Is Climate Change a Good Thing?
Opportunities and Barriers to Using Climate Change to Motivate Efficiency

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ABSTRACT

A study by the Energy Center of Wisconsin took the pulse of Midwestern public perceptions concerning climate change in the fall of 2007. A hybrid telephone-web survey of 3,284 households in nine states provides insight about current public understanding of climate change, levels of concern, preferred societal responses, expectations from utilities, and personal efforts in response to the phenomenon.

This paper summarizes the primary results concerning public levels of concern, understanding, and potential propensity to take action. Results suggest that concern about climate change is still secondary to broader environmental issues, but offers promise as a motivator for a wide range of the public to adopt more energy efficient practices. Understanding of some key issues is still low, and more public education is needed to inform Midwesterners what individual actions would be most effective in counteracting or reducing climate change.

Introduction

Discussions about climate change have increased greatly among energy efficiency professionals in recent months and years. Carbon equivalent emissions are beginning to join kilowatts and kilowatt-hours as considerations in program design, implementation, and evaluation. The "wedge" is becoming an increasingly common concept in energy efficiency circles, and time-series maps showing arctic ice levels are appearing in presentations about energy efficiency. The energy efficiency community is shifting its emphasis toward climate change. But what about the general public?

Casual observation suggests that the rhetoric concerning climate change has shifted in recent years. Media coverage of the subject is ubiquitous, while public expressions of doubt about the existence of the phenomenon by opinion leaders appear to have diminished. These trends raise the question: Is the public ready for climate-based messaging on energy efficiency? Would people take action because of climate concerns?

The energy efficiency field's need for answers to such questions led the Energy Center of Wisconsin to establish a Midwestern tracking study of public perceptions concerning climate change. This study was first launched in the fall of 2007 with support from three utilities and one non-profit organization as a survey of Midwestern households. The Energy Center will repeat the survey to track changes and expand the survey to a national scale as well.

The survey was designed to answer numerous questions concerning climate change and related energy issues. Research questions addressed in this paper include:

- Does climate change attract public attention as an issue?
- Can climate change be used to motivate changes to consumer behavior?
- What additional public education is needed to improve public understanding of climate change?

Other topics included in the research, but not presented in this paper, include preferred solutions to climate change, public expectations of energy providers, and willingness to participate in green pricing and alternative rate structures.

Methodology

The results in this paper are based on 2,479 completions of a hybrid telephone and web survey of 3,284 households in nine Midwestern states: Illinois, Indiana, Iowa, Michigan, Minnesota, North Dakota, Ohio, South Dakota, and Wisconsin. The survey was fielded between November 20 and December 5, 2007.

The Energy Center developed the survey instrument with input from the initial project sponsors. The instrument comprised 122 open- and closed-ended questions on the following topics:

- degree of concern about nine societal issues;
- climate change perceptions;
- preferred climate change solutions;
- individual and personal practices related to climate change;
- green pricing;
- perceptions concerning electric rates;
- information sources about ways to save energy in the home;
- openness to alternative rate structures; and
- demographics.

Respondents were asked about half of the questions in the instrument during a 12-14 minute survey. The mix of survey questions varied by geography and sponsor priorities, but we included an extensive set of climate change questions in all variations of the survey instrument.

Because all sponsors are located in Wisconsin, we oversampled households in this state. Wisconsin households comprise slightly more than 1,400 respondents with the remaining respondents distributed across the other states. Within Wisconsin, 600 respondents were part of two separate statewide random samples and are included in the analysis presented in this paper; the remaining Wisconsin respondents were oversamples of sponsors' regions of interest and are excluded from this analysis. Because of their comparatively small populations, we treated North and South Dakota as a single geographic entity for sampling and analysis.

Within each state and oversample, we completed approximately equal numbers of surveys via random-digit-dial telephone survey and web-panel online survey. (Web panel members were selected to match the demographic characteristics of the overall population and then invited to complete an Internet version of the survey.) Table 1 shows the number of completions of each type by state and oversample.

All results are population- and demographically weighted. Results from each state were weighted by the ratio of the adult population in that state (according to the 2000 Census) to the number of completions from that state, so the results reflect the nine state region being studied. In addition, we weighted by gender, age, and educational attainment to adjust for differences in the characteristics of our respondent pool to the characteristics of the underlying population from each state. The respondent pool also differed from the population for household income, but our adjustments for age and education resolve most of this sampling bias.

Table 1. Completions by Subsample and Survey Mode

State or Oversample	Completions by Telephone	
	Telephone Survey	Web Survey
Illinois	133	134
Iowa	134	134
Indiana	135	134
Michigan	133	134
Minnesota	135	134
North & South Dakota	137	134
Ohio	134	134
Wisconsin – statewide	300	300
Wisconsin oversamples (excluded from this analysis)	436	369

We treated telephone and web responses equally, even though there were some differences in responses to some questions based on survey mode. For example, respondents aged 45-64 who completed a telephone survey were more likely to be concerned about climate change than their counterparts who completed a web survey. In fact, it seemed that telephone respondents tended to have somewhat more intense responses to most questions.

Arguably, random-digit-dial sampling provides a selection of potential respondents that is more representative of the population than web respondents who have opted into a web panel. However, low participation rates in random-digit-dial telephone surveys introduce sampling bias by excluding potential respondents who spend little time at home, screen calls, or decline to participate in surveys. In addition, telephone surveys may be more likely to produce socially desirable responses than web surveys because the respondent provides his or her answers directly to another person. Given these considerations, we have no basis for favoring the responses from either mode, and we chose to weight them equally. Follow-up implementation of this tracking study will employ the same approach to ensure comparability.

Findings

One of the issues we sought to explore in the survey was whether individuals could be motivated to make more energy efficient choices in their personal lives based on their concern about climate change. We made the assumption that several conditions would need to be true (although not necessarily sufficient) for climate change to be an effective motivator for energy efficiency. These conditions fall into four main groups:

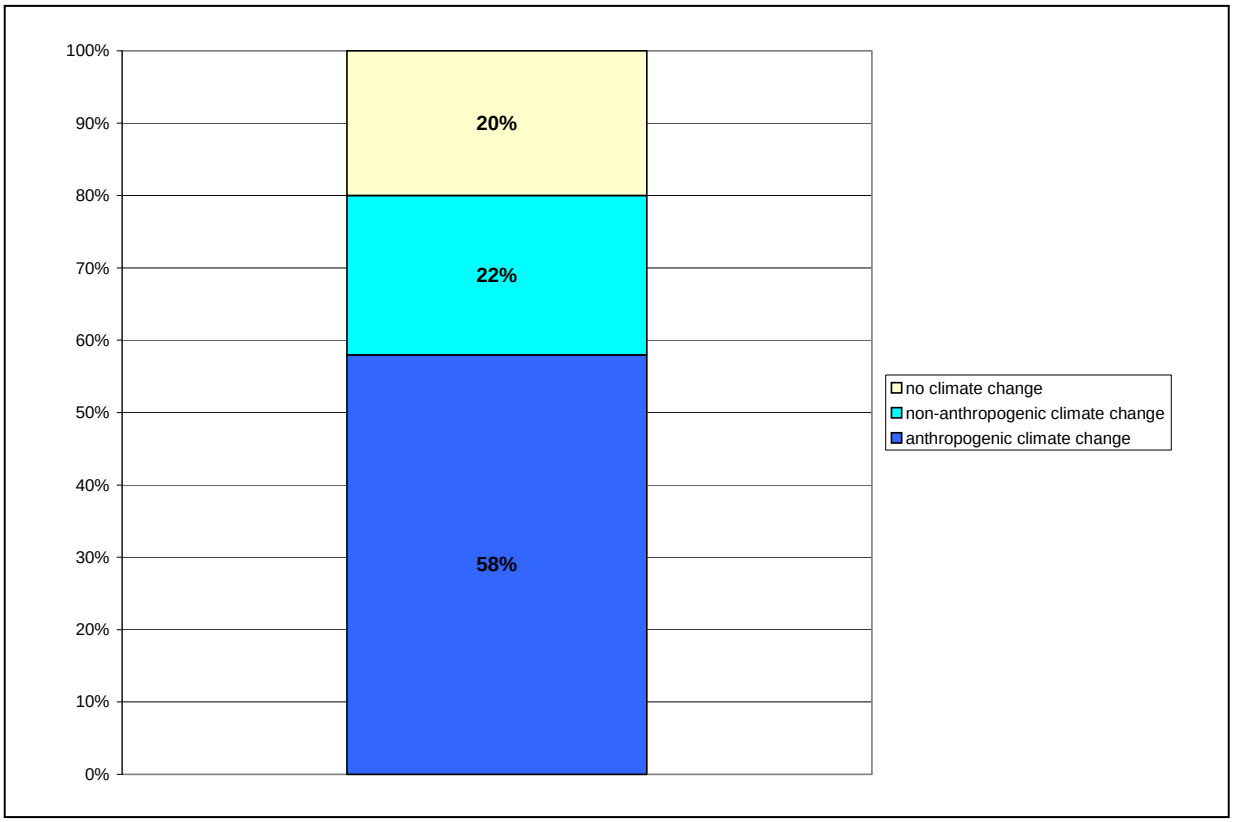
- **credibility** of climate change as an anthropogenic phenomenon;
- **concern** about the effects of climate change;
- a sense of **responsibility and self-efficacy** about the issue; and
- **knowledge** about how individuals can help address climate change.

This paper elaborates on each of these topics, presents relevant results from our study, and discusses implications for public education and messaging to promote energy efficiency.

Credibility

Large percentages of Midwesterners perceive climate change as a credible phenomenon that is caused by human activity. These two perceptions are probably the most important prerequisites before an individual would take climate change-motivated action. According to our study, 80 percent of Midwesterners believe that the temperature of the earth's climate is increasing, and nearly three-quarters of this group believes that human activity is largely responsible for these increases in temperature (see Figure 1). That makes 58 percent of Midwesterners "believers" in anthropogenic climate change. This group is most likely to be open to changing their behavior based on climate change, while the other 42 percent still need to be convinced that climate change is related to human activity (and thereby able to be influenced by what people do) or occurring at all.

Figure 1. Midwesterners' Beliefs about Climate Change



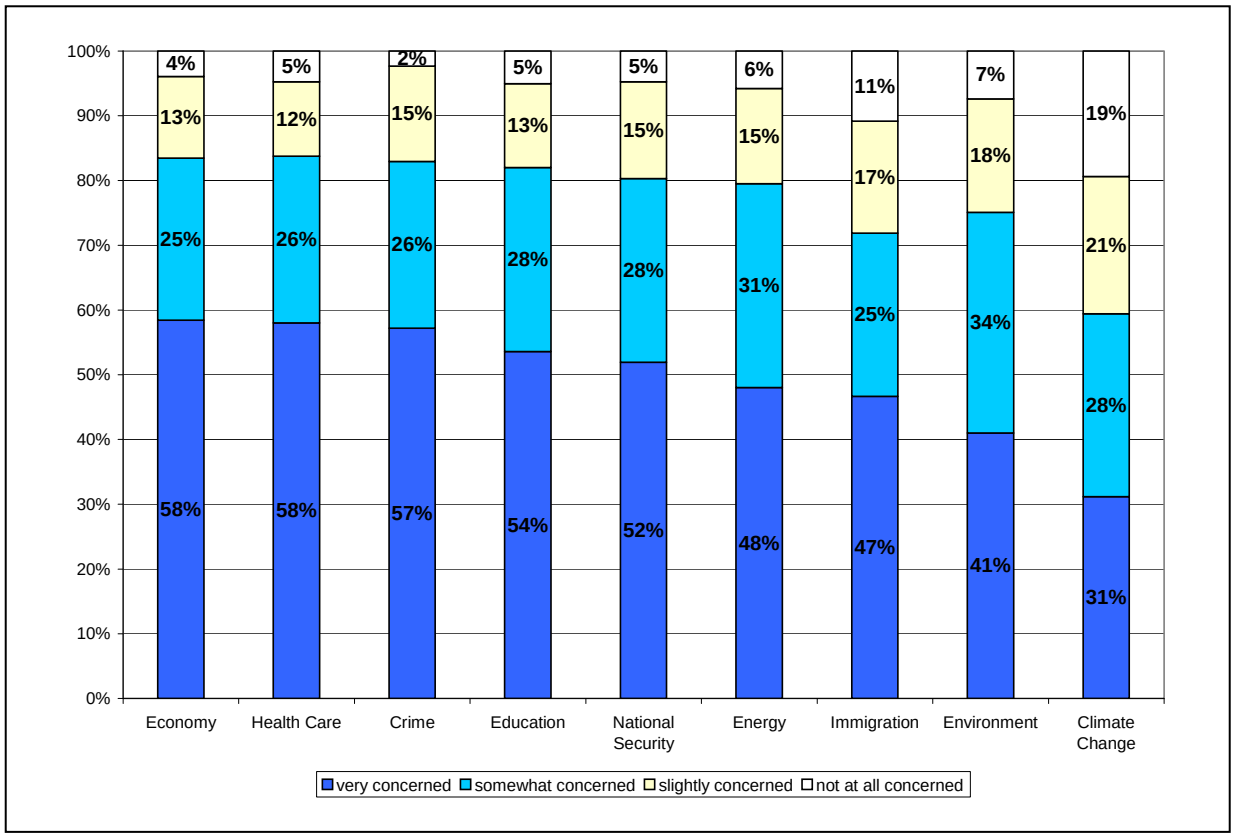
The share of the public that believes in anthropogenic climate change appears to be increasing, although our study does not yet have trend data to make any determination about changes in perception. Nevertheless, national longitudinal opinion tracking by Stanford University's Woods Institute for the Environment and Ohio State University suggests an increase, dating back to 1997, of the share of Americans who believe that climate change is occurring and caused mainly by human activity.

Concern

We measured concern about climate change in two ways. First, we began the survey by asking respondents to cite the degree to which they are concerned about nine broad-ranging societal issues. Next, we asked those respondents who believe that climate change is occurring about the consequences they think it will bring. Climate change did not fare as a high level concern on either metric.

Of the nine societal issues we tested, climate change ranked last. A larger share of respondents was "very concerned" about the economy, health care, crime, education, national security, energy, immigration, and the environment. Figure 2 shows the results quantitatively.

Figure 2. Midwestern Levels of Concern about Nine Societal Issues

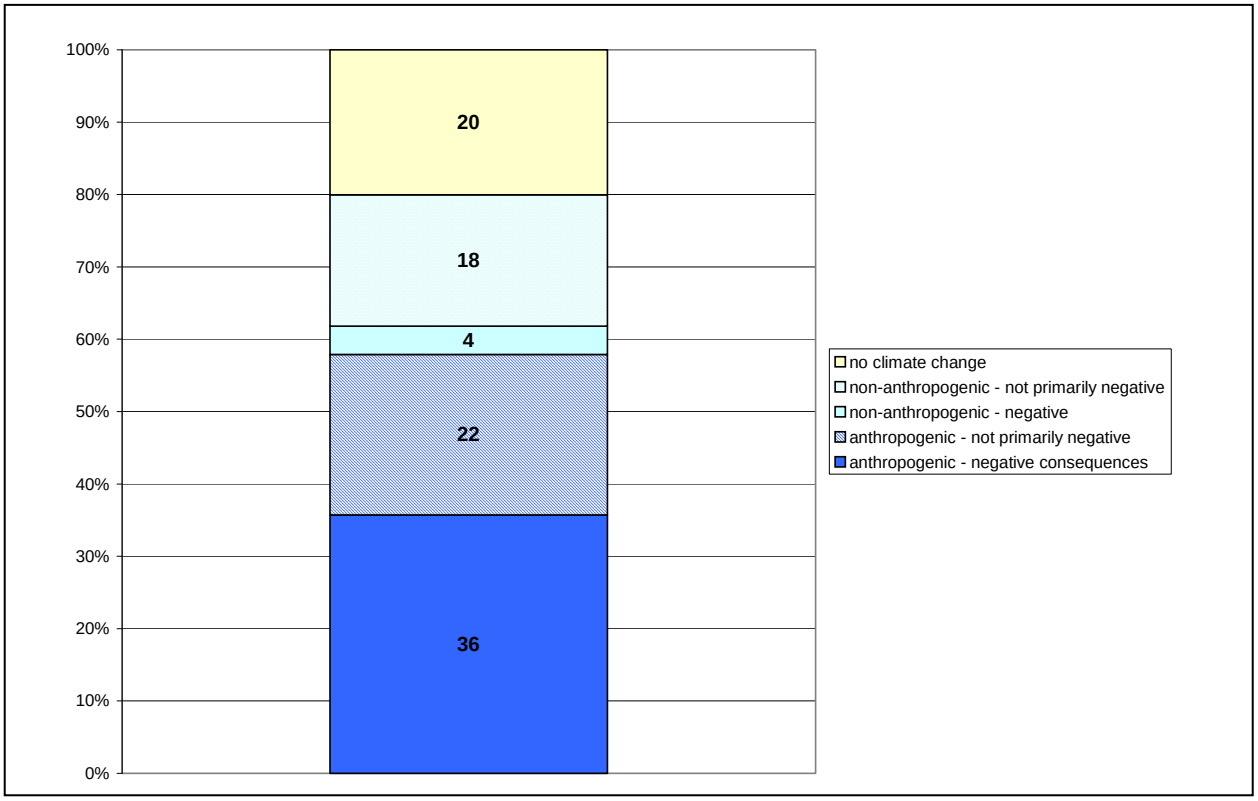


This result suggests that environmentally-oriented messaging or climate change messaging that includes a connection to a related issue like the environment – or even the economy and health – may still be more effective in the Midwest than messaging based on climate change alone.

People who do not believe in climate change are unlikely to be concerned about it, so we posed a sequence of questions about perceived consequences of climate change to those who said they believe the phenomenon is occurring. Even among believers in anthropogenic climate change, only 62 percent believe the consequences will be primarily negative consequences. Most of the remaining 38 percent thought climate change would bring a balance of positive and negative consequences. That leaves about one third (36 percent) of Midwesterners thinking that

anthropogenic climate change will bring negative consequences, as shown in Figure 3. Arguably, this group is most likely to take personal action to address climate change.

Figure 3. Midwesterners' Beliefs about Climate Change and Its Consequences



Furthermore, we asked respondents how serious they think climate change will get during their lifetimes and what consequences worry them the most. Responses suggest a modest level of concern from an anthropocentric point of view. Forty percent of those who anticipate negative consequences from climate change (or 16 percent of all respondents) estimated those effects to become "a noticeable problem" during their lifetimes, while roughly equal shares of the remaining respondents thought the negative effects would be "a minor nuisance," "a big problem," or "a serious threat."

When we asked a subset of Wisconsin respondents to identify the negative consequences that worry them, the largest share of respondents (25 percent of those who were asked this question) cited destructive weather patterns like storms and droughts. The next most common answers were melting ice, other negative consequences for nature, uncomfortable temperatures, and agricultural problems.

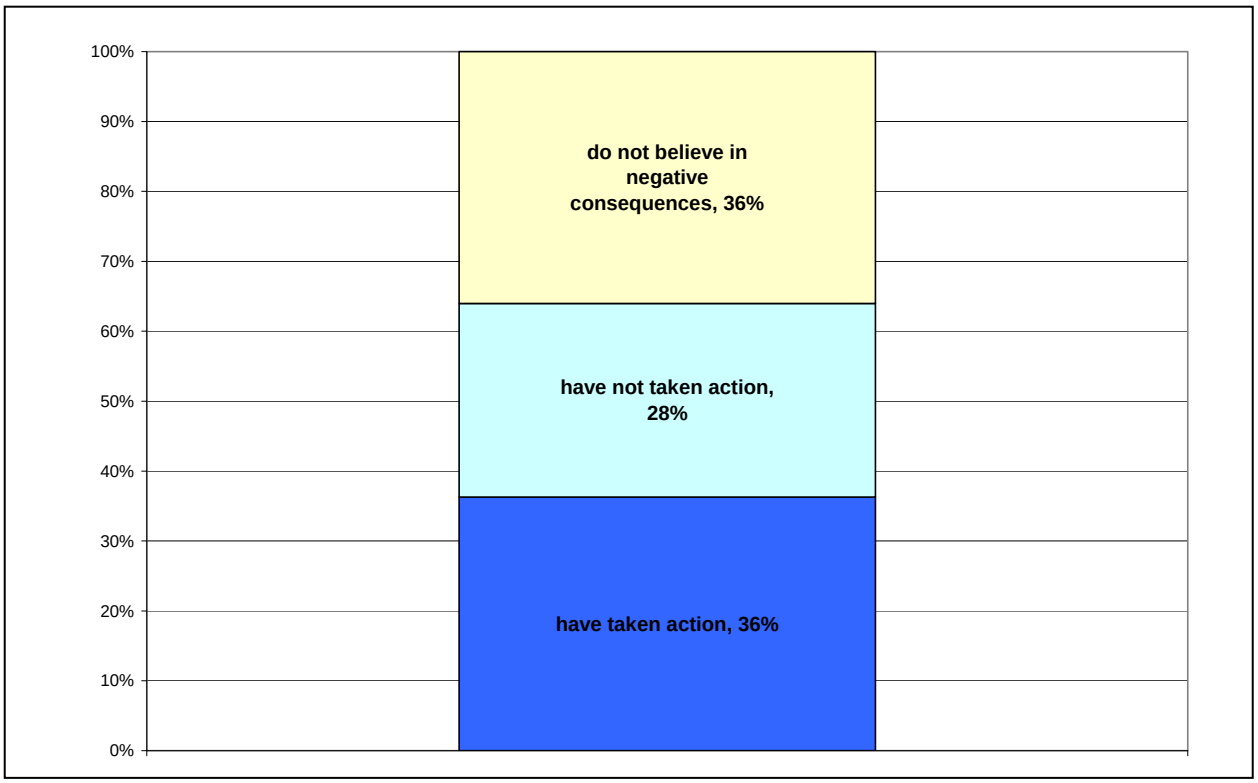
Responsibility and Self-Efficacy

Before individuals will take action to address an issue, they need to think of themselves as having some responsibility for addressing the issue and being able to affect the outcome. We asked all respondents who believe in at least some negative consequences from climate change who should lead the effort to address climate change and whether they themselves had done anything differently because of climate change.

Midwesterners do see individuals as part of the solution to climate change. In response to our open-ended question about who should take the lead, respondents cited individuals more often than any other response except the government. "All of us," "everyone," and similar responses accounted for a quarter of the responses to this question – far ahead of industry, global entities, and other answers. This result is significant because the question was worded to identify the "solution leader" and not just contributors to a solution. Midwesterners see themselves as needing to be part of the answer to climate change.

Later in the survey, we asked open-ended questions about what individuals could do in response to climate change and what, if anything, the respondent's household had done. Although self-reports are likely to overstate actual practices and overestimate causality, a large share of respondents (56 percent of those asked and 36 percent of all respondents) stated their household had done something differently because of concern about climate change. (See Figure 4.) These responses indicate a willingness to respond to climate change through personal action.

Figure 4. Midwestern Households Reporting Alteration in Practice due to Climate Change



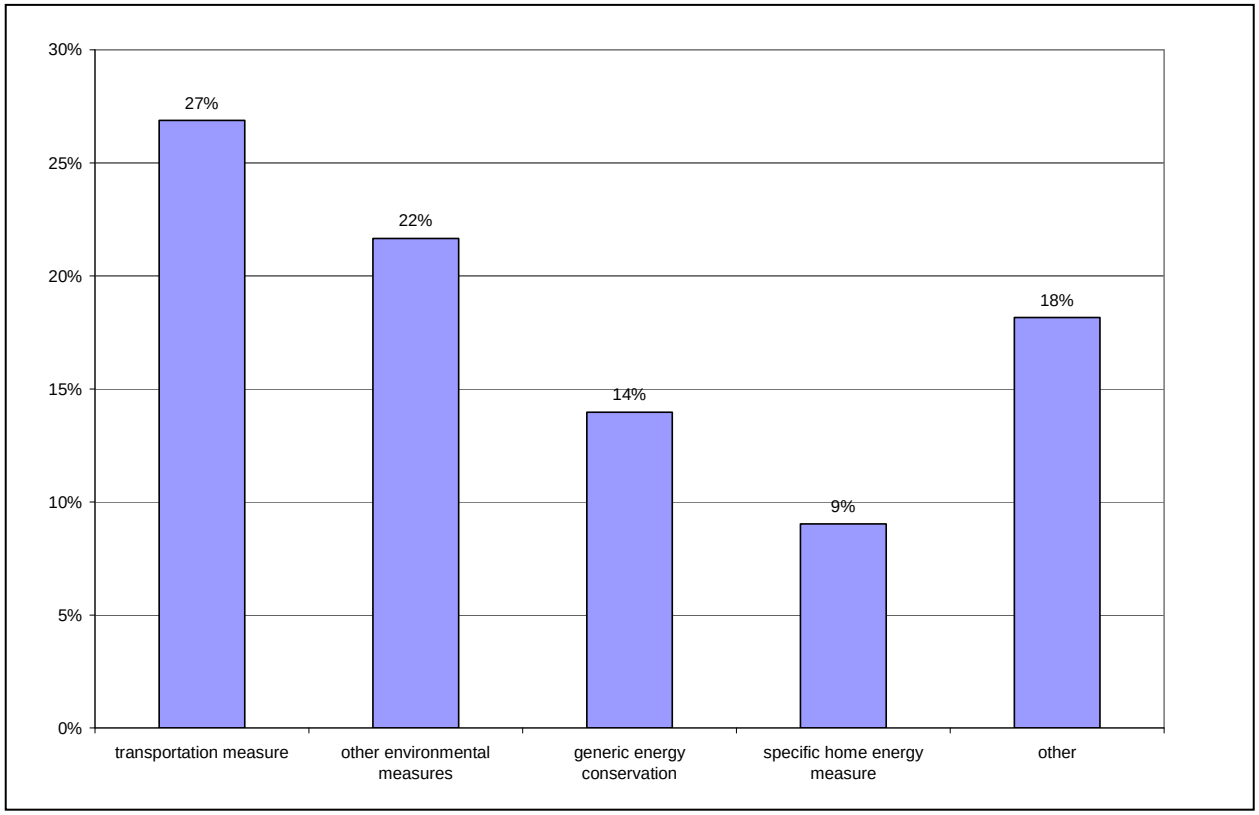
Knowledge

Individual action alone will not make a difference; people have to know what actions make the greatest difference and act on those. Our study suggests that Midwesterners have only a partial understanding of what they can do, along with some misperceptions.

When asked what individuals can do about climate change, responses drew heavily from various transportation measures, such as driving less, carpooling, using alternate forms of transportation, or purchasing more efficient vehicles such as hybrid cars. As illustrated in Figure 5, twenty-seven percent of respondents provided at least one transportation-related response.

The second most common type of response was a generic environmental action, such as recycling, using less, not littering, or avoiding aerosol cans. Twenty-two percent of respondents gave an answer in this category. Non-transportation energy efficiency measures received far fewer mentions with 14 percent of respondents making a generic comment about energy conservation (which can include transportation) and 9 percent citing something specific individuals can do in their home. Midwesterners are clearly focused on transportation and general environmental practices.

Figure 5. Midwesterners' Perception of What Individuals Can Do about Climate Change



Only once we asked what respondents had actually done did home-based energy efficiency measures appear in greater numbers. In response to that question, 23 percent of respondents cited an efficiency measure they had taken in the home. It may seem counterintuitive that respondents cited having taken energy measures at home more often when asked what they **had** done than when asked what one **could** do. However, the increase in home-related responses is probably due to the desire to think of something they had done and the greater likelihood that people have taken steps to save energy in the home than on the road because the barriers are easier to overcome.

The specific home-based efficiency measures respondents cited are consistent with the kinds of practices the energy efficiency programs in cold climates tend to recommend. Measures commonly cited by respondents included:

- efficient lighting
- turning down the thermostat
- efficient appliances
- insulating or air sealing the home
- turning off lights

Terminology – Climate Change or Global Warming?

We were uncertain whether to use the term "climate change" or "global warming" when referring to the phenomenon in survey questions. Climate change is the technically more accurate term, but an informal scan of articles listed in Google News in the fall of 2007 suggested that global warming is more commonly used in news coverage by a 60/40 ratio. That led us to build an experiment into the survey to compare the public's reaction to the two terms.

Although we used climate change in most questions, we did ask a few hundred respondents one of the following two questions:

- What does the term climate change mean to you?
- What does the term global warming mean to you?

Respondents appeared to understand both phrases, which suggests that either term can be used in communication with the general public. However, respondents perceive the terms somewhat differently.

Majorities from both groups – those asked about climate change and those asked about global warming – cited a combination of temperature changes or broader climate changes. Those asked about climate change were more likely to cite broader weather or climate patterns than just temperature changes (34% vs. 13%). Both groups gave responses limited to temperature fluctuations in similar numbers (50% of the global warming group and 41% of the climate change group). However, those asked about global warming were much more likely to speak specifically of temperature increases, while those asked about climate change gave more varied responses that also included temperature fluctuations.

More interestingly, the phrase global warming seems to elicit a stronger emotional response – both positive and negative. Thirty-five of the 263 respondents to the global warming question gave responses that we judged to be strong and emotional in nature, compared to only 14 such responses from the 251 respondents to the climate change question. Furthermore, the global warming responses tended to be more intense, at times including expletives. Both groups of responses included a mix of intense concern and skepticism. Table 2 lists some examples of emotionally charged responses to both questions.

Table 2. Samples of Charged Responses to the Terms Global Warming and Climate Change

Type of Charged Response	Global Warming	Climate Change
Intense Concern	"It's scary, and it could mean that we would not have crops." "The world is melting." "Dire consequences looming." "The sun is coming closer to the earth and melting the icebergs, causing huge amounts of water to cover the earth."	"Things will sort of burn away." "We are going to suffer." "Extinction of life."
Skepticism	"Liberal gobbledygook." "A liberal biased attempt to scare people into giving up freedoms and bashing America." "Propaganda."	"Climate change is a joke." "A total crock."

Conclusions

Comprehensive climate change-oriented messaging will need to consider an evolving body of knowledge about social marketing and behavior change, but the insights gained through attitudinal surveys like the one presented here are critical to ensure the public has the attitudinal and informational capacity to respond.

There are mixed indications about whether Midwesterners are in a position to respond to climate change-oriented messages to make energy-efficient choices. Substantial shares of Midwesterners perceive climate change as a human-caused reality that requires a response from individuals as well as governments and other market actors. Indeed, substantial shares of Midwesterners report having made some personal choices already that were motivated by concern about climate change. However, the degree of concern about climate change is not yet as high in the Midwest as concern about the environment more generally or other societal issues. If concern about climate change continues to increase, such messaging could become effective on a broad scale in the future.

For now, a share of Midwesterners may be sufficiently "prepped" to respond to a climate change-oriented call to action, while others still need more education before even well-designed messaging is likely to work. Different kinds of information would need to be provided to three main groups we identified in this study:

- concerned believers (those who believe climate change will bring negative consequences);
- unconcerned believers (those who believe in climate change, but do not perceive the consequences to be necessarily negative); and
- non-believers (those who do not believe in climate change or those who think of it as a natural phenomenon).

Concerned and unconcerned believers both hold promise for public education campaigns and energy efficiency messaging, while non-believers are least likely to take any personal actions. Public education aimed at this group would be least likely to result in changed practices.

Unconcerned believers need more information about the nature and potential severity of climate change. They need to be informed that warmer global temperatures will have greater consequences than just more comfortable winters and melting ice causing problems for polar bear habitats. In particular, the effects on people may need to be stressed. Survey responses suggest that such issues as destructive weather patterns and problems with agricultural production would resonate with people.

Concerned believers may already be taking action, but they don't necessarily know where to focus their attention. While survey respondents are on target in wanting to address their use of transportation fuels, the common perception that recycling and similar measures will help address climate change needs to be addressed. Public education campaigns for the concerned believers needs to clearly spell out the steps they can take to reduce their use of non-transportation fuels.

In most public education efforts and other communications with the general public, the term "climate change" is likely to produce a more desirable reaction than the term "global warming." Climate change is likely to be taken as a more objective and accurate term and reduces the risk of negative reactions from skeptics. Global warming will produce more emotional responses that might be better able to motivate action in a segment of the population, but those positive responses are likely to be matched by strong negative responses by other segments of the public.

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