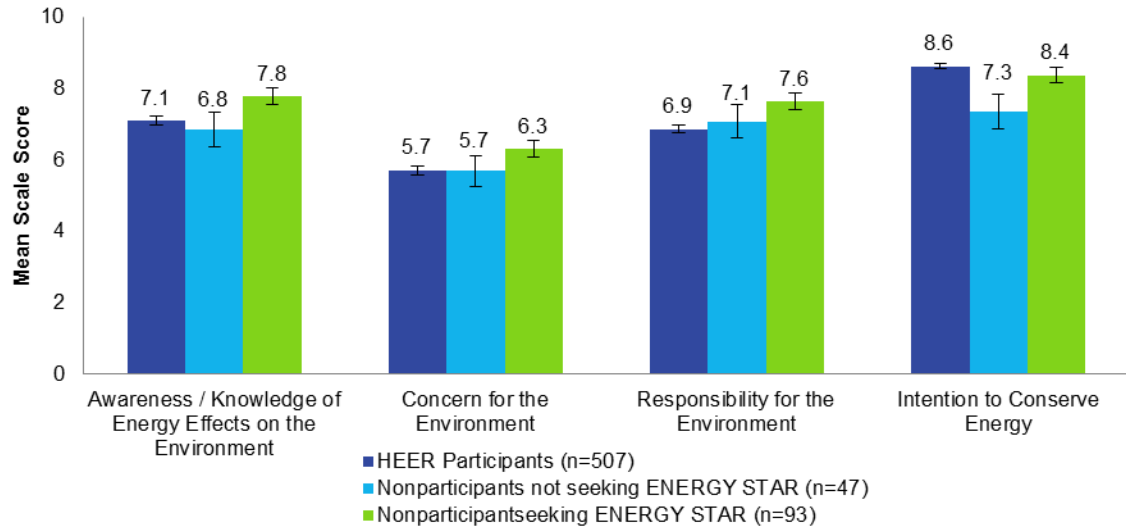
⁷ As noted in Scale Development section, we averaged respondents’ ratings to certain statements to create environmental indicators.

⁸ ANOVAs (environmental indicators): $F(2,644)_{\text{awareness}}=2.64$, $p=0.07$ – planned contrasts indicate nonparticipants seeking ENERGY STAR are different from nonparticipants not seeking ENERGY STAR and HEER participants, $t(644)=2.23$, $p=.03$; $F(2,644)_{\text{concern}}=1.89$, $p=0.15$; and $F(2,643)_{\text{responsibility}}=3.30$, $p=0.04$ – planned contrasts indicate nonparticipants seeking ENERGY STAR are different from nonparticipants not seeking ENERGY STAR and HEER participants, $t(643)=1.93$, $p=.05$

⁹ Planned contrasts for awareness, concern and responsibility for the environment showed no significant differences between HEER participants and nonparticipants seeking ENERGY STAR.

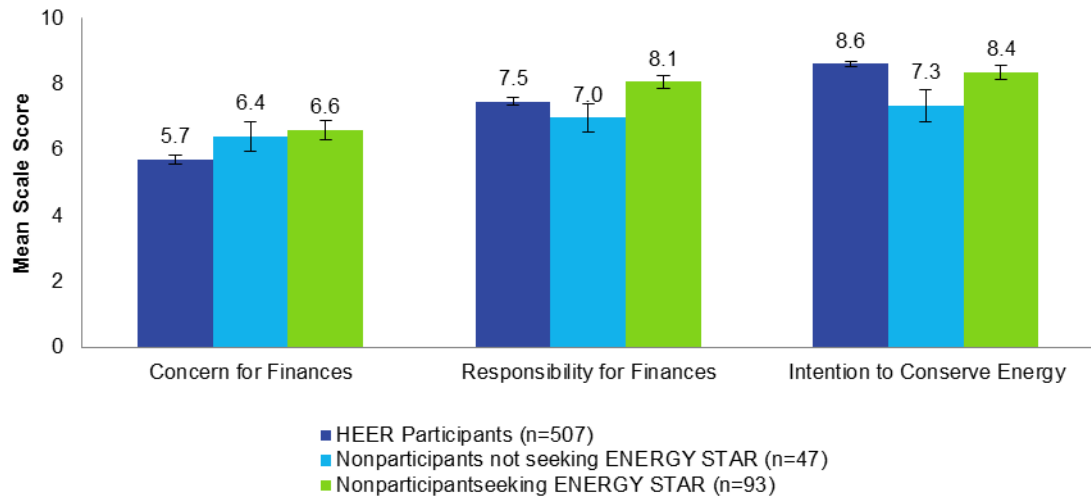
¹⁰ Planned contrast for different levels of intention to conserve energy between HEER participants and nonparticipants not seeking ENERGY STAR: $t(644)_{\text{intention}}=4.07$, $p<0.001$

Figure 2. Mean Environmental Awareness/Knowledge, Concern, Responsibility, and Intention to Act Differences between HEER Participants and Both Nonparticipant Groups (Error bars show standard error)



When we compared the financial indicators, we discovered that nonparticipants seeking ENERGY STAR appliances expressed having a greater *personal responsibility* for finances than did both participants and nonparticipants not seeking ENERGY STAR¹¹ (Figure 3). Additionally, nonparticipants seeking ENERGY STAR had a higher *concern* for finances than participants.¹² This indicates that nonparticipants seeking ENERGY STAR had more financial concerns and felt more financially responsible than participants.

Figure 3. Mean Financial Concern, Responsibility, and Intention to Act Differences between HEER Participants and Both Nonparticipant Groups (Error bars show standard error)



To further explore these findings, we conducted logistic regression analyses to assess how demographic variables and *awareness*, *concern*, *responsibility*, and *intention* indicators are associated with participants, and the two nonparticipant groups. Table 1 displays the results as odds ratios, which

¹¹ ANOVA (financial indicators): $F(2,638)_{\text{responsibility}}=4.0$, $p=.02$ – planned contrasts indicate nonparticipants seeking ENERGY STAR are different from nonparticipants not seeking ENERGY STAR and HEER participants, $t(638)=2.83$, $p=.01$

¹² ANOVA (financial indicators): $F(2,642)_{\text{concern}}=5.20$, $p=.01$, Tukey's post-hoc tests showed a marginally significant difference between HEER participants and nonparticipants seeking ENERGY STAR (mean difference=.91, $p=.1$).

measure how likely participants are to differ from other groups per demographics and *awareness*, *concern*, *responsibility*, and *intention* scores. Specifically, values above and below “1” mean that other groups are more likely or less likely, respectively, to have certain characteristics than participants.

The logistic regression results indicate that:

- Nonparticipants seeking an ENERGY STAR appliance expressed a greater *personal responsibility* to reduce the effect of energy use on their finances but had a lower *intention* to conserve energy at home than did the participants. There were no differences between these two groups with respect to age and income. However, nonparticipants seeking an ENERGY STAR appliance were more likely to be renters than were the participants. This may be a reason as to why nonparticipants seeking an ENERGY STAR appliance had a lower *intention* to conserve energy at home than did the participants.
- Nonparticipants not seeking an ENERGY STAR appliance had a lower *intention* to conserve energy at home than did the participants. This is not surprising, since they were more likely to be renters, to have lower incomes, and to be younger than participants.

Table 1. Differences between HEER Participants and the two Nonparticipant Groups – Multinomial Regression Results

Variables Included in the Model	Odds Ratios ^a (n=449)	
	Nonparticipants seeking ENERGY STAR appliance vs. HEER Participants	Nonparticipants <i>not</i> seeking ENERGY STAR appliance vs. HEER Participants
Awareness, Concern, Responsibility, and Intention Indicators		
Aware of energy-use impacts on the environment	1.04	0.99
Concern for the environment	1.08	1.05
Personal responsibility for the environment	0.98	1.14
Concern for finances	1.09	1.13
Personal responsibility for finances	1.20*	0.93
Intention to conserve energy at home	0.75*	0.62*
Demographic Variables		
Age (in years)	0.99	0.97*
Home-ownership (1=yes, 0=no)	0.14*	0.15*
Household income (seven categories: 1=“\$20,000 or less” to 7=“\$100,000 or more”)	0.95	0.78*

* Significant at p<0.05

^a We used SPSS IBM logistic regression algorithm to estimate odds ratios. This software calculates odds ratios by using this formula: odds ratio= $e^{\text{logistic regression coefficient}}$, where e is a numerical constant equal to approximately 2.718.

Vermont Study

As in the California study, we divided the respondents from the homeowner market and whole house program surveys into relevant behavior-based groups. Unlike the California sample, all survey respondents in the Vermont study were homeowners with higher incomes, and therefore, were eligible to participate in or already had participated in the whole house/comprehensive upgrade programs.

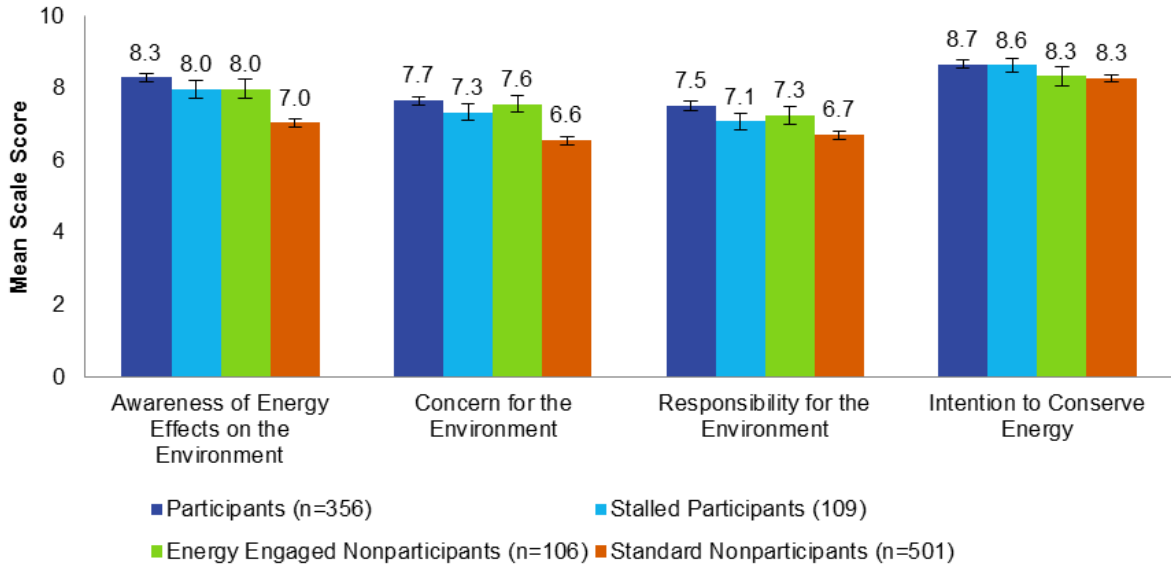
We determined the behavior-based groups according to the following logic:

- If respondents had participated in the whole house/ comprehensive upgrade program (i.e., they had received financial incentives for a whole house retrofit), they were classified as **“Participants.”**
- If respondents had initiated a project through the whole house/ comprehensive upgrade program and had not completed it (i.e., dropped out of the program), they were categorized as **“Stalled Participants.”**
- If respondents reported receiving a quote for installing a renewable energy system (geothermal, wind, or solar) and had not participated in the whole house/comprehensive upgrade program, they were categorized as **“Energy Engaged Nonparticipants.”**
- If respondents reported not receiving a quote for installing a renewable energy system and had not participated in the whole house/comprehensive upgrade program, they were categorized as **“Standard Nonparticipants.”**

When comparing the environmental indicators, we found that standard nonparticipants were less *aware of*, *concerned* about, and expressed feeling less *responsibility* for protecting the environment than did the program participants, stalled participants, and energy-engaged nonparticipants (Figure 4).¹³ These results indicate that energy-engaged nonparticipants (i.e., those who had received a bid for a renewable energy system – an investment similar in scale to a whole house upgrade) were similar to participants and stalled participants in their level of environmental *awareness/knowledge*, *concern*, and *personal responsibility*.

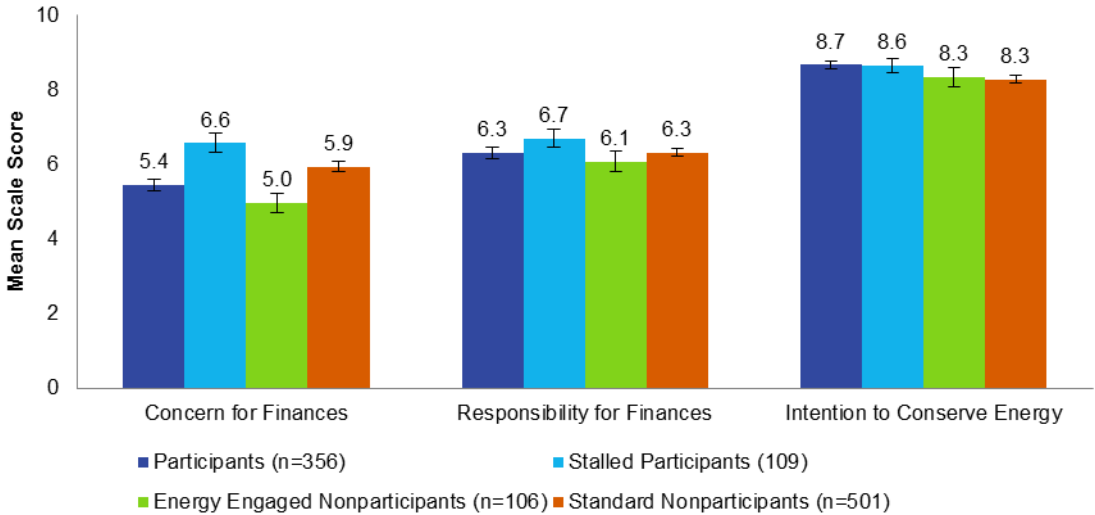
¹³ ANOVAs (environmental indicators): $F(3,1070)_{\text{awareness}}=17.0$, $p<0.001$ – planned contrasts indicate standard nonparticipants have lower scores than participants, stalled participants and energy engaged nonparticipants, $t(1070)=-5.5$, $p<0.001$, and that energy engaged nonparticipants are not significantly different from participants or stalled participants; $F(3,1070)_{\text{concern}}=15.5$, $p<0.001$ – planned contrasts indicate standard nonparticipants have lower scores than participants, stalled participants and energy engaged nonparticipants, $t(1070)=-5.6$, $p<0.001$, and that energy engaged nonparticipants are not significantly different from participants or stalled participants; $F(3,1070)_{\text{responsibility}}=7.6$, $p<0.001$ – planned contrasts indicate standard nonparticipants have lower scores than participants, stalled participants and energy engaged nonparticipants, $t(1070)=-5.5$, $p<0.001$, and that energy engaged nonparticipants are not significantly different from participants or stalled participants.

Figure 4. Mean Environmental Concern, Responsibility, and Intention to Act Differences between Participants, Stalled Participants, and Both Nonparticipant Groups (Error bars show standard error)



When we compared the financial indicators, we found that stalled participants and standard nonparticipants were more *concerned* about the impact of energy use on their finances than were the participants and energy-engaged nonparticipants (Figure 5).¹⁴ These results suggest that financial concerns affect stalled participants and standard nonparticipants more than they do participants and energy-engaged nonparticipants.

Figure 5. Mean Financial Concern, Responsibility, and Intention to Act Differences between Participants, Stalled Participants, and Both Nonparticipant Groups (Error bars show standard error)



¹⁴ ANOVA Concern for finances $F(3,1074)=8.2$, $p<0.001$, Tukey's post hoc tests showed significant differences between participants and standard nonparticipants (mean difference=0.5, $p=.05$), participants and stalled participants (mean difference=1.13, $p=.001$), energy engaged nonparticipants and standard nonparticipants (mean difference=.97, $p=.01$), and energy engaged nonparticipants and stalled participants (mean difference=1.6, $p<0.001$).

To further explore these findings, we conducted multinomial logistic regression analysis to assess how demographic variables and awareness, concern, responsibility, and intention indicators are associated with participants, stalled participants, and nonparticipants. The results, which are displayed in Table 2, indicate that:

- Stalled participants were more concerned about the effect of energy use on their finances than were the participants. There were no differences between these two groups with respect to age, size of home, age of home, duration of homeownership, and household income. In fact, stalled participants with greater concerns about their finances were likely to have incomes similar to participants'. This suggests that the concern for finances indicator could better predict which customers will be more likely to drop out of the program than income level alone.
- Energy-engaged nonparticipants were most similar to participants; the two groups had similar environmental and financial awareness, concern, and personal responsibility scores, and demographic similarities. There were no differences in household income, size of home, and age between participants and energy-engaged nonparticipants. Nevertheless, energy-engaged nonparticipants lived in newer homes and had owned their homes longer than had the participants. New homes tend to be more energy-efficient than older homes, and likely would not require whole house energy upgrades.
- Standard nonparticipants were more concerned about the effect of energy use on their finances and less concerned about the environment than were the participants. These findings suggest that standard nonparticipants likely were motivated more by their concerns about their finances than about the environment. In addition, standard nonparticipants lived in homes that were newer than those of participants. However, there were no differences between these two groups with respect to household income, age, size of home, and duration of homeownership.

Table 2. Differences between Participants and two Nonparticipant Groups – Multinomial Logistic Regression Results

Variables Included in the Model	Odds Ratios ^a (n=564)		
	Stalled Participants vs. Participants	Energy Engaged Nonparticipants vs. Participants	Standard Nonparticipants vs. Participants
Awareness, Concern, Responsibility, and Intention Indicators			
Aware of energy-use impacts on the environment	1.15	1.15	1.00
Concern for environment	0.88	0.92	0.83*
Personal responsibility for environment	0.96	1.08	1.06
Concern for finances	1.16*	1.01	1.13*
Personal responsibility for finances	0.96	0.95	1.05
Intention to conserve energy at home	1.10	1.03	1.02

Variables Included in the Model	Odds Ratios ^a (n=564)		
	Stalled Participants vs. Participants	Energy Engaged Nonparticipants vs. Participants	Standard Nonparticipants vs. Participants
Demographic Variables			
Age (in years)	1.01	0.98	0.99
Size of home (in square feet)	1.00	1.00	1.00
Age of home [Eight categories: 1="2001-2012 (newest)" to 8="1940 or earlier (oldest)"]	0.90	0.65*	0.68*
Duration of home-ownership (Seven categories: 1="1-2 yrs" to 7="More than 30 years")	0.84	1.23+	1.10
Household Income (Ten categories: 1="\$20,000 or less" to 10="\$200,000 or more")	0.97	0.937	1.06

+ Marginally Significant at p<0.1

* Significant at p<0.05

^a We used SPSS IBM logistic regression algorithm to estimate odds ratios. This software calculates odds ratios by using this formula: odds ratio = $e^{\text{logistic regression coefficient}}$, where e is a numerical constant equal to approximately 2.718.

Conclusions

We learned that the indicators of *awareness/knowledge* of energy-related issues, *concern*, and *personal responsibility* attitudes about the costs of energy and the impacts of energy use on the environment helped us better explain some differences between program participants and nonparticipants. In both studies, we found that participants were less focused on finances than were any other group. This was quite striking in the Vermont study, where we discovered that residents whose incomes were similar to the nonparticipants and who had dropped out of the program still felt financially constrained, in that they expressed greater *concern* about energy use on their finances than did program participants. This finding would not have been as clear if income had been the only measure of the household's financial situation.

We also noticed that *intention* to act was high across all groups in both the California and Vermont studies. The *intention* to act indicator was based on two questions that inquired about whether respondents were planning to conserve energy at home this summer or this winter. That is, the *intention* to act indicator in both studies did not measure whether respondents had the intent to engage in a specific behavior promoted by the program. It is possible that those indicators of *intention* that measure a person's intent to engage in a specific behavior could be more predictive (and therefore more useful) than the general indicator of *intention* that was used in this study. Further research should be conducted on this topic.

Last, we learned that analysis linking the abovementioned indicators and demographic variables provided greater insights into who are the customers who opt to participate or not participate in a

program. In the California study, we noticed that both nonparticipant groups had less *intention* to conserve energy at home than the participants. This difference between the groups was moderate since for each unit increase in the intention score, the odds of belonging to the two nonparticipant groups rather than the participant group decreased by 0.75 and 0.62, respectively. The greater percentage of renters among the two nonparticipant groups may explain why both nonparticipant groups were less willing to conserve energy at home. In the Vermont study, we found that energy-engaged nonparticipants who had similar incomes and *awareness/knowledge* and *attitude* profiles as program participants lived in newer homes. Because of that, energy-engaged nonparticipants would likely not need to implement whole house retrofits.

Given these findings, we conclude that some of the environmental and financial indicators that we developed based on the akAB framework were effective in distinguishing a few important differences between various participant and nonparticipant groups of two dramatically different programs. This leads us to believe that these indicators should be researched further to assess whether they can be refined to better assess participants and nonparticipants of residential energy-efficiency programs.

Acknowledgements

We would like to thank the following people for their assistance on this project: Kathy Randazzo with Opinion Dynamics for her invaluable feedback during the GPS study; Andy Fessel and Brian Smith of PG&E, and Caroline Chen of SCE, StatWizards LLC for funding the GPS study; and the Vermont Department of Public Services and High Meadows Fund for funding the Vermont study.

References

- Ajzen, I. 1991. "The Theory of Planned Behavior." *Organizational Behavior and Human Decision Processes* (50): 179-211.
- Fishbein, M. and I. Ajzen. 1975. *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.
- Lutzenhiser, L. 1993. "Social and Behavioral Aspects of Energy Use." *Annual Review of Energy and the Environment* (18): 247-289.
- Moran, D., M. McClaren, A. and Dunn. 2013. *Vermont Single-Family Retrofit Market, Market Research*. Portland, Ore.: GDS Associates, Inc. and Research Into Action. Accessed March 10 2012 at <http://www.highmeadowsfund.org/storage/research-and-learning-documents/energy-related-documents/2013-reports/Market%20Research%20Report%20FINAL%202013-02-15.pdf>.
- Peters, J.S., M. Spahic, A. Dunn, and K.V. Randazzo. 2012. *2011-2012 General Households Population Study in California*" Portland, Ore.: Research Into Action. Accessed March 10 2013 at http://www.calmac.org/publications/GPS_Report_08302012_FINALES.pdf.
- Prochaska, J.O., and W.F. Velicer. 1997. "The Transtheoretical Model of Health Behavior Change." *American Journal of Health Promotion* (12): 38-48.
- Randazzo, K.V., and J.S. Peters. 2011. *Reconsidering What We Measure: A White Paper. Residential Decision-Making and Proposed Standard Questionnaire Items*. Portland, Ore.: Research Into Action. Accessed March 10 2013 at

- Rogers, E. 1962. *Diffusion of Innovation*. New York, N.Y.: Simon and Schuster, Inc.
- Schwartz, S. 1977. "Normative Influences on Altruism." *Advances in Experimental Social Psychology* (10): 222-279.
- Stern, P., T. Dietz, T. Abel, G.A. Guagnano, and L. Kalof. 1999. "A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism." *Human Ecology Review* (6): 81-97.
- Wilhite, H., E. Shove, L. Lutzenhiser, and W. Kempton. 2000. The Legacy of Twenty Years of Energy Demand Management: We know more about individual behavior, but next to nothing about demand. In E. Jochem, D. Bouille, & J. Sathaye (Eds.), *Society, Behavior, and Climate Change Mitigation* (pp.109-126). Dordrecht/Boston/London: Kluwer Academic Publishers.
- Wilson, C., and H. Dowlatabadi. 2007. "Models of Decision Making and Residential Energy Use." *Annual Review of Environment and Resources* (32): 169-203.