Power and Persuasion: Behavior Science in the Energy Conservation Sector

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Abstract

Vermont's home energy efficiency effort is reflective of the international problem of energy conservation. To wit: while there is much talk and concern about the environment and limited energy resources, accomplishments often do not match goals. In 2008, the Vermont state legislature mandated that 80,000 homes be retrofitted for energy efficiency by 2020. Yet, the state's energy efficiency utility, Efficiency Vermont (EV) has spearheaded a mere 3,075 home energy efficiency projects since 2005 (Efficiency Vermont, 2011). This paper suggests that part of the problem may lie in the energy efficiency industry's reliance on traditional advertising industry techniques. We argue that, in order to be truly effective, the home retrofitting communication process should be a comprehensive endeavor in which all aspects of communication with prospective customers, from interpersonal to electronic to mass media-based, are part of an evidence-based behavior-change effort. Therefore, this paper discusses the psychosocial climate in which energy efficiency efforts operate, and suggests research-based approaches and behavioral processes for encouraging homeowners to undertake home energy efficiency projects and to engage in conservation behaviors. To aid in clarifying important points, this paper also considers and critiques Efficiency Vermont's communication materials.

Keywords: energy conservation, media campaign, home energy performance, behavior change, social marketing

An Argument for Evidence-Based Communication in the Home Energy Efficiency Realm

The Challenge

In 2008, the Vermont state legislature mandated that, on top of the housing stock already insulated to modern standards, an additional 80,000 additional Vermont homes be retrofitted by 2020. This would require weatherization of more than 22 homes per day, or over 8,200 homes per year, a pace that the 2011 Comprehensive Energy Plan acknowledges is not currently being met (Vermont Department of Public Service, 2011).

There are 324,389 units of housing in Vermont (U.S. Census, 2012), most of which are not insulated to modern standards (Conant, 2009). The state's energy efficiency utility, Efficiency Vermont (EV) has spearheaded 3,075 home energy efficiency projects since 2005 (Efficiency Vermont, 2011), which represents about one percent of the state's housing stock. EV is funded by a surcharge on ratepayer utility bills. These upgrades include measures taken within the home with the intention of lowering energy use, including air-sealing and insulation, installation of programmable thermostats, and the replacement of energy-inefficient devices such as refrigerators, heating units, etc.

There are a few main reasons behind the legislature's mandate. Approximately 44% of Vermont's owner-occupied homes were built prior to 1950 (Black-Plumeau & Collins, 2009), well before modern air sealing and insulation techniques existed. So, significant potential savings are available concerning the cost of heating and cooling. Vermont imports six hundred million dollars' worth of fossil fuels, and Vermonters spend about $2.5 billion on all forms of energy combined, including about $700 million on electricity (Vermont Department of Public Service, 2011). This is in a state of about 626,000 people. Another issue is that 28% of the nation's

energy is used in homes; 28% of the nation's CO_2 emissions are tied to the home as well (Bin & Dowlatabadi, 2005).

There are clear consumer benefits to retrofitting. According to Efficiency Vermont's website, Vermont homeowners who have retrofitted their residences are saving, in one case, $294 on heating costs (Efficiency Vermont, 2010) and in another, 43% on their bill (Efficiency Vermont, 2011). EV's promotional materials claim that homeowners can save up to 30% on their energy bills. This is within the range of estimates from a variety of sources (Gardner & Stern, 2009; Ludwig & Isaacson, 2010; Palmer, Walls, Gordon, & Gerarden, 2011). In Chicago, a city with a climate similar to that of Vermont, a retrofitting program resulted in a reported 26.2% reduction in energy use (Ludwig & Isaacson, 2010). EV's research indicates that consumers who have retrofitted their homes feel they are saving money (although not as much as hoped) and that they are more comfortable in their homes than before the retrofits took place (Efficiency Vermont, 2008).

Home energy efficiency measures are often driven by financial incentives, which include rebates and zero-interest loans or a combination thereof. EV declared success with a recent program called *Home Performance with ENERGY STAR* that involved incentives of up to $2500 for actions such as air sealing, insulation, heat distribution improvements (e.g., sealing ducts) and heat system replacement. The campaign resulted in the exhaustion of available incentive funds.

However, for the foreseeable future, EV will not be offering financial incentives in the amounts provided in previous years. At the same time, EV seeks to become known to Vermonters as the central resource center for all home energy efficiency questions, with the goal

of prompting energy efficiency inquiries from the public regardless of whether or not incentives exist (personal correspondence, S. Bay, EV, September 25, 2012).

Thus, the challenge is as follows: with the state falling behind schedule for its targeted number of home retrofits, with smaller incentives available to spur new ones, and with the incentive pool in any case not sufficient to retrofit the mandated number of homes, clearly, stronger measures are needed to persuade Vermonters to retrofit their homes.

There is another, related issue as well: retrofitted homes by themselves do not save energy (Gonzales, Aronson, & Costanzo, 1983). It is humans, after all, who control thermostats, close windows, and add or shed layers of clothing. Therefore, this paper presents information regarding the importance of ongoing, persuasive communication to ensure that home occupants practice conservation.

The purpose of this paper is to connect the concept of evidence-based persuasion techniques with an industry that is reliant on traditional, probably ineffective strategies that spring from the marketing world. Thus, this paper suggests a framework for understanding the psychosocial world in which retrofitting and conservation communication operates, and it recommends ways to communicate persuasively within this world.

Barriers to Change, Complicating Factors, and Common Mistakes

It is a cliché in social science that human behavior is complicated. Complicating matters further is that many seemingly logical assumptions made by policy makers, program managers, and marketing personnel are simply incorrect (Carrico, 2011). This section examines some common misperceptions in an effort to delineate the home retrofitting communication landscape.

Beliefs and behaviors. People often instinctively assume a direct connection between beliefs and behaviors, and therefore believe that messaging will be effective by linking the two. This is often incorrect (Scudder, 2010). There is a twin issue as well, summed up by the cliché, "saying one thing and doing another." In surveys, people may answer what they believe, but their actions are not always consistent with their answers (Bertrand & Mullainathan, 2001). This raises questions regarding the validity of answers to subjective survey questions such as those that ask people to rate the importance of the environment in their lives and decision process.

Information is not necessarily power. Another attractive notion is that, if only individuals are given the proper information, they will act on it. This is not necessarily so (Abrahamse, Steg, Vlek, & Rothengatter, 2005). While information campaigns can result in greater knowledge, they generally do not result in behavior change. A survey of Chinese citizens living in low-carbon pilot cities (that is, cities with CO_2 awareness campaigns) showed that while 90% of the residents were aware of the connection between energy and CO_2, they took minimal pro-environmental action (Chun & Haotong, 2012).

Two-way effects of norming. Norming is a communication tool that is sharp at both ends. On the one hand, descriptive social norms can spur environmentally-friendly action (Cialdini, 2007). On the other, because people in general wish to be part of the group, inadvertently communicating a descriptive norm can have a backfire effect (Carrico, 2011). An example might be communication about the fact that a majority of Vermont homes are energy-inefficient and how much money is wasted each year. This can have the effect of norming the idea that houses are drafty and energy bills are high, subtly reinforcing the notion that this is just the way things are, thus weakening the impulse to retrofit.

Incentives or de-incentives? A seemingly logical assumption is that greater financial incentives lead to more motivation to retrofit, and in some cases, particularly among the economically disadvantaged, this is likely true (Ludwig & Isaacson, 2010). However, while cost is a factor in consumer energy efficiency decisions, its impact is commonly exaggerated (Katzev & Johnson, 1983). Other factors that may have a more significant impact include the design of an energy-savings program, the ease or lack thereof involved in participating, and the marketing of the program (Carrico et al., 2011).

Some researchers have found that rewards generally have short-term effects (Abrahamse, Steg, Vlek, & Rothengatter, 2005). Worse, incentives can have a reverse effect upon motivation, acting to subvert one's intrinsic motivation, with lasting effects (Deci, 1971). Cognitive dissonance theory (Festinger, 1957) explains this process. The larger the incentive, the more the individual convinces herself that the reason she took a particular action was due to the money involved and not due to a belief, even if her action is consistent with her beliefs (Nel, Helmreich, & Aronson, 1969). In fact, the larger the financial incentives, the higher the risk of actually de-incentivizing people. When an actor in a situation is incentivized to do something she knows is the right thing to do anyway, her motivation to comply decreases (Carrico et al., 2011).

There is also the issue of whether or not cash incentives affect much more than the timing of a purchase. In 2010, the state of Vermont implemented a woodstove change-out program, offering a $450 incentive to encourage Vermonters to trade in their old woodstoves for cleaner-burning EPA-certified models. The entire incentive budget was used. As with EV, this was taken as a sign of the program's success, but many program participants said they had been

planning to buy a new stove anyway to replace old, leaky models. (H. Hales, personal correspondence, November 11, 2012).

Rebound effects. A home energy retrofit based on a financial incentive can have the perverse effect of actually creating wasteful behaviors (Greening, Greene, & Difiglio, 2000). In other words, no matter how energy-efficient a home is, the residents of the home can affect the home's performance significantly. In one study involving identically-built homes with similar appliances, researchers found that some households used up to 300% more energy than others. Researchers attributed this variance to personal comfort, perception of the importance of saving money, degree of knowledge about how buildings function, level of interest in modifying one's home for energy efficiency, and other similar behavior-oriented issues (Socolow, 1977).

Conflicting information. The study of human behavior involves nearly unlimited variables. Therefore, conflicting information is not uncommon in the literature. As an example, some researchers claim that environmental concerns have no bearing on many pro-environmental decisions (Cramer, 1985). Other researchers find concern about the environment is a significant motivational lever (Gershon, 2009). Incentives, too, are a complicated issue requiring careful thought, as they have proven helpful in some situations (Gneezy, Meier, & Rey-Biel, 2011). These seeming contradictions can be attributed to the fact that persuasion theories are context-specific (Stern 1999); they point to the importance of a thorough understanding of the communication objective, the audience, and the channels to employ—from media ones to interpersonal ones—to reach these diverse audiences with messages suited for them. In other words, context-specific research is needed before committing to a communication plan.

Lack of energy knowledge. Another complicating issue is that while Americans grade themselves fairly high on energy knowledge, the facts tell another story. For instance, in one study, only one in three respondents could successfully read an energy bill (Southwell, Murphy, DeWaters, & Brown 2012). Just 12% of Americans passed a basic test of energy knowledge; 36% incorrectly believe the majority of the nation's power comes from hydroelectric sources; and, perhaps most significantly, fewer than 40% knew that the fastest way to address short-term energy needs is to conserve (National Environmental Education & Training Foundation, 2002). Also, consumers routinely make poor buying decisions regarding appliances, forgoing considerable long-term savings for smaller, immediate ones (Carrico et al., 2011).

Lack of knowledge is one thing; this coupled with high confidence in one's knowledge is another. This energy ignorance has major implications concerning the marketing of efficiency programs, personal energy decisions, and national energy policy (Southwell et al., 2012). In the retrofitting realm, a potential customer may make a decision based on too much optimism or too little. In the first instance, the retrofitting industry's image can suffer as a result of being incapable of delivering over-the-top results; and in the latter, a home may not be retrofitted at all.

Traditional marketing approaches. In the advertising world, there is an old and revered model of behavior change referred to as the AIDA, or, Awareness to Interest to Desire to Action. It assumes that humans follow a linear path toward buying habits. But it is most likely incorrect (Ehrenberg, 2000; Miller & Berry, 1998). Nevertheless, widespread reliance on the model--perhaps because it sounds inherently logical--continues to result in the development of messaging that follows this recipe, some examples of which this paper will discuss later.

Madsbjerg and Rasmussen (2014) detailed how a major beer company's pub sales were failing despite the fact that store sales were strong, customers liked the product, and, most importantly, bar patrons' product awareness was high due to exposure to plentiful promotional materials such as t-shirts and coasters. Anthropological observation of selected pubs resulted in strategies that brought about improved sales. Douglas, Mallonee, and Istre (1998) illustrated how Oklahoma residents could both claim to want to take advantage of a free smoke alarm distribution program, and yet at the same time not achieve a high rate of smoke detector installation due to some relatively simple and easily-overcome barriers. These examples clearly illustrate that the AIDA is a flawed strategy, at least in some important instances.

Above, this paper refers to survey bias, that is, the tendency for people to provide survey answers that better represent thoughts or actions they believe they have rather than their actual ones. Social desirability bias is a related factor, particularly in interviews (Fisher, 1993), and may be of particular concern when questions involve the environment. Efficiency Vermont polls homeowners who have undertaken a retrofit in an attempt to define potential future customers, but, for example, it would not be surprising if, in a state such as Vermont with a pronounced green ethos, a significant number of respondents might answer that they undertook a retrofit out of concern for the environment, whereas rebates and tax incentives may have played a much bigger part. Misjudging motives can result in the creation of ineffective messaging. Cialdini (2007) found that homeowners' actual top-four motivations for saving energy were nearly opposite those which they had previously listed in a survey, and that the most common reason that people were motivated to save energy was that they were under the impression that their neighbors were doing so.

Not all information is the same. Hence, it is also worth questioning the value of the demographic information that informs much advertising strategy. As with the AIDA, while the value of demographic profiles--that is, those detailing past customers' age, income level, education level, etc.--can seem self-evident, this may be a flawed assumption leading to flawed marketing initiatives. Simply because a certain person of a certain age, income, race and geographic location partakes in an action, it does not follow that another person fitting this same profile will do the same.

So, where does all the above information leave the committed home retrofitting organization that seeks to reach and convince potential customers? It leaves them in need of a different kind of information.

A Behavioral Science Approach

"Six Americas." In 2008, a group of researchers began the *Six Americas* study, and they regularly update it with current findings (Leiserowitz, Maibach, Roser-Renouf, & Hmielowski, 2012). The researchers divided Americans into six groups representing the spectrum of climate change beliefs. These include *alarmed, concerned, cautious, disengaged, doubtful,* and *dismissive*. About once per year, the authors re-conduct their survey with new respondents, group these respondents into one of the six classifications based on a set of criteria, and then illustrate how the groups react to a series of questions regarding global warming's impact, public transportation, political ideology, the economy, spiritual beliefs, and more.

This framework can be looked to for help in understanding which audiences are most likely to respond to what kinds of retrofitting messages, and how. For instance, the issue of source credibility (Rnpitakpa, 2004) arises through the following finding, as does the importance of personal beliefs: in the 2012 presidential campaign, more than twice as many Americans trusted President Obama regarding climate change information than Mitt Romney. The only segment of the six classifications that trusted Mitt Romney was Dismissive. This indicates that any environmental appeal is likely to be lost on this group. Yet, at the same time, 65% of Dismissives believe that oil companies should be accountable for petroleum's effects, including pollution and military expenditures (Leiserowitz, Maibach, Roser-Renouf, & Hmielowski, 2012). So, a possible home retrofitting communication strategy for this group might involve the notion of comfort or independence from corporate or foreign energy.

The transtheoretical model. The *Six Americas* study can provide a guideline for understanding audience segments in the general energy/ environment category, but it is likely not sufficient to merely identify an Alarmed Vermonter as a probable home retrofit customer. We can draw additional insights from two other models.

The Transtheoretical Model (TTM) is about individuals' stages of change (Prochaska & DiClemente, 1983). The model postulates that in regard to any particular health behavior, all individuals are arrayed along a continuum of states including *pre-contemplation, contemplation, preparation, action,* and *maintenance*. The TTM was developed to aid in treating addictive behaviors, particularly smoking, but it has been applied to many health conditions and used in behavior contexts beyond health (Velicer, Prochaska, Fava, Norman, & Redding, 1998).

The adoption of ideas. Rogers (1995) discusses how new concepts spread through a population, progressing from fringe ideas to mainstream wisdom. He uses the terms *innovators, early adopters, late adopters, early majority* and *late majority*. His model offers insight regarding how a novel idea such as a home retrofit goes from being a relatively rare activity undertaken by a few true believers to a commonplace activity.

If we view the entire pool of potential retrofitters as arrayed along a continuum regarding environmental beliefs and stages of action, we can begin to consider tailored messaging and resource allocation. For instance, some groups will be more expensive to convince than others.

The table below aligns the TTM with categories of Americans from the *Six Americas* study and with Rogers' diffusion stages. This is done to produce a graphic representation of personality types with the aim of presenting one possibly productive way to segment potential audiences. If an energy efficiency company can begin to view possible customers as belonging to particular groups based on attitudes--versus relying on demographic data and self-measures-- it is likely that a more realistic picture of the potential customer base can emerge. At the very least, the result should be better, more targeted messaging.

Table 1

Audience Segmentation

Transtheoretical Model Stages		"Six Americas" Categories		Diffusion of Innovations Stages
Pre-contemplation	correlates with …	Dismissive (this individual is not interested in change) Doubtful (this individual is distrustful of change)	and relates to …	Late Adopters and Late Majority
Contemplation	correlates with …	Doubtful (but open to possibilities) Disengaged (having no opinion) Cautious (characterized by significant openness to possibilities)	and relates to …	Late majority and Early majority
Preparation	correlates with …	Cautious (perhaps some recent event serves as a trigger)	and relates to …	Early majority and Early adopters
Action	correlates with …	Alarmed (they want to take immediate action)	and relates to …	Early adopters and Innovators
Maintenance	No direct correlation; correlates with conservation behaviors		relates to …	Innovators

A psychosocial framework. There is consensus among health behavior researchers that in order for behavior change campaigns to enjoy the highest possibility for success, they should include the following elements: reliance on theory; use of formative research including focus groups, interviews, and qualitative and quantitative data; the use of control groups; and measurement tools (Noar, 2006; Noar, Palmgreen, Chabot, Dobransky, & Zimmerman, 2009; Myhre & Flora, 2000). Carrico et al. (2011) recommend a comprehensive effort to understand barriers to action. Worden et al. (1988) detailed such an approach to understanding audiences and designing messages for them that includes several critical steps ranging from defining and ranking objectives to segmenting audience by psycho-social means to testing, grading and ranking potential messages using a variety of measures.

Related considerations. There are many barriers to behavior change, and these barriers often interact in a variety of ways. Wilson and Dowlatabadi (2007) discuss the importance of matching decision models with desired behaviors. These models include theories from economics, behavioral science, technology adoption, environmental psychology, and others. Stern (1999) advises the use of several guiding principles in speaking with people about efficiency measures. These are: responding to barriers via thorough investigation and a variety of tailored responses; seeing the consumer's world through the consumer's eyes; applying sociological/ behavior concepts; identifying and ameliorating limiting factors which are external to the individual; setting realistic expectations; creating a feedback loop and adjusting messaging as needed. The framework here might be described as anthropological in nature.

Persuasion Techniques

Thus far, this paper has surveyed various concepts that aid in the understanding of audiences. Understandably, this information is complex and far-reaching. This is not to imply, however, that creating a successful energy efficiency campaign must necessarily be unwieldy or unaffordable. Much valuable information is available via a literature review. Additional insights are available from the world of persuasion science.

Persuasion science. Researchers have shown that, with relatively little training, home energy auditors using psycho-social strategies can significantly improve their retrofitting rates among homeowners (Gonzales, Aronson, & Costanzo 1988). These techniques include vivid communication (instead of explaining heat loss by pointing out a series of small cracks, auditors used the analogy of one football-sized hole in the living room wall), asking for a small commitment at first and a larger one later—also known as the foot-in-the-door approach (Freedman & Fraser, 1966), personalization of reports and presentations, and using loss-frame language by expressing how much the consumer would lose by not undertaking a retrofit (Gonzales, Aronson, & Costanzo, 1988).

Below, we illustrate a theoretical scenario demonstrating how an energy efficiency utility might employ the above ideas both for the retrofitting process and for an ongoing energy conservation effort. This is not intended to be a blueprint or blanket recommendation, but rather, to list significant considerations. Each market can be expected to have its own factors which should be taken into consideration.

A Theoretical Home Energy Efficiency Persuasion Process

Reaching the Audience

This campaign begins with a mailer that would go to every home in a community. The request is quite small: We (efficiency consultants) will be in your neighborhood knocking on doors giving tips on how to save energy, as well as discussing how citizens can save money and help the environment, all while enjoying cooler summers and warmer winters.

Website information emphasizes that retrofitting is a relatively easy, common practice that other local homeowners have undertaken. Pictures and simple explanations do not simply outline the process; they specifically aid the homeowner in envisioning him or herself in each stage of it (Bandura, 1986; Pelletier & Sharp, 2008). Also, because message consistency and repetition are crucial, the retrofitting initiative would be supported by consistent, short, repeated advertising messages (McCullough & Ostrom, 1974).

Beginning a Relationship

The same person who signed the original letter would show up at the door; if, after the initial meeting, this person felt that s/he had established a relationship with the homeowner, s/he would remain on the account. This is due to the importance of liking in gaining compliance (Cialdini, 2009). If an easy relationship with the homeowner did not seem possible, another representative could be assigned to the homeowner. It is important to consider that the reason for a lost sale might not be that the homeowner was not interested, but more that she simply did not have the right relationship with the efficiency consultant.

Also important is that the efficiency representative carefully tailor all communications, for two main reasons; first, because people have many different motivational levers (Pelletier & Sharp, 2008); and second, so as to avoid psychological reactance, which is a state of induced resistance to messaging (Brehm & Brehm, 1981). So, giving a one-size-fits-all sales pitch based

on the environment could create reactance in a person who does not believe in the concept of human-made global warming. However, whatever issue serves as the behavioral lever, it is better to use a loss-frame approach than a gain-frame one, emphasizing what the homeowner will lose if measures are not taken (Carrico et al, 2011).

All conversation should identify and prioritize intrinsic motivations over the extrinsic one of monetary incentives (Carrico et al, 2011). Further, the efficiency consultant should work to help the homeowner envision the process and the benefits, not simply describe them (Pelletier & Sharp, 2008).

The efficiency consultant would do well to be in a clean, new uniform at all times, as uniforms convey authority and expertise (Bushman, 1988).

Segmenting the Audience

Gershon (2009), who stratifies audiences, recommends that communicators initially forego working on strategies to convince the skeptical, and instead speak first to the converted, the idea being that early adopters serve a normative role for others. So, the home efficiency consultant would work with a decision tree, first ascertaining what stage of belief or action a particular homeowner is in (see Table 1), and then focusing efforts on the most promising prospects. This type of segmentation, as opposed to categorization by demographics, would grade prospective clients as likely or unlikely to perform a home efficiency retrofit, but, perhaps more importantly, make an attempt to segment consumers by what type of appeal would most likely work. Homeowners who expressed less enthusiasm might not be included in present efforts, but would still be segmented for later outreach, the idea being that their own beliefs may change over time.

Sequential Requests

The end result of the process below is to secure the homeowner's interest in a free energy audit, not the efficiency work itself. So, the homeowner would have no cost or obligation during this whole process; this allows for conversation to continue and a relationship to build.

Following the example of Gonzales, Aronson, & Costanzo (1988), a sequence of steps would be employed with the purpose of moving the consumer closer to a decision point. So, the knock on the door would seek to bring the homeowner a little further along the path by asking for a relatively minor pledge of support regarding the importance of energy savings, or the environment, or energy independence, etc., with the intention of asking for a greater commitment later. This is the foot-in-the-door approach (Freedman & Fraser, 1966; Katzev & Johnson, 1983).

Pre-giving, or the principle of reciprocation, would be included as a way of inducing compliance with the above request; the gift might be compact fluorescent light bulbs (CFLs), although it is important not to have the giveaway appear to be a bribe (Cialdini, 2009). The gift of CFLs would display selfless concern for conservation on the part of the organization seeking to perform audits. The energy efficiency consultant would then ask some basic questions about the home and take notes. Questions would concern square footage, energy use, and comfort. The consultant would then leave, promising to contact the homeowner at a specific time.

During the next visit or call, the efficiency consultant would present the homeowner with an energy efficiency story particularized to the home. A narrative approach should be prioritized over a statistical one (Chang & Lee, 2010; Allen et al., 2000) and could involve anything relevant to the homeowner, from creating a better planet for her children to creating a more comfortable home for herself. Statistical information could involve potential savings, facts about

energy, and information regarding CO_2. In any case, the story would follow up on and refer to the specific pledge made during the first visit. If the homeowner's greatest motivation was to save money on fuel, this would be part of the story.

The goal of the process so far would be to generate three distinct plans for the homeowner, all in different price ranges. All three would include a free energy audit performed by the efficiency company. This would be a version of the door-in-the-face or rejection-then-retreat technique (Cialdini, Vincent, Lewis, Catalan, Wheeler & Darby, 1975). The homeowner might look with horror at the top-level price, but rejecting this plan is likely to make either of the other two plans more attractive. Considering all the homeowner had been given (CFLs, advice, information), had expressed interest in (saving fuel, a healthier, more comfortable home) and had attested to (a concern for the environment or desire to be free of foreign oil), there is the likelihood that she will take further action. In any case, the free energy audit would be considered a loss-leader, not a direct loss. Even if the homeowner chooses the lowest-cost option, the foot-in-the-door approach allows for larger requests on the part of the efficiency company at a later time (Cialdini, 2009).

If the audit is agreed to, the efficiency consultant should invite the homeowner to partake in the audit and secure a non-binding verbal commitment to undertaking some form of ongoing pro-efficiency action (Gonzales, Aronson, & Costanzo, 1988; Pelletier & Sharp, 2008). Lastly, applying the scarcity principle by referring to limited-time offers can spur action (Cialdini, 2009). This is where financial incentives may most productively be brought into the conversation.

After the Retrofit

After the retrofitting process is complete, there are several techniques available for ensuring that energy conservation is taking place on an ongoing basis (an issue we discuss below). One example is a program of public declamation based on intrinsic motivations (Festinger, 1957; Pallak & Cummings, 1976). In Vermont, this might include frequent contests conducted through the Front Porch Forum, an electronic community bulletin board. Prizes would be awarded to randomly-selected participants who list their energy-saving techniques. This idea would serve several purposes:

First, public declamation is a feature of cognitive dissonance theory that involves the idea that if a person publicly attests to something, even if he or she does not believe it, the person's behavior tends to become consistent with the proclamation (Festinger, 1957). Second, public declamation is a form of social norming (Cialdini, 2007) which allows for the perception of home retrofits as a mainstream behavior to be created with relative ease. Third, a regular contest allows people to share conservation tips. Fourth, because the Front Porch Forum is extremely local (in some cases, the entire forum is a collection of streets within a town), the concept of authority can be employed because of people's relationships with their neighbors (Cialdini, 2009). Finally, because the messaging would be coming from a local source, reactance may be minimized.

A Consideration of Current Practices

The Efficiency Vermont Campaign

As stated earlier, the purpose of this review is to build a framework for addressing the large question of what levers are available to persuade homeowners to undertake home retrofits.

Hence, we have largely confined this paper to bird's-eye discussions. It is important now to consider some specifics.

The random application of proven techniques. Samples of Efficiency Vermont's advertising campaign can be found in Appendix A. Some of these employ persuasion appeals, which could be considered an excellent start. For instance, there are social norming messages and loss-frame messages. Other appeals display no obvious connection to behavior theory.

For instance, one print advertisement's headline is "It's As Easy as A-B-C," with the sub-headline being "audit, button-up, cash in" (see Appendix A). Below these headlines, there is a picture of a child holding up three blocks with the letters A, B, and C on them. In much smaller type in the body of the ad is information about retrofitting and the cash incentive. The most obvious things the viewer first sees are the headline and the child. It is important to place oneself in the consumer's place in considering this appeal. From a norming perspective, are we to emulate the child? If so, what is the desired action? What incentive does the busy consumer have to read the ad? Even if we read it, if we have not first been convinced about how a home retrofit will improve our lives, then does it matter how easy it is to have one done?

The same questions should be asked of a print ad featuring a fortune teller who foresees "great energy savings in your future." The same goes for another that shows a goldfish jumping into a fishbowl that contains a shark while a headline implores the reader to "look before you leap." The idea is that if one does not rely on the right advice before making a move, dire consequences could arise (similar to the slashing attack of a large ocean predator). But, considering the typical homeowner's range of concerns in contemplating a retrofit--noise,

disruption, loss of privacy, expense, an uncertain time frame, etc.--it is well worth contemplating whether invoking fear is a logical persuasion strategy.

The goal of this paper, however, is not to debate the specific merits of advertising messages, and it is not to deny the possibility that particular messages might have been unexpectedly effective. Rather, the issue is that these messages seem to have no obvious connection to psychosocial theories that have been shown to be effective in creating behavior change. The messages do appear to have a connection with one theory, and this is the AIDA. The strategy seems to be that if the consumer sees an attractive image or a clever headline, he will be intrigued to learn more about the child holding blocks or the fortune teller or the shark in a fish bowl. But, this is a valid idea only if the AIDA is a valid theory, which it does not appear to be.

There are three important points to be made here. First, a mishmash of appeals makes it difficult for an efficiency company to determine what did and did not work, so no revision process can take place for the next campaign. Maybe a particular appeal worked spectacularly; maybe the entire campaign did not. A more informative approach would have been to run a social norming campaign in one market and run a loss-frame one in another similar market and to compare the results. The second issue is that, in the absence of testing, there is no way of knowing how often consumers need to be exposed to particular messages in order for them to take action. Finally, it is most likely that ads are maximally effective only in the greater context of a persuasion process. Thus, whether or not the campaign was successful becomes a matter of anecdotal opinion. So, a healthy skepticism as to the effectiveness of the messaging is warranted.

Consumer research. Efficiency Vermont has conducted demographic research (see Appendix B), which is helpful regarding general audience characteristics. However, given the

non-linear relationship between attitudes and behaviors (Scudder, 2010) and between survey answers and actions (Bertrand & Mullainathan, 2001), deeper, more multi-dimensional information is necessary to address the considerable challenge of retrofitting 80,000 Vermont homes and EV's goal of becoming the state's resource for efficiency information.

The role of theory. Another way to gain knowledge without acquiring it through expensive research is to rely on theory. Cognitive dissonance theory (Festinger, 1957) and the concept of pre-giving (Cialdini, 2009) are just two examples of theories that address the idea that much human behavior is not a result of careful thought, but rather can be quite automatic. So, when EV bases some of its retrofitting messaging on logical argument (such as ease or money savings), this might be non-productive. Compliance can be gained without creating converts, a process described by the elaboration likelihood model (Petty & Cacioppo, 1986).

Goal Clarification and Mission-Drift

An important question is this: Do the state of Vermont, Efficiency Vermont, or efficiency companies in general desire adherents or converts? Carrico et al. (2011) draw the distinction between marketing products and marketing behavior change. On its website, the Vermont Energy Efficiency Corporation, which administers the Efficiency Vermont program, states that the organization is "dedicated to reducing the economic and environmental costs of energy consumption …" (VEIC, 2012).Yet the former and the latter are not the same goal. In California, a psychosocial approach to home retrofitting proved successful in terms of the number of jobs completed, but, paradoxically, not in terms of energy saved. Homeowners who had undergone the program used as much energy as those who had not (Gonzales, Aronson, & Costanzo, 1983). So, it is important for efficiency companies to regard the home retrofitting program as two

distinct entities—a process of convincing homeowners to retrofit; and an ongoing, evidence-based, psychosocial effort to ensure they conserve.

Because retrofitting efforts have taken place with greater frequency in recent, recessionary years, it is important to ask if anecdotally-reported decreased energy use is related to increased efficiency, or to people's reduced circumstances in a poor economy. If it is the latter, then one question to ask is whether EV's ratepayer-funded process is creating a state full of efficient homes occupied by inefficient people, with no net effect on energy conserved or CO_2 eliminated.

This is a potential issue on the national level as well, considering that public money is involved in most retrofitting contexts, either through tax breaks or incentives; and of course a portion of this money goes into the marketing of programs. The American Recovery and Reinvestment Act of 2009 channeled approximately five billion dollars into retrofitting the nation's homes (U.S. Government Accountability Office, 2012). Also, Congress came close to passing the Home Star Energy Retrofit Act, colloquially known as "cash for caulkers", and the act may be reintroduced in the near future. Both the United States Government (2000) and the media (Loth, 2010) refer to both acts as jobs programs as well as energy efficiency ones, often mentioning jobs first. This is telling because if the practice of retrofitting homes does not result in significant net energy savings, then it runs the risk of being perceived as little more than a green-labeled jobs program benefiting efficiency company administrators, contractors, marketing companies, and media salespersons.

Discussion

The literature collected for this paper revealed that much important information regarding retrofitting and efficiency behaviors has existed for decades. For instance, Gonzales, Aronson and Costanzo (1988) proved the success of a step-by-step, theory-based approach to the home energy audit procedure. Harrje (1976) discussed the main motivators for convincing homeowners to undertake a retrofit (surety of substantial benefits; length of time to recoup investment: awareness of low-cost options, etc.). Socolow (1977) chronicled how people's behaviors--not efficient homes--have the biggest effect on how much energy a home uses. And Katzev & Johnson (1983) found that simple foot-in-the-door techniques could improve homeowner efficiency. This research demonstrates that we have known for some time many main issues and barriers surrounding home energy efficiency. The available literature also suggests that these techniques have not been extensively studied and likely not commonly used in the home retrofitting realm. This represents a considerable opportunity for energy efficiency companies.

This paper's review of Efficiency Vermont's efforts was based on two interviews with EV and on a packet of information containing promotional messages and consumer feedback. Undoubtedly, more information would improve this paper; however, EV marketing personnel had limited availability. The authors are both sincerely grateful to EV and somewhat disappointed that a greater opportunity for collaboration did not seem in the interests of EV personnel. More information regarding the background of the messaging would have aided in the process of providing recommendations.

At the current rate, Vermont will fall woefully short of its goal of 80,000 more retrofitted homes in the next six years, a grim parallel to international efforts to reduce CO_2. So, unless falling short is becoming an acceptable option in the climate realm, clearly, a better approach is

warranted. The recommendations in this paper represent an opportunity to address this issue using evidence-based methods with the goal of accomplishing both energy efficiency and energy conservation.

Concluding Thoughts

The intent of this paper was not to create a specific persuasion campaign, but rather to demonstrate that many factors affect the energy efficiency process, and to point out that a reliance on standard marketing approaches is to severely limit the potential of this process. It bears speculating that a particular human conceit is that, while we accept the concept of evolution, there persists in our nature a notion of exceptionalism, as though humankind were not subject to simple motivations such as social norms. Hence, we are apt to believe we are logical creatures driven by reason, even when research shows we are often not. Until the concepts of persuasion science are more broadly accepted, it seems that this bias will continue to cloud human thinking, resulting in the production of logical appeals regarding daily practices such as saving energy. The process goes like this: because we believe we are logical beings, then we believe that if we create a logical appeal, other enlightened thinkers such as ourselves will respond to it, when in fact it is highly unlikely that we would respond to our own message. This is an inherent weakness of the AIDA model in the advertising world.

The greater purpose of this paper, therefore, is to shift focus away from traditional, seemingly obvious, advertising techniques and toward persuasion and behavior science. Living as we do in a rapidly changing climate, this is no mere matter of preference; rather, a shift in thinking is needed if humankind is to achieve the kind of change needed to slow and reverse current trends which concern us all.

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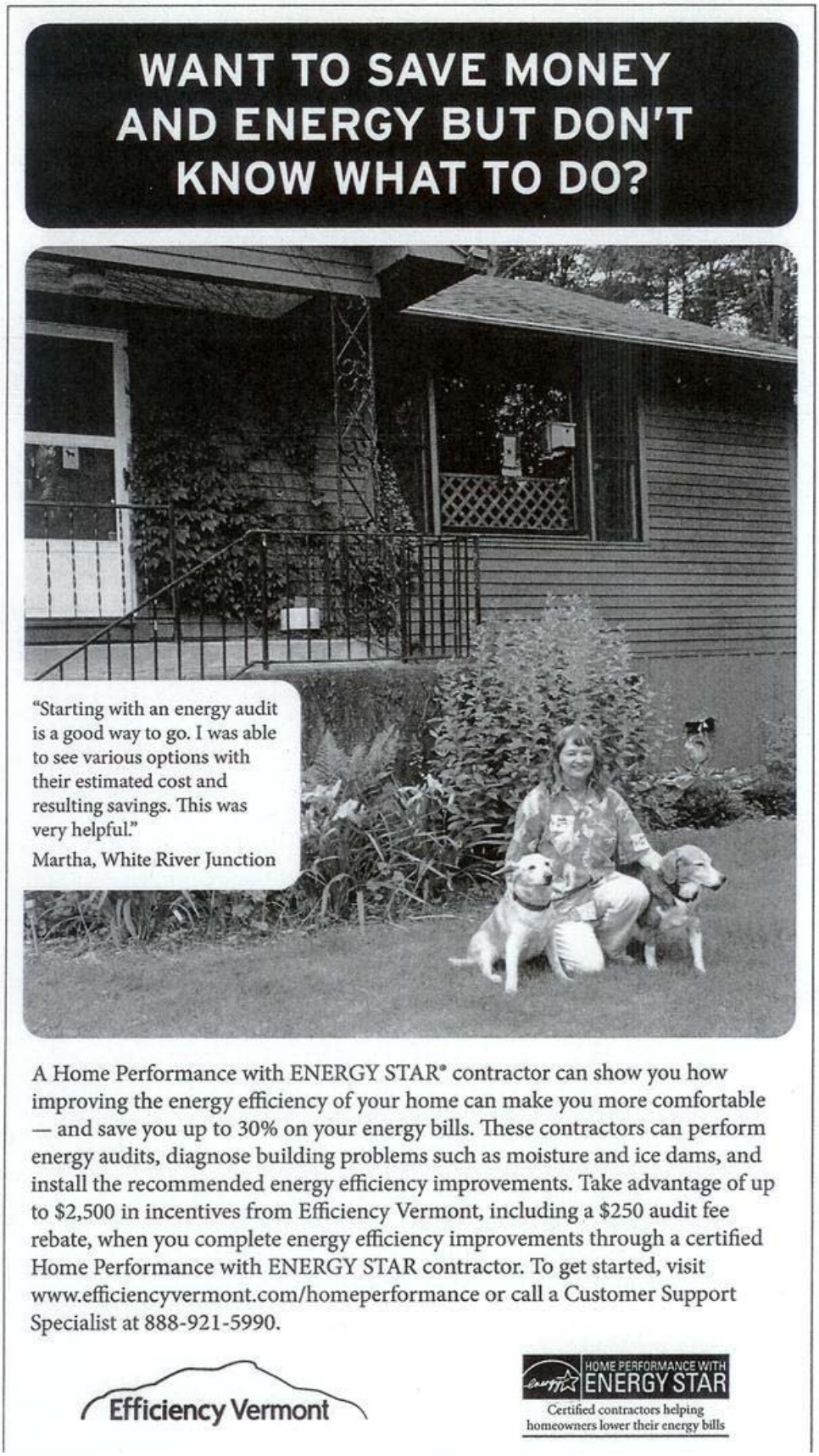
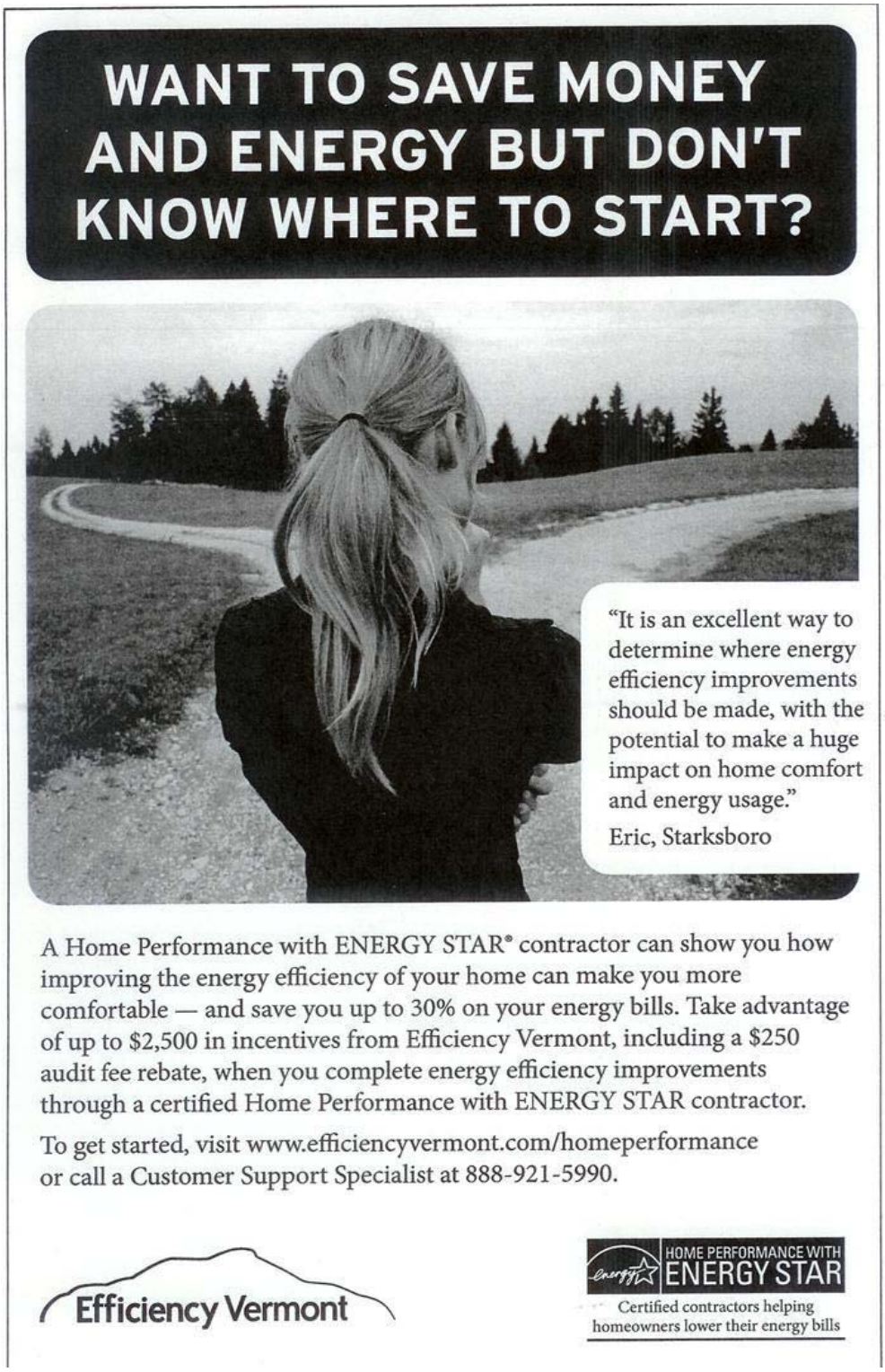
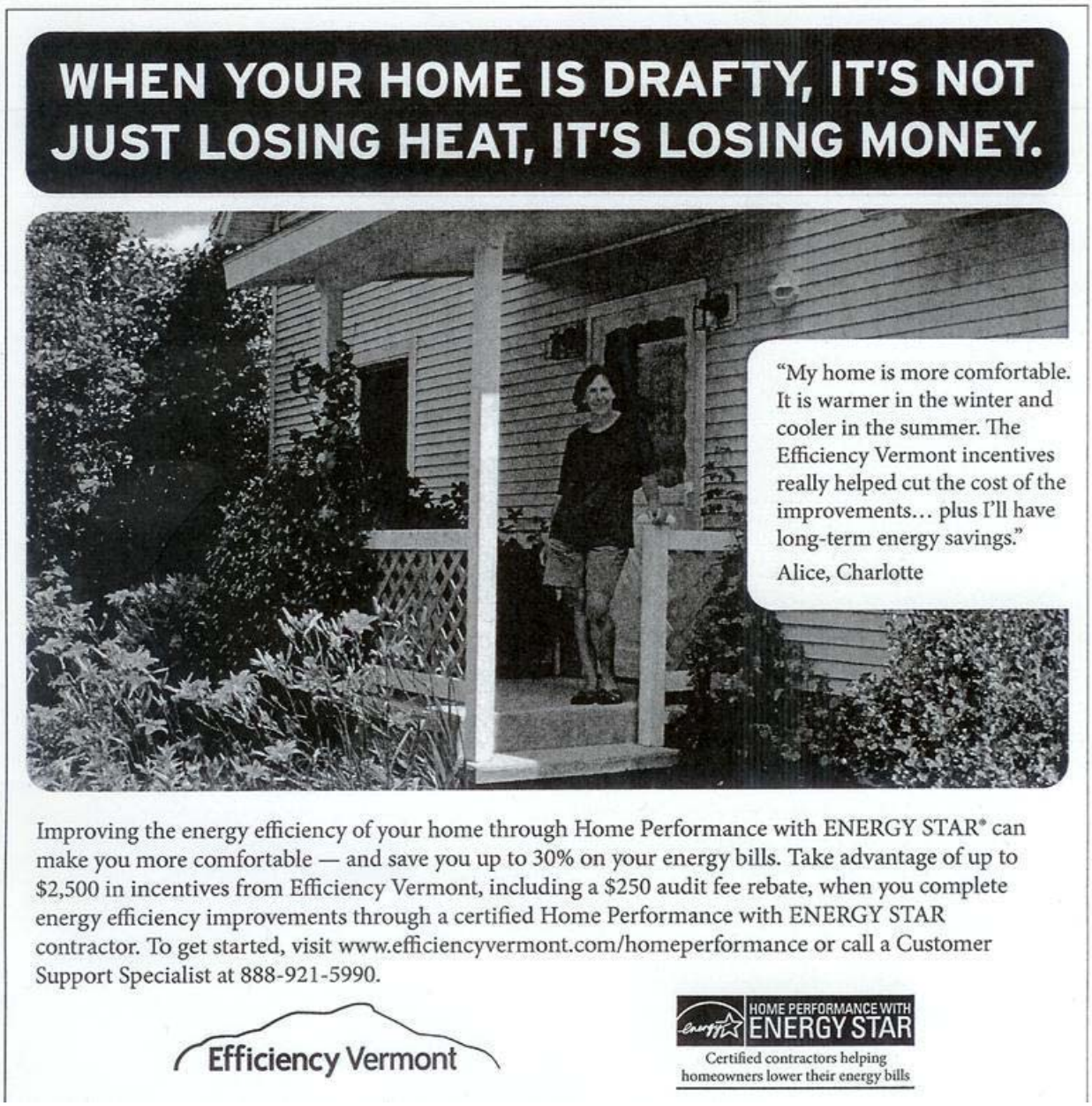
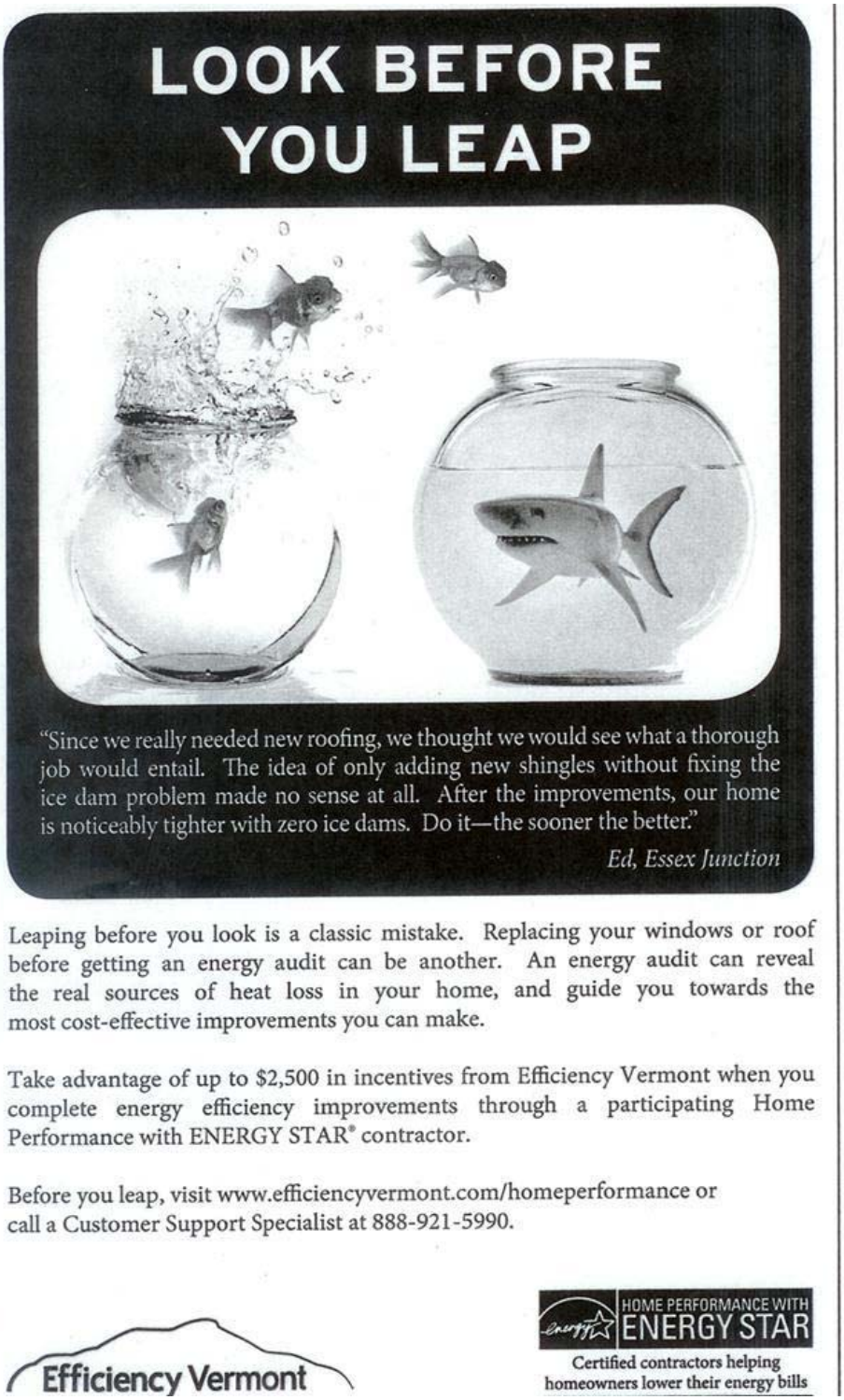
Appendix A

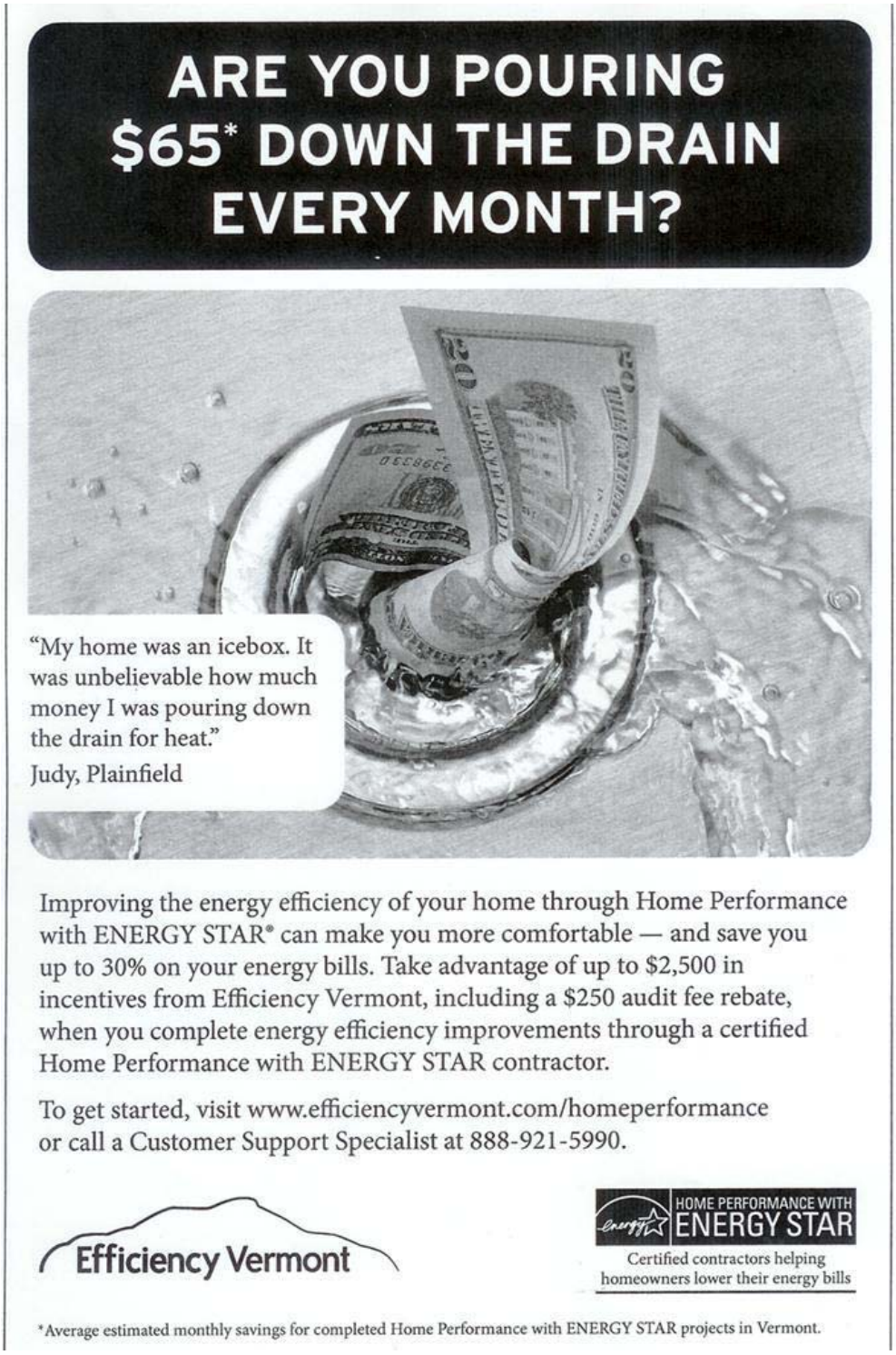

THINGS THAT CAN GIVE YOU NIGHTMARES...
EIGHT-LEGGED CREATURES, DRAFTY HOMES, HIGH ENERGY BILLS
Buttoning up your home through Home Performance with ENERGY STAR® can make you more comfortable, and save you up to 30% on your energy bills. Take advantage of up to $2,500 in incentives from Efficiency Vermont when you complete energy efficiency improvements through a participating Home Performance with ENERGY STAR contractor.
For a better night's sleep, attend an educational Button Up Workshop or call a Customer Support Specialist at 888-921-5990. To find a Workshop near you, visit www.efficiencyvermont.com/buttonup.
Efficiency Vermont
HOME PERFORMANCE WITH ENERGY STAR
Certified contractors helping homeowners lower their energy bills

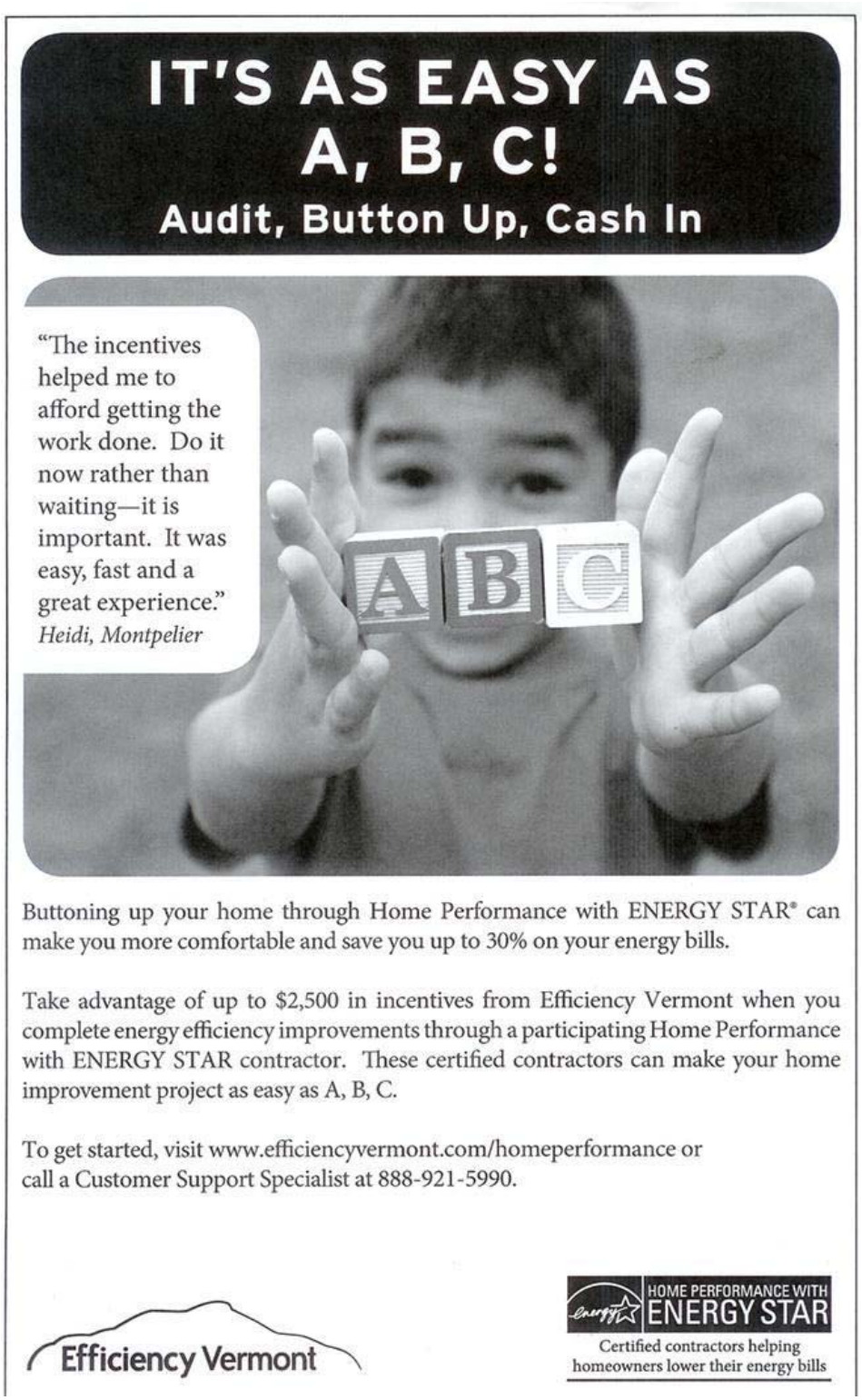

WANT TO SAVE MONEY AND ENERGY BUT DON'T KNOW WHAT TO DO?
"Starting with an energy audit is a good way to go. I was able to see various options with their estimated cost and resulting savings. This was very helpful."
Martha, White River Junction
A Home Performance with ENERGY STAR® contractor can show you how improving the energy efficiency of your home can make you more comfortable — and save you up to 30% on your energy bills. These contractors can perform energy audits, diagnose building problems such as moisture and ice dams, and install the recommended energy efficiency improvements. Take advantage of up to $2,500 in incentives from Efficiency Vermont, including a $250 audit fee rebate, when you complete energy efficiency improvements through a certified Home Performance with ENERGY STAR contractor. To get started, visit www.efficiencyvermont.com/homeperformance or call a Customer Support Specialist at 888-921-5990.
Efficiency Vermont
HOME PERFORMANCE WITH ENERGY STAR
Certified contractors helping homeowners lower their energy bills


WANT TO SAVE MONEY AND ENERGY BUT DON'T KNOW WHERE TO START?
"It is an excellent way to determine where energy efficiency improvements should be made, with the potential to make a huge impact on home comfort and energy usage."
Eric, Starksboro
A Home Performance with ENERGY STAR® contractor can show you how improving the energy efficiency of your home can make you more comfortable — and save you up to 30% on your energy bills. Take advantage of up to $2,500 in incentives from Efficiency Vermont, including a $250 audit fee rebate, when you complete energy efficiency improvements through a certified Home Performance with ENERGY STAR contractor.
To get started, visit www.efficiencyvermont.com/homeperformance or call a Customer Support Specialist at 888-921-5990.
Efficiency Vermont
HOME PERFORMANCE WITH ENERGY STAR
Certified contractors helping homeowners lower their energy bills


WHEN YOUR HOME IS DRAFTY, IT'S NOT JUST LOSING HEAT, IT'S LOSING MONEY.
"My home is more comfortable. It is warmer in the winter and cooler in the summer. The Efficiency Vermont incentives really helped cut the cost of the improvements… plus I'll have long-term energy savings."
Alice, Charlotte
Improving the energy efficiency of your home through Home Performance with ENERGY STAR® can make you more comfortable — and save you up to 30% on your energy bills. Take advantage of up to $2,500 in incentives from Efficiency Vermont, including a $250 audit fee rebate, when you complete energy efficiency improvements through a certified Home Performance with ENERGY STAR contractor. To get started, visit www.efficiencyvermont.com/homeperformance or call a Customer Support Specialist at 888-921-5990.
Efficiency Vermont
HOME PERFORMANCE WITH ENERGY STAR
Certified contractors helping homeowners lower their energy bills


LOOK BEFORE YOU LEAP
"Since we really needed new roofing, we thought we would see what a thorough job would entail. The idea of only adding new shingles without fixing the ice dam problem made no sense at all. After the improvements, our home is noticeably tighter with zero ice dams. Do it—the sooner the better."
Ed, Essex Junction
Leaping before you look is a classic mistake. Replacing your windows or roof before getting an energy audit can be another. An energy audit can reveal the real sources of heat loss in your home, and guide you towards the most cost-effective improvements you can make.
Take advantage of up to $2,500 in incentives from Efficiency Vermont when you complete energy efficiency improvements through a participating Home Performance with ENERGY STAR® contractor.
Before you leap, visit www.efficiencyvermont.com/homeperformance or call a Customer Support Specialist at 888-921-5990.
Efficiency Vermont
HOME PERFORMANCE WITH ENERGY STAR
Certified contractors helping homeowners lower their energy bills


ARE YOU POURING
$65* DOWN THE DRAIN
EVERY MONTH?
"My home was an icebox. It was unbelievable how much money I was pouring down the drain for heat."
Judy, Plainfield
Improving the energy efficiency of your home through Home Performance with ENERGY STAR® can make you more comfortable — and save you up to 30% on your energy bills. Take advantage of up to $2,500 in incentives from Efficiency Vermont, including a $250 audit fee rebate, when you complete energy efficiency improvements through a certified Home Performance with ENERGY STAR contractor.
To get started, visit www.efficiencyvermont.com/homeperformance or call a Customer Support Specialist at 888-921-5990.
Efficiency Vermont
HOME PERFORMANCE WITH ENERGY STAR
Certified contractors helping homeowners lower their energy bills
*Average estimated monthly savings for completed Home Performance with ENERGY STAR projects in Vermont.


IT'S AS EASY AS
A, B, C!
Audit, Button Up, Cash In
"The incentives helped me to afford getting the work done. Do it now rather than waiting—it is important. It was easy, fast and a great experience."
Heidi, Montpelier
A B C
Buttoning up your home through Home Performance with ENERGY STAR® can make you more comfortable and save you up to 30% on your energy bills.
Take advantage of up to $2,500 in incentives from Efficiency Vermont when you complete energy efficiency improvements through a participating Home Performance with ENERGY STAR contractor. These certified contractors can make your home improvement project as easy as A, B, C.
To get started, visit www.efficiencyvermont.com/homeperformance or call a Customer Support Specialist at 888-921-5990.
Efficiency Vermont
HOME PERFORMANCE WITH ENERGY STAR
Certified contractors helping homeowners lower their energy bills

Copy

KELLIHERSAMETSVOLK
NYC | BOS | BVT

Client: Efficiency Vermont
Date: 9/8/11

Job Number:
Job Name: HPwES Radio
Version: 12

The sound of a leaky house.
:60

ANNCR: This is the sound of a leaky faucet.

SFX: Drip, drip, drip…

ANNCR: When you hear it, you fix it. Simple. Well, this is the sound of a leaky home.

SFX: Silence…

ANNCR: Not a thing. But with winter coming, it's time to start thinking about where your home might be losing energy and costing you more money on your energy bills.

SFX: Light music

ANNCR: At Efficiency Vermont, we're here to make it easy and affordable through Home Performance with ENERGY STAR. To get started, visit a Button Up Workshop this fall. There, you'll learn how home improvements can help you save up to 30% on your energy bills, collect up to $2,500 in incentives, and make your home more comfortable. For example, you may have a drafty house or a room that's colder than the rest. To learn more about Home Performance with ENERGY STAR, visit a Button Up Workshop. Go to efficiencyvermont.com or call 888-921-5990 to find the next workshop near you.

SFX: Drip, drip, squeak (dripping stops).

ANNCR: There, much better.

Copy KELLIHERSAMETSVOLK NYC | BOS | BVT

Client: EVT
Date: 5/11/11

Job Number:
Job Name: HPwES Radio
Version: 10

"Comfort"

VO: Living in an energy-efficient home means living comfortably. How? Well for starters, your home stays warmer in the winter and cooler in the summer, which means you do, too. And Efficiency Vermont's Home Performance with ENERGY STAR program makes improving the comfort and energy efficiency of your home as easy as A, B, C. That's, AUDIT, BUTTON UP, and CASH IN. The first step is to have an energy audit conducted by a participating contractor, certified by the Building Performance Institute, to identify the areas of energy loss in your home. Next, your contractor will button up your home, providing guidance every step of the way. Not only can you save up to 30% on your energy bills and be more comfortable, you can also take advantage of up to $2,500 in incentives from Efficiency Vermont once you've completed your project with a participating Home Performance with ENERGY STAR contractor. Ahhh, the joys of comfortable living.

To find a participating contractor, visit efficiencyvermont.com/homeperformance or call 888-921-5000 today.

Appendix B

EXECUTIVE SUMMARY

Objectives: To measure post-contact customer opinions about: (1) their motivation for hiring an Home Performance with ENERGY STAR contractor, (2) how they located their Home Performance with ENERGY STAR contractor, and (3) their satisfaction with their Home Performance with ENERGY STAR contractor.

Method: To acquire and report the above information:

- yearly,
- using a direct-mail survey questionnaire,
- illustrating current and trend data for each objective.

Measures: The questionnaire is shown in Appendix A. Measures involve:

- The motivation for hiring an ENERGY STAR contractor.
- How the respondent found (located) the ENERGY STAR contractor.
- If the respondent obtained more than one proposal, what criteria were used to select the ENERGY STAR contractor.
- Overall satisfaction with the ENERGY STAR contractor recommendations and installation.
- Satisfaction with specific services provided by the ENERGY STAR contractor (see questions 10 and 11).
- Other feedback regarding the ENERGY STAR contractor and Efficiency Vermont (see questions 12 through 20).
- Demographic information.

Sample: Five hundred and sixty nine usable questionnaires were returned in 2011 which are included in the analysis of this study.

Appendix C

Objectives

1. Identify Vermonters' reasons for participating in Home Performance with ENERGY STAR (HPwES); specifically,

   - Identify and rank motivations for, and barriers to, pursuing and completing a home performance audit.

   - Identify and rank motivations for, and barriers to, completing the recommended improvements.

2. Use these findings to build a campaign strategy that will attract new participants to the HPwES program, with the end goal of increasing the total number of households that complete HPwES improvements.

Methodology

Macro Poll

- Eight questions about HPwES in the June 2008 Macro Poll, a telephone survey of 400 Vermont residents.

Contractor Interviews

- Five interviews with HPwES contractors (i.e., Building Performance Institute-certified audit providers and contractors who participate in HPwES through Efficiency Vermont).

Participant Survey

- A 17-question survey, mailed to all recent (within 1.5 years) HPwES participants.
- A total of 131 completed surveys were received and processed.

Web Leads Survey

- A 14-question survey, mailed to all HPwES Web leads (individuals who had requested contact from a HPwES contractor at efficiencyvermont.com, and who were not included on the participant list).
- A total of 135 completed surveys were received and processed.

Interviews

- Thirteen interviews with HPwES program participants, including 10 participants who had completed a substantial portion of the recommended work and three participants who had completed little or none of the recommended work.