Inspiring the Local Response
to Climate Change

An Examination of Barriers and Incentives in Medford Mass.

Report prepared for Medford Climate Action Network

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This report was written for the Medford Climate Action Network (Medford CAN) to support the organization in their effort to understand and engage the Medford community in actively mitigating their individual contributions to climate change. Through interviews with city officials and leaders in Medford’s environmental community, as well as focus groups with various representative populations of the Medford community, the Field Projects team found that the Medford community is in fact generally aware of climate change issues and considers these issues important, but that this awareness does not necessarily lead to behavior change. Most residents have already taken small steps to change their behavior, including recycling and changing to energy-efficient light bulbs. However, major barriers stand in the way of real behavior change -- money and time being mentioned most often. Our research also revealed the importance of symbolic actions and leading by example (especially at the government level), engaging people one on one, and integrating climate change issues into the school curriculum. A draft survey instrument, shaped by the findings of this research, was developed to be used later to collect further information from Medford residents in order to provide more quantitative and statistically valid analysis of these issues. Background research on social marketing, the psychology of environmental problems, cognitive dissonance and marketing, persuasive communication with climate change, and journal articles that present similar research on residential climate action also helped to inform findings and recommendations.
This project uses community-based research among Medford citizens to identify and analyze barriers to and incentives for taking action to mitigate climate change. The core of the project is built on qualitative research to gauge residents’ awareness of the climate change issue, which refers to the increases in global temperature, and the associated array of negative effects on the environment, that are induced by human behaviors and are the result of elevated levels of greenhouse gas emissions, like carbon, into the atmosphere.\(^1\) This report also explores perceptions of the importance of the issue, people’s understanding of the connection between climate change and personal energy use, and their motivation for taking action. Research also determined barriers to action, as well as the extent of action residents have already taken.

With this knowledge, Medford Climate Action Network (Medford CAN) hopes to persuade community members to take more vigorous action to mitigate the effects of climate change. The results from the interviews and focus groups were used to produce a draft survey instrument that can be used to survey Medford residents in a subsequent project with a more widespread and statistically significant scope.

The research methodology included interviews with community leaders and focus groups with residents from four different groups within Medford, including African Americans, parents, civic club members, and middle class white homeowners. These groups were chosen for the insight they could provide into the knowledge and opinions of different populations in Medford that will be important to understand in order to initiate effective changes in behavior. In addition, the methodology included a literature review and a comparison analysis of Arlington, Massachusetts, a town similar to Medford that is perceived to have achieved more success in its climate action goals. The research was framed around questions about the level of awareness and knowledge about climate change issues in Medford and the importance that is assigned to this issue, as well as what the perceived barriers and incentives are for Medford residents to change their behaviors, and what actions have already been taken by Medford residents to mitigate climate change.

The Field Project team’s findings show that knowledge among residents about the issue of climate change is a key factor in creating behavior change. They also indicate that information about the problem

\(^1\text{EPA, 2009.}\)
alone is not sufficient. It is important for people to have information not only about what the issues are, but also about which of their behaviors contribute to the problem, and what changes in their behavior could be made to mitigate the problem. The issue of climate change needs to be made more visible to people on a day to day basis, and a variety of approaches need to be used in order to be successful in appealing to the values and interests of a broad population base. The importance of face-to-face contact in information exchange emerged as a key to affecting behavior change, as did the need for the use of credible sources or people the residents can relate to in delivering messages about climate action. In order to be effective, the message cannot come solely from environmentalists.

The most common barriers and incentives to emerge from this research included structural barriers, as well as financial concerns and time constraints. The scope of the problem of climate change also emerged as an important barrier to people taking action due to a feeling of being unable to make a significant difference based only on individual action.

Multiple approaches need to be used in order to successfully initiate widespread behavior changes throughout Medford. Support from the City is seen as a key to success in the removal of barriers and the creation of effective incentives. Medford CAN needs to work closely with City officials in order to successfully achieve the desired changes. If the City of Medford wants to see action on the part of its residents with regard to climate change, it is important for the City itself to shift its focus from the reduction of municipal emissions to the reduction of community emissions.
Chapter 1

Introduction to Medford
Climate Action Network
1.1 Introduction

Climate change refers to the increases in global temperature, and the associated array of negative
effects on the environment, that are induced by human behaviors and are the result of elevated levels of
greenhouse gas emissions, like carbon, into the atmosphere. This problem can be mitigated in several
ways, namely by taking actions to significantly reduce carbon emissions. There are many ways to reduce
carbon emissions, including reducing consumption of fossil fuel resources, improving energy efficiency,
limiting the consumption of red meat, and recycling, among other measures. Each of these measures con-
tributes to the mitigation of carbon emissions, to varying degrees, with some being significantly more effec-
tive than others. This issue of climate change, and the need to take steps to mitigate the problem, has
moved to the forefront of environmental concerns. The belief is widely held that if drastic changes are not
made to reduce the amount of manmade carbon that is being emitted into the atmosphere, we may soon
face catastrophic effects.

In the City of Medford, Massachusetts, action to address climate change can be traced back to
1999, when the Medford City Council adopted a resolution in support of the International Council on Lo-
cal Environmental Initiatives’ (ICLEI, now called Local Governments for Sustainability) Cities for Climate
Protection (CCP) Campaign. ICLEI works with its members to develop campaigns and programs to help
them meet their commitments to sustainable development, many of which are related to climate change
mitigation. The CCP is founded on a set of Five Milestones. These are:

- **Milestone One**: Conduct a Baseline Emissions Inventory for all municipal
  operations and the entire community
- **Milestone Two**: Set an Emissions Reduction Target
- **Milestone Three**: Develop an Action Plan which describes initiatives the City
  Intends to take in order to reach its emissions reductions target
- **Milestone Four**: Implement the initiatives in the Action Plan
- **Milestone Five**: Monitor Emission Reductions

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3 Carbon Footprint, 2009.
5 City of Medford, MA, 2001, pg. 5.
6 ICLEI (Local Governments for Sustainability), 2008. (a)
The completion of Milestones One and Two ultimately led to a major step in Medford’s efforts to reduce its contribution to climate change when, on October 9, 2001, Medford became the first city in Massachusetts to move to Milestone Three through the adoption of a *Climate Action Plan*. The Plan outlined the municipal government’s mission to reduce its greenhouse gas emissions to 20% below 1998 levels by 2010 through such efforts as converting traffic signals and street lights to more energy-efficient systems and purchasing alternative fuel vehicles for the city’s fleet. By determining which sectors of the city consumed the most energy and contributed most significantly to carbon dioxide (CO₂) emissions, the Plan detailed specific steps to address these primary offenders, including such measures as converting oil heating systems to natural gas in municipal buildings, ensuring that renovations and new construction of public schools was done with energy-efficiency in mind, and issuing a mandate to purchase *Energy Star* products or their equivalent. Additionally, the Plan called upon the Medford community as a whole to reduce its emissions 10% by 2010 through individual actions, as it has been recognized that residential oil heating is the largest contributor to greenhouse gas emissions in Medford.⁷

Another prominent component of the *Medford Climate Action Plan* is the declaration of the city’s desire to assume a leadership role and help other communities map similar goals. The Plan states:

“As emissions of greenhouse gases understand no political borders, the City of Medford recognizes its commitment to reduce emissions can only go so far on its own. In addition to educating Medford residents and businesses, it will be important to encourage neighboring cities, such as Malden and Everett to join the CCP campaign. Medford is willing to take a leadership role in encouraging other cities in the metropolitan Boston area to recognize the climate change problem and to commit to reducing their own emissions.”⁸

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⁷ City of Medford, MA, 2001, pg. 11
Several community-led organizations and projects exist in Medford that seek to engage and educate individual members of the city about the threat of climate change and about the steps that can be taken to mitigate its effects. The first is the Medford Climate Action Network (Medford CAN), which is a grassroots community organization lead by our client, Susan Altman. Medford CAN was originally formed to help facilitate the community’s efforts in regards to the Climate Action Plan. Specifically, Medford CAN is tasked with increasing the level of awareness about global climate change and what can be done to counteract it, and to promote actions and behaviors that lower carbon emissions at the local level. Medford CAN works with other groups, such as the Massachusetts Climate Action Network, to influence state and national policies.9

A second important organization in Medford is the Clean Energy Committee (CEC), which was created in 2004 by Mayor Michael McGlynn to support the city’s efforts to “become a municipal leader in the use of clean power.”10 The Committee was involved with the installation of Medford’s 100kW wind turbine, which currently generates 10% of McGlynn Middle School’s power needs. Solar panels provide electricity for Medford City Hall and for the lights at the city’s Hormel stadium, and plans are also underway to install $100,000 of additional solar panels.11

Finally, the Medford Energy Task force was created with the purpose of aiding in the implementation of ICLEI’s Cities for Climate Protection campaign, which Medford signed on to in 1999. The task force is comprised of members from various municipal departments, utilities, and representatives from state agencies. This group has worked to execute some of the most important institutional changes within Medford’s energy infrastructure, such as installing photovoltaic panels at City Hall and Hormel Stadium, integrating biodiesel and electric cars into the municipal fleet, and developing a municipal Energy Efficiency Policy.12

The action that the City of Medford has taken to mitigate its climate change contribution is consistent with the trend that has developed at the national level in the United States. Though the United States is the largest per capita emitter of carbon dioxide in the world13, it has yet to take significant action at the national policy level to signif-

10 Clean Energy Committee, 2009, home page.
11 Ibid.
12 City of Medford, 2008.
cantly mitigate the country’s contribution to climate change. However, while federal action has been lacking, a great deal of action has developed on the scale of states and municipalities, such as has been happening in Medford. Almost 550 American cities, towns, and counties have become members of ICLEI (Local Governments for Sustainability), more than in any other country in the world.\textsuperscript{14} Further, in 2005, the United States Conference of Mayors endorsed the U.S. Conference of Mayors Climate Protection Agreement. Signatory mayors make a commitment to reducing the carbon emissions in their cities, and more than 500 mayors have signed on to date.\textsuperscript{15}

Despite some progress in Medford at the municipal level as described above, a perception remains within the environmental community that, relative to other nearby communities, Medford continues to struggle to engage a critical mass of its residents to address climate change at the local level, and it seems the City has not become the leader on climate action that it hoped to be.\textsuperscript{16} This perception is what ultimately led Medford CAN to commission this Field Projects study.

1.2 Project Overview

Community-based research was conducted among Medford citizens to identify and analyze barriers to and incentives for taking action to mitigate climate change. The core of the project is based on qualitative research that helped gauge residents’ awareness of the climate change issue as outlined above, their perceptions of the importance of the issue, their understanding of its connection to personal energy use, and their motivation for taking action. This research also looked at barriers to taking action, as well as to what extent residents have already taken action. With this knowledge, Medford CAN hopes to persuade community members to take more vigorous action to mitigate climate change.

The research methodology included interviews with community leaders and focus groups with residents, as well as a literature review and a comparison analysis of Arlington, Massachusetts. Arlington is a town similar to Medford, and it was examined with the purpose of gauging its success in achieving its climate action goals. Based on a series of discussions with Susan Altman (Chair, Medford CAN) in January 2009, the Field Projects

\textsuperscript{13} Union of Concerned Scientists, 2009.
\textsuperscript{14} ICLEI (Local Governments for Sustainability), 2008. (b)
\textsuperscript{15} United States Conference of Mayors, 2008.
\textsuperscript{16} Altman, 2009.
team developed a set of goals/questions to be answered by this project. These goals/questions are presented below:  

- Are Medford residents aware of/knowledgeable about climate change issues?
- Which aspects of climate change stand out most in residents’ minds?
- Are different community groups (e.g. different racial groups, economic classes, age categories, etc.) more or less aware or knowledgeable than other groups? Which groups are most aware? Which groups are least aware?
- How important do Medford residents think climate change issues are?
- Do different community groups feel climate change is more important than other groups?
- Which groups feel the issues are most important?
- Which groups feel the issues are least important?
- Is there a disconnect between how important people feel the issues are and the actions they are taking (or not taking)?
- What are the perceived barriers for Medford residents to taking action to mitigate climate change?
- Do different community groups perceive different barriers?
- What incentives would work best to persuade Medford residents to take action to mitigate climate change?
- Do different incentives work for different community groups?
- What incentives are currently offered?
- What actions have Medford residents already taken to reduce their individual impact on climate change?
- Have different community groups taken different actions?
- Do residents feel as though they have taken sufficient action?

The results from the interviews and focus groups were used to produce a draft survey instrument that can be used to survey a much broader and statistically significant population of Medford residents in a subsequent project. Medford CAN plans to use these research findings to design and implement a pilot project to help change the behavior of residents in the target groups by motivating them to take effective and substantial action to address climate change.

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17 A Memorandum of Understanding (MOU) between the Field Projects team and Susan Altman was issued to summarize these goals/questions, the scope of work, work products and deliverables, timelines, and other project management details. A copy of the signed MOU can be found in Appendix A of this report.
Chapter 2

Data Sources and Methods
As noted briefly above, the approach to this project involved gathering data from three major sources:

- **Comparison analysis**—The Field Projects team conducted background research on Arlington, Massachusetts, a town similar to Medford, to gauge the amount of success in its climate action goals and to perhaps highlight best practices and methods that may be transferred successfully to Medford.

- **Detailed interviews with influential members of the Medford community**—The Field Projects team conducted interviews with key community members, including Medford CAN staff and public officials.\(^{18}\)

- **Focus groups**—The Field Projects team conducted four focus groups with residents who represent diversity in Medford.\(^{19}\)

In addition to the primary data collected from the sources above, the Field Projects team surveyed and interpreted the existing literature pertinent to the research questions. The purpose of conducting a literature review was to gain an understanding of some of the concepts that are relevant to Medford CAN’s goals and to the application of the findings for this project. In particular, we sought literature that would shed some light on research that has been done to identify levels of awareness and concern within populations about climate change issues, and also which discuss the factors that may affect an individual’s willingness or ability to change his or her behaviors related to climate change mitigation and energy reduction. By examining these topics, the Field Projects team was able to draw some connections between what has been found to be most effective in other areas, and what might work in Medford. The findings from the literature

\(^{18}\) Any project involving human subject research (e.g. interviews and focus groups) requires Institutional Review Board (IRB) review. This project qualified for exemption from IRB review. A copy of the signed IRB approval can be found in Appendix B of this report.

\(^{19}\) See Footnote 16 above.
can then be applied to efforts in Medford to take action on climate change, hopefully serving to make those efforts more effective by reaching a wider population and appealing to different demographics and personality types within that population. In addition, the review also provides context for the other analytical pieces of this project and for a larger grant proposal that is expected to be completed in Summer 2009, led by Susan Altman.

The remaining subsections (2.1. through 2.4) provide details about each of the data sources and methods.

2.1 Comparison Analysis

The comparison analysis was conducted in order to provide a detailed account of how a similar community near Medford is faring in addressing residential action to mitigate climate change. The town was selected based on perceptions that the comparison community had demonstrated more success in their climate action efforts in the hopes that this comparison could provide an example of “what works,” and could highlight best practices and methods that have been successful in the comparison town so that they might provide ideas to Medford CAN about what is possible to implement in Medford.

This analysis first focused on compiling detailed information on current and past Medford climate action and creating a community profile, including details on demographics, diversity, politics, and economy. After creating the Medford community profile, the Field Projects team conducted a search for towns similar to Medford based on demographics, climate, and public organizational structure and that seem to have successfully inspired residents to take action related to climate change (either through implementation of a Climate Action Plan or other town goals and activities).

The search was narrowed to towns in Massachusetts because these would invariably have a similar climate to Medford and because being in the same state would expose the town to a similar political and governmental climate.

Another requirement for selecting a town was the need for available data, reports, and personal contacts documenting its progress in order to facilitate our analysis. For this reason, we chose to focus on a town within the Massachusetts Cli-
climate Action Network (MCAN). Because Susan Altman is extensively involved with MCAN, our team had access to MCAN resources. In addition, because Medford is also part of MCAN, it is likely that the leaders who spearheaded the efforts of their town joining the network are somewhat similar to their counterparts in Medford. This helps achieve our goal of finding a town as similar as possible to Medford.

Arlington, Massachusetts was chosen for analysis as the comparison town. Arlington borders Medford to the northwest, has similar population statistics and diversity, and similar public transit available as well as proximity to a major city and highways. The median income in Arlington is slightly higher than in Medford, but by a negligible amount. There is also a perception that Arlington has been able to better achieve its goals with regard to individual action and climate change (see Section 3.1 for further discussion of this issue). In addition, Sustainable Arlington is a town committee with a comparable mission to Medford CAN, and therefore provides us a valuable window into what an organization of this caliber can potentially do to achieve behavior change and action related to climate change and specific town environmental goals. A detailed account of our findings related to the Medford community profile, Arlington community profile and comparison analysis can be found in Section 3.1 below.20

2.2 Stakeholder Interviews

The Field Projects team conducted 15 in-depth interviews with Medford CAN staff, public officials, members of the Advisory Board, leaders of local organizations, and residents who are considered community leaders in Medford. The aim in conducting these interviews was to provide context about external factors impacting Medford community involvement with climate change action, to provide feedback on stakeholders’ opinions about the barriers and incentives that they and the communities they represent face, and to assemble recommendations to Medford CAN’s success in reaching and inspiring the general public. The interviews also served as input into the focus group questions (see Section 2.3 below) as well as the development of the draft survey instrument (see Appendix D).

In addition, the interviews were conducted with environmental and community leaders for the purpose of enabling us to compare these stakeholder opinions with those of the general community (obtained during the focus groups). This al-

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20 Detailed demographic statistics for both Medford and Arlington Massachusetts can be found in Appendix C.
lowed the Field Projects team to highlight any disconnects between what people “in the know” think and what is actually the case in Medford.

The interview format allowed for detailed responses to questions and also allowed for further exploration of issues through probing answers to questions. A copy of the complete interview guide used in the stakeholder interviews can be found in Appendix E. Interviews were conducted in February 2009, and all but one was conducted in person (this one was held via conference call). Interviews lasted about one hour, and questions focused on:

- Past and present involvement with Medford CAN and other environmental and community groups
- Government involvement in the effort to raise awareness and promote individual action on climate change
- Perceptions of climate change awareness and action among Medford residents
- Interviewees’ own personal awareness and knowledge of climate change issues
- Perceptions of barriers and incentives to climate change action for the general Medford community
- Interviewees’ own personal barriers and incentives to climate change action
- Recommendations for Medford CAN and other environmental organizations (including Medford government) to improve residential climate change action

2.3 Medford Residents’ Focus Groups

The Field Projects team conducted four focus groups with Medford residents in order to gather their opinions about climate change, their levels of knowledge and awareness about the issues, the barriers and incentives to action, and recommendations for how Medford CAN can better utilize resources to motivate behavior change. The focus groups also shaped the development of the draft survey instrument (see Appendix D).

Similar to the interviews, the focus group format allowed for detailed responses to questions and allowed for further exploration of issues through probing answers to questions. It also helped solicit more information from participants by allowing them to build on one another’s responses. A copy of the complete facilitation guide for the focus groups can be found in Appendix F. The focus groups were conducted in March 2009 in various locations throughout Medford to allow easier access for participants. Focus groups lasted between an hour and a half to two hours, and questions centered on:

- Residents’ knowledge and awareness of climate change issues
- Perceptions of the importance of these issues
• Barriers to taking action with regard to climate change
• Best incentives to motivate action with regard to climate change
• Actions residents have already taken to mitigate their individual effects on climate change

To ensure a diversity of perspectives, focus groups were conducted with members of the Medford community, including African Americans from the historic West Medford neighborhood, parents of school-aged children, members of Medford civic clubs, and middle class white homeowners. A discussion of why each of these groups was chosen for this project are presented in detail below.21

African Americans in the West Medford Community. Although Medford is composed largely of white residents, African Americans make up the largest minority and account for over six percent of the population.22 West Medford is home to one of the oldest and most historic African American communities in the United States.

Many notable African Americans were part of this community, dating back to the Civil War. This community has been one of the most distinct and important African American communities in New England. Members of this community have deep-seated roots in Medford and wield much influence within the overall community of Medford. Therefore, African Americans residing in West Medford were included in one of the focus groups for this project because of the cultural, historic, and political importance of this community. The Field Projects team coordinated with a contact at the West Medford Community Center in order to set up a focus group with African Americans in this neighborhood. Three people participated in this focus group.

Parents of School-Aged Children. Throughout the interview process that occurred before the focus groups, almost all participants mentioned that focusing on environmental education through the schools would have a trickle-down effect from children to their parents.23 Because children from all backgrounds are students in the Medford Public Schools, interviewees felt that education about climate change issues in the schools would be an effective way to reach the many sub-populations within Medford. This project included a focus group with parents of school-aged children in order to obtain the thoughts of the people who

21 Statistics on all focus group participants can be found in Appendix G.
22 U.S. Census Bureau, 2005-2007. Additional Medford statistics presented in Appendix C.
would be the recipients of such trickle-down information discussed by the interviewees.

In addition, a perception was expressed by interviewees that families tend to be interested in supporting what their children are doing in school, and because oftentimes parents are one of the most involved groups of people in community and school activities, parents may be a group that would have a high return on investment; if this group of people is already likely to be involved and well-networked within Medford, Medford CAN could potentially make large strides by targeting them with outreach.

The Field Projects team attended Parent Teacher Organization (PTO) meetings and distributed focus group recruitment materials at McGlynn Elementary School, Brooks Elementary School, and Andrews Middle School in order to recruit parents in Medford with school-aged children. Medford Public Schools use a “controlled choice” assignment plan, which allows parents to rank schools in order of preference and these rankings influence the final school assignment for students. This type of school choice program ensured that the recruitment materials reached a geographically diverse population of parents, because students are not assigned to specific schools simply based on their proximity to a school. However, the “controlled choice” assignment plan may also lead to a more homogenous group of parent participants because similar parents may choose to send their children to the same school. The Field Projects team attempted to overcome this bias by recruiting from three separate schools within Medford. In addition, participants were recruited from both Elementary schools (pre-school chil-

23 For more detail on these findings, see Results Section (Section 3.1)
24 In other words, instead of students being assigned randomly or by proximity to particular schools, families get to choose which Medford school their child or children attend to a certain extent. Medford Public Schools takes a family’s school preference into consideration when assigning students, and tries to accommodate as many preferences as possible (but cannot guarantee a student is assigned to the family’s top school choice in every case). This system is described in greater detail on the Medford Public Schools Web site: http://www.medford.k12.ma.us/itemDetail.aspx?categoryID=10112&RootCatID=8850&itemID=29015.
dren through fifth grade students) and Middle schools (sixth grade through eighth grade students) in order to ensure a wider age range of participants. Three parents were able to attend the focus group for this project.

**Members of Medford Civic Clubs.** Similar to the discussion above regarding parents and their capability to be well networked in the community, this project included a focus group with members of Medford civic clubs because of their level of involvement in community issues (other than environmental) and their potential willingness to work with others and serve as leaders in Medford. In addition, many of the members of the civic organizations in Medford are business owners or work closely with the business community. Although Medford CAN’s goals surround residential action, the business community may present itself as a much smaller and easier community to reach. Businesses also are a very visible part of Medford (similar to the government) whose behavior may be emulated by the surrounding residents. In other words, if business owners are motivated to make changes and take action with regard to climate change, this could potentially signify to residents what environmental behaviors are being expected of them.

The Field Projects team attended the Medford Joint Service Annual Dinner, an event for Medford’s major civic clubs, including Medford Kiwanis, Medford Rotary Club, Medford Lions, Thursday Fortnightly Club, Zonta Club, and the Medford Chamber of Commerce, in order to recruit participants for this focus group. While members from all of the clubs in attendance were recruited, a total of eight people from Kiwanis, Rotary, and/or the Chamber of Commerce participated in the focus group held in March 2009. Kiwanis and Rotary Club are both service organizations that provide humanitarian and community service opportunities to members. Rotary Club bills itself as an organization of “business and professional leaders,” and Medford Kiwanis also states that one of the perks of joining is the ability for members to make business and professional contacts. Because members of the service clubs include business leaders and owners, and because members of the Chamber of Commerce also attended the focus group, the Field Projects team was able to achieve their goal of collecting informa-

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25 Focus group participants were recruited from half of the public elementary and middle schools in Medford (there are four public elementary schools and two public middle schools in the City). This was done in an attempt to mitigate potential bias due to similar parents sending their children to the same school. If the parents from a particular school represent a homogenous group, recruiting from a larger number of schools might yield three separate homogenous groups, making the overall group heterogeneous.
tion from civic club members active in the community as well as from the business community.

Middle Class White Homeowners. This group makes up the bulk of Medford residents, and if Medford’s environmental leaders are to make any significant progress in creating residential behavior change, an effective method of reaching this majority will have to be established. In addition, Medford is home to many Italian American and Irish American families who have called Medford their home for multiple generations. The information provided by this group of people can aid Medford CAN in understanding the reasons why the organization has not been able to connect with this community in the past, provide valuable recommendations about how to approach them in the future, and suggest strategies about how to conduct outreach within this well-established sub-community within Medford.

In order to reach this broad public, the Field Projects team canvassed our own neighborhoods. In various Medford neighborhoods, distributing fliers and knocking on doors allowed us to reach a more randomly-selected group of people who own their own homes to potentially participate in our focus group than could be achieved by working with a community contact that may only have exposed us to a small circle of residents. Residents were also recruited directly from the Medford Public Library, and four participants attended the focus group which was held at the library to increase the convenience for participants.

2.4 Methods

All data that were collected for this project are qualitative, and therefore this project consists mainly of in depth qualitative analysis of collected information and the background literature. Anecdotal and qualitative evidence from the primary data sources were combined with published literature to describe the current conditions in Medford and how they compare with other studies, and to make recommendations to Medford CAN about future strategies.

The Field Projects team analyzed the data from the interviews and focus groups to provide answers to the evaluation questions posed in Section 1.2. The interviews and focus groups provided

26 Rotary Club of Medford, MA, 2009.
27 Kiwanis, Medford, 2009.
28 Medford statistics are presented in Appendix C and a discussion of the community profile and demographics are presented in Section 3.1 of this report.
qualitative data including context, examples, and perspectives of residents and community leaders. We compiled notes from both sources and analyzed these data to allow us to extract major themes and patterns. The data were then separated out by evaluation question (i.e., data segments were topically grouped by evaluation question). These data were supplemented with findings from the literature review and comparison analysis to demonstrate results and provide recommendations to Medford CAN.

The information collected in the interviews and focus groups was also used to help formulate a valid, reliable, and effective draft survey instrument to be used later to collect detailed data from Medford residents. The draft survey instrument was designed to collect information on topics that could be compared to interview and focus group data. These topics were:

- Actions residents have taken
- Their awareness of climate change
- Barriers to climate change action
- Incentives for climate change action
- Other topics to be determined from interview and focus group results

Developing an effective and valid survey requires significant preparation. Full survey implementation for this project would have involved designing an implementation plan, developing the survey instrument, developing the sampling frame, pre-testing the survey, and finally, conducting the survey and compiling results. These steps require extensive background research, including interviews with key stakeholders and possible survey respondents. Given the project time frame and resources, it was not feasible for the Field Projects team to fully implement the survey. However, the interviews and focus groups provided the necessary data for the Field Projects team to develop a quality survey instrument to be used in survey implementation in the future. Appendix D provides details about the survey development and the actual survey instrument.

29 Common themes emerging from the interviews and focus groups and the number of times they were mentioned are presented in Appendix H.
30 It is possible a very small-scale survey would have been feasible to implement in the time frame for this project. However, given the sampling frame issues and the likely small number of responses, the Field Projects team believes a survey of this type would not have been statistically valid and would not add data that the interviews and focus groups did not already cover. To use resources more efficiently, we recommended that a more robust survey instrument be designed during this project, to be implemented at a later date.
3.1 Comparison Analysis

As Medford seeks to increase its level of action in favor of climate change mitigation, the Field Projects Team sought to look outside for a community that has followed a similar trajectory in hopes of gaining some insight into strategies and approaches that have been successful in reducing municipal emission rates.

Arlington, Massachusetts – a neighbor of Medford – is of a relatively similar size, demographic, and economic composition, and is another member of the Massachusetts Climate Action Network. Arlington was chosen based on demographic research revealing relative similarities in size, population, and income levels, as well as on recommendations from our client and others who were interviewed – all who were under the assumption that Arlington’s environmental efforts have thus far been markedly more successful and effective than Medford’s. We hoped to gain from Arlington some experiential advice on ways Medford could proceed in its quest to achieve its goals regarding increasing resident’s participation in mitigation efforts.

Arlington joined the Cities for Climate Protection Campaign (CCP) and enacted a Climate Action Plan later than Medford. The municipality also adopted a Sustainability Action Plan in 2006 (ASAP), which outlines strategies for an active plan to reduce the municipality’s carbon dioxide emissions, with a set goal of a six percent reduction in emissions below 1997 levels by 2010 and twelve percent by 2015.

Arlington’s sustainability approach fits into their Vision 2020 campaign, which is an overarching master plan for the community that features a strong environmental component spearheaded by the Environmental Task Force. The Task Force oversees the various environmental groups within the town, including Sustainable Arlington – the community’s most prominent and influential organization – as well as various green building projects that Arlington is undertaking. To support the Action Plan, a website, www.sustainablearlington.org, is maintained as a resource and is updated regularly with news, information, and meeting dates.

Because of the frameworks already in place, and based on anecdotal evidence from our client and others familiar with these communities, it is also believed that Arlington has surpassed Medford in its efforts to reduce municipal energy use. Surprisingly, upon interviewing two members of Sustainable Arlington\textsuperscript{34}, it appears that Medford and Arlington are in fact at comparable stages in the advancement of their efforts, the difference being in their approaches to the climate change issue. While the Field Projects team has found that Medford’s efforts are thus far being championed and promoted by the municipal government in a top-down model of leadership by example, the interviews indicated that Arlington’s efforts are primarily resident-initiated and working in a bottom-up method.

Examples of these differing approaches can be seen in many ways. First, while Medford has had an Environmental Agent in place for several years, Arlington has only just approved the hiring of an Energy Manager for the town, which will occur at some indeterminate date in the future when funds become available.\textsuperscript{35} Where Medford’s city government has focused on municipal emissions reductions – with a City Hall building retrofit, use of hybrid vehicles for several municipal functions, and the recent installation of a 100kW wind turbine at McGlynn Elementary School – Arlington’s efforts have thus far been most effective at the residential level. Examples of this include the fact that more than 70 people are participating in the Energy Smackdown Competition (as compared to just over 30 in Medford), as well as the fact that Arlington’s recycling rate for the year 2007 was 29\%, as compared to only 15\% in Medford.\textsuperscript{36}

\textsuperscript{34} The Field Projects team had the opportunity to engage in an email interview with two leaders of the Sustainable Arlington organization in April 2009.

\textsuperscript{35} Sustainable Arlington, 2009.

\textsuperscript{36} Massachusetts Department of Environmental Protection, 2009.
The Sustainable Arlington organization is consistently committed to reaching out to residents in ways that Medford public officials or Medford CAN have yet to attempt, but which would likely prove quite beneficial. For example, Sustainable Arlington sponsors guest speakers who are experts in the field of climate change to give public lectures for the town, it maintains a display case in the public library that showcases information about climate change and ways to reduce personal energy use and carbon emissions, as well as serves as an advisory board to the Arlington government, in order to help with purchasing decision-making to ensure that new investments made by the city are the most energy-efficient possible. As previously mentioned, Sustainable Arlington also maintains its website with current information, tips, and dates of upcoming meetings, which are held monthly. Medford CAN, in addition to having an out-of-date website, does not hold regular meetings, making it even more difficult for potentially interested and motivated residents to join the group.

Yet in spite of these differing approaches, Medford and Arlington share some very similar challenges. Members of Sustainable Arlington reported that, in spite of having a population with a seemingly-high awareness about climate change, it is extremely difficult to motivate people to go from spectators to active participants in the town’s initiatives. The interviewees also revealed that although 180 people are on the organization’s listserv, only 10-15 regularly attend meetings. This observation is one that closely mirrors efforts in Medford, where a proportionally-small population of self-designated environmentalists find themselves in the position of “preaching to the choir” because of the great difficulty of bringing in new members or having a true impact on the general population. Because of the insular nature of both environmental groups within their respective communities, it is difficult to gauge how much action residents are actually taking within their homes.

Another challenge exists in both Arlington and Medford in motivating local business owners to reduce their energy use when there are no official mandates requiring them to do so. Neither group has successfully addressed this yet, though this year the City of Medford has enabled municipal recycling for businesses, which it had not provided before.

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39 From Field Project’s Team Interview with Mayor McGlynn.
As far as each town’s action plans for sustainability and energy-efficiency are concerned, both are still in the early phases of implementation despite having been enacted several years ago. Both organizations attribute primary causes to be competing issues on political agendas, lack of financial resources, and lack of public participation. Medford does not appear to lag significantly in its pro-environmental action, as previously thought, but in fact seems to be quite on par with the rate of development in another similar community in the area, and therefore does not represent the isolated or unusual case once assumed.

3.2 Findings from Interviews, Focus Groups and Supporting Literature

3.2.1 Awareness, Knowledge, and Perceptions of Importance of Climate Change Issues Among Medford Residents

In order to augment the analysis of the interview and focus group findings, several articles were selected for review that also examine awareness and knowledge of climate change issues, as well as perceptions about the importance of the issue.

An article by Semenza, Hall, Wilson, et al\(^{40}\) examines the awareness, concern, and behavior change related to climate change among survey respondents in Portland, Oregon and Houston, Texas, and also analyzes barriers to action. Although the researchers are trying to answer somewhat different questions than this report addresses, this article was chosen because it provides a good example of research techniques and background information that will be useful to the city of Medford and Medford CAN. The authors state that an individual’s awareness and concern about climate change issues, their willingness to act, and their ability to change their behavior are the critical pieces that determine whether or not the individual voluntarily reduces their energy consumption to help mitigate climate change.

The authors found that, from a sample size of 1,200, almost all respondents (over 90 percent) are aware of climate change issues. High-income respondents in both Houston and Portland are more likely than low-income respondents to demonstrate awareness of the issues. In addition, the authors found that of those who were aware of climate change issues, almost all respondents expressed concern about the problems (90 percent of respondents in Portland, 82 percent in Hous-

ton). Results also showed that 63 percent of respondents in Portland and 47 percent in Houston self-reported that they had changed their behavior. The authors’ model showed that level of concern, level of education, and age were statistically significant factors that affected behavior change (higher levels of concern and education, and younger more than older individuals were more likely to exhibit changes in behavior).

This literature supports the findings from the series of interviews and focus groups that was conducted by the Field Projects team, which reveal a range of interesting opinions about the levels of awareness and knowledge that Medford residents hold with regard to climate change issues, and about the degree to which these issues are considered important. First, there seemed to be agreement among the majority of interviewees (10 out of 15 people) that there needs to be an increase in the visibility of climate changes issues, in terms of both the problems and the solutions involved. By making the issue more visible, respondents feel that knowledge can be increased among Medford residents and so can the level of importance that people associate with climate change. Respondents expressed a belief that by increasing the visibility of climate issues, a greater portion of the community will give climate action a higher priority than they do at present.

All of the focus group participants in this project demonstrated an awareness of the climate change issue, while the levels of understanding about the causes of climate change and what actions could be taken to mitigate the problem, seemed to vary. All four of the groups were able to come up with a list of activities that contribute to climate change, as well as a list of what can be done to mitigate the issue, but there were also references made to some ideas that are not directly related to climate change. When asked to name some of the activities that contribute to climate change, there were six (6) responses during the focus groups that
referred to such ideas as the ozone layer, Freon, and aerosols as contributing factors to climate change. Other activities that are more directly related to climate change that were listed included auto emissions, air travel, industrial activities, oil usage and home heating and cooling.

Similar to the findings of Semenza et al., the level of awareness of the issue of climate change in Medford, as demonstrated by the interviews and focus groups, was found to be high. Due to the anonymous nature of the focus group process in this project, the Field Projects team was unable to gather any data on income, education or age that could be used to determine a correlation to the level of awareness and understanding of climate change. By developing a survey tool similar to that used by Semenza et al. for use in Medford, these relationships can be explored in order to better direct future efforts to improve the level of awareness and understanding about climate change issues in Medford.

A second article, by Costanzo, Archer, Aronson and Pettigrew, was chosen for review because it examines the idea of the importance of information and messaging in transitioning from the dissemination of information into meaningful action and behavior change. The authors argue that disseminating information is not enough to motivate individuals to conserve energy and that more focus should be applied to the social-psychological aspects of energy conservation. They determine that the attitude model (that favorable attitudes about energy conservation will lead to action by individuals) and the rational-economic model (that people will take actions that benefit them economically) are insufficient models to explain the behavior of individuals with respect to energy conservation. This article is included in this report because of the close relationship between the themes that it explores, and the perceptions that were revealed during the interview and

Visibility of Climate Change Issues

10 out of 15 interviewees think that by increasing the visibility of climate change issues, knowledge among Medford residents can be increased and so can the level of importance that people associate with climate change. In addition, respondents think that a greater portion of the community will give climate action a higher priority than they do at present.

42 Ibid.
focus group process of this study about the importance of the climate change issue and people’s receptivity to information on the subject.

After presenting their modified model of energy use behavior, Costanzo et al. offer suggestions on how to better promote energy conservation. To increase the probability that information is received by individuals, the authors note that the message should be “vivid” and personal. This could be achieved by relating information to the individual’s own energy bill and describing actions taken by an individual’s peers and neighbors. In addition, information is more likely to be received by an individual if losses are highlighted as opposed to gains (for example, information should describe how much energy a user is losing on a monthly basis, not on what they could be gaining by conservation). Home energy consumption has become increasingly visible to the end consumer. For many of us, the only visible component of our energy use is our monthly bill. Monthly bills fail to separate information about particular appliances, making it increasingly difficult for the average consumer to understand their personal connection with energy use. The authors cite a number of studies that have found that making energy use more visible by installing monitoring devices that measure specific outlet use, providing customers with daily or weekly printouts of their energy use, or providing customers with an itemized utility bill has successfully reduced residential energy use.

The approach taken by the City of Medford on climate action is closely tied to this idea of increasing the visibility of an issue. Interviews with public officials revealed that the City has focused on reducing municipal emissions and on making changes that can be seen throughout Medford, including the installation of the wind turbine at the McGlynn Elementary school, the addition of electric vehicles to the municipal fleet, and the installa-

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44 Costanzo et al, 1986.
tion of solar panels on the roof of City Hall. Other interviewees that did not represent the City felt that if the Mayor and Medford city officials made climate action an even higher priority, then the citizens of Medford would also be more willing to take action. Mayor McGlynn stated in his interview with the Field Projects team that, when faced with challenging economic conditions as the city currently is, finances are always the top priority, but that climate issues do not fall too far behind these concerns. He said:

“Anybody in any community across Massachusetts, their number one issue today is finances ... how do you survive? Especially in this global downturn. But other than that, I think anyone around here will tell you, in the last six months we haven’t spent more time on any other issue than environment.”

There was some doubt expressed from other interviewees about the degree to which the Mayor truly believes in these environmental concerns, and that if the Mayor were to really get behind these issues with sufficient resources, people would be very receptive to climate initiatives. One interviewee stated that “[the Mayor] is not being a champion or advocate for. ... He ought be talking about it at all turns, for all to do. The city would be leading by example as best it could. He would be always acknowledging the limits but promoting that you stretch the envelope.”

Interviewees noted a range of observed involvement in climate action from their communities, and stated that although there seem to be several pockets of environmental activism throughout the community, these groups do not seem to be collaborating effectively. Some respondents recognized that there were several members of their personal communities and neighborhoods who actively engage in pro-environmental behavior, such as recycling or driving less.45 A perception that more sub-populations within Medford are beginning to take action was also stated. All interviewees noted that overall participation in and awareness about environmental concerns seems to have increased in the last several years. On the other hand, other interviewees noted that there did not seem to be any significant conscious environmental action taken by those in their community. Nine (9) of the interviewees believed that their own neighbors took less personal action than they

45 All interviewees said at least some of their neighbors recycle. Three (3) people mentioned driving less.
perceived to be characteristic of the rest of Medford. All respondents stated that people seem to say they care about climate issues, but do not take any meaningful action.

There was a consensus among respondents that awareness of climate problems is high in Medford, but that more needs to be done to increase residents’ knowledge about how the problem will affect them and what actions can be taken to mitigate the problem before behavior change will begin to occur. This is consistent with the focus group findings discussed above, which indicated that all participants were at least aware of the issue, despite some varying levels of understanding about its causes and potential mitigation. Interviewees identified a variety of sources from which they believe their fellow Medford residents obtain information about climate change. These sources include the Internet, local newspapers, public announcements or fliers, an email listserv and door-to-door canvassing. Four (4) interviewees also noted Al Gore’s “An Inconvenient Truth” as an important way that many people learned about climate issues. The role of public schools in informing people was also discussed by all respondents. This idea was mentioned 21 times in interviews (see Appendix H). A belief was expressed by interviewees that through informing children there can be success in reaching the parents, and this can be effective in reaching a diverse population of residents.

The information sources listed by interview respondents aligned well with those that focus group participants said they received information on climate change from. Most focus group participants stated that television media was their primary source of climate change information. Programs such as the History Channel and National Geographic documentaries, along with the news were listed. People seemed to be most influenced by visual media and messaging, and listed images of melting glaciers, polar bears and how climate change is affecting other parts of the world as being key factors in signaling the importance of the issue to them. For example, when participants were asked how they first learned about the climate change issue, one respondent referred to a television program on glaciers. The participant described how “…they were showing time-lapse photography and you could just see it. How fast they’re crumbling and how... they’re getting smaller and smaller at a greater rate.” Another respondent said, “In National Geographic there was an article about the polar bears... Because they are used to walking
around on ice, they showed them sort of floating on ice islands....It was with those images that I was finally able to understand what was going on.” The Internet was another source of information that was mentioned by participants repeatedly, as was Al Gore’s “An Inconvenient Truth.”

In the interviews, the importance of face-to-face, personal connections was emphasized, as was the need to use multiple approaches in communicating information to the public. The belief was expressed that with more information, climate issues will become more important to Medford residents. This relates to what Costanzo et al\textsuperscript{46} conclude about the need for vivid and personal messages in order to achieve behavior change, as discussed above. Focus group respondents did not make reference to any personal messages related to climate change, and instead spoke of the broader, more global images that had affected them. None of the focus group participants felt that climate change was a daily priority for them. Perhaps if the messages that people were receiving about climate change were more personal and vivid as Costanzo et al\textsuperscript{47} stress, then the importance of the issue in people’s daily lives would increase as well. The concerns mentioned by focus group participants as being more prominent than climate change con-

\textbf{City of Medford Focusing on Visibility.}

Interviews with public officials revealed that the City has focused on reducing municipal emissions and on making changes that can be seen throughout Medford, including the installation of the wind turbine at the McGlynn Elementary school, the addition of electric vehicles to the municipal fleet, and the installation of solar panels on the roof of City Hall. Other interviewees that did not represent the City felt that if the Mayor and Medford city officials made climate action an even higher priority, then the citizens of Medford would also be more willing to take action.

\textsuperscript{46} Costanzo et al, 1986.
\textsuperscript{47} Ibid.
cerns included childcare, work, and paying the bills. Recycling was noted by many as an action that had become a daily routine and priority. Actions related to climate change mitigation, such as turning off lights, lowering the thermostat, and reducing energy consumption were listed as important parts of several participants’ daily routines, but for most, the motivations were financial and not necessarily driven by a desire to mitigate climate change. Financial incentives, which are perhaps a more personal incentive, were mentioned fifty-seven (57) times throughout the interview and focus group process, twenty-seven (27) times in interviews and thirty (30) times in focus groups.

Costanzo et al\(^\text{48}\) also discuss how information needs to come from a credible source in order to be effective. They reference another article\(^\text{49}\) that found that households that believed they received information pamphlets from state regulatory agencies used significantly less electricity the following months than did households that believed they received the information from their utility company. Conservation information from utility companies is often mistrusted by consumers because they are not believed to be credible sources, which is particularly detrimental since the utilities are often in the best position to disseminate information. The authors also emphasize that energy conservation technology adoption follows a social diffusion model, and that people will rely more on information received by their peers (than on information received by others) and that in relation to innovations that are not well understood (like energy conservation technologies), people will tend to model their own behavior after the behavior of their social network.

An article by Rose, Dade and Scott\(^\text{50}\) compliments Costanzo et al\(^\text{51}\) very nicely by emphasizing the idea that the information itself is not enough to inspire wide-scale behavior changes throughout a population. In addition to the factors outlined above, these authors focus on the psycho-

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48 Ibid.
49 Craig and McCann, 1978.
50 Rose, Dade and Scott, 2007.
51 Costanzo et al, 1986.
logical aspects of creating behavior change and they argue that many information campaigns fail because they present an idea in terms that are meaningful and poignant for one segment of a population, but not for others. This article was selected for this report because it presents a framework for reaching a variety of different populations and personality types effectively, something that will be important in a diverse community like Medford.

Based on Maslowian psychology, the authors identified three main psychological needs, and they developed a system of three corresponding categories, into which the population can be divided. Those categories are Settlers, Prospectors and Pioneers. Settlers are those individuals whose needs are mostly focused on sustenance or security; they have a need for belonging, identity and safety. Settlers tend to look to the past and dislike anything new or different as these things have the potential to threaten their belonging or security. The second group, the Prospectors, have esteem or ‘outer directed’ needs; their self-esteem is important and they rely on others and outside sources to boost their own esteem. Prospectors live in the present and seek rewards in terms of fashion, status, success and recognition. The final category, the Pioneers, have inner directed needs; they often have a strong ethical basis for their lives and finding meaning and discovering new truths are important to them. Pioneers like change and discovery as long as those changes are based in an ethical framework that is acceptable to them.

“ If I don’t buy into it, no matter what someone tells me, it’s not going to happen.”

By separating people into these different value groups, the authors argue that we can better understand what will motivate changes in their behavior, and messages can be tailored differently to reach different groups more effectively. Presenting a problem in terms that will work for one of these groups will not work for the others, because they will see the problem differently based on what they value. With an understanding of the values that a group of people holds, the authors describe the potential for creating a list of Do’s and Don’ts that will be most effective in marketing behavior change to each sub-group of the population. The authors emphasize the importance of not only knowing what the message is that is to be conveyed, but also the importance of knowing the population to whom you will be presenting the message.
Another article that compliments Costanzo et al\textsuperscript{52} as well as Rose, Dade and Scott,\textsuperscript{53} is one written by Wimberly,\textsuperscript{54} which is focused on the idea of the use of marketing strategies in trying to induce behavior change and the importance of credible sources and peer networks in achieving changes. This report is also relevant because of its applicability in determining the most effective way to communicate information to different groups of people, and to achieve the desired behavior change as a result. The report highlights the results of a survey conducted by EcoAlign, a strategic marketing firm. The survey was administered to a stratified random sample of 1,000 U.S. households to gauge their feelings with regard to climate change and their personal responsibility of contributing to reducing climate change, their willingness to take action, what actions have been taken, and who people think is responsible for climate change action and mitigation. Because this study was conducted by a for-profit marketing firm, the report language is slanted towards hiring the company for future efforts to target green consumers and there is undoubtedly quite a bit of bias in all aspects of the study. Nonetheless, the report provides information that is relevant to this project.

As Semenza et al\textsuperscript{55} also concluded, this survey found that most respondents are aware of climate change and how it affects their personal lives (e.g. different weather and temperatures). Almost three quarters of respondents indicated they feel it is important to reduce the negative impacts of climate change (two-thirds of these respondents felt it was “extremely” or “very” important). However, the survey also found that most respondents expressed unwillingness to pay extra to help mitigate climate change, and that although respondents indicate that individual citizens are primarily responsible for reducing climate action, the majority does not feel that their personal action could have an impact.

“When people learn about something and then talk about it as a group, I think it has a very different impact than when you do it on your own... I think it can be more powerful.”

\textsuperscript{52}Ibid.
\textsuperscript{53} Rose, Dade and Scott, 2007.
\textsuperscript{54} Wimberly, 2008.
\textsuperscript{55} Semenza et al, 2008.
The study calls for a new kind of marketing called “cell activation marketing” to be used to engage citizens in environmental actions and behavior change. Cell activation marketing consists of “activating cells of believers in critical audiences to promote transformation.” This helps create credible sources of information (termed “messengers” or “ambassadors” in this report), a requirement for behavior change that Costanzo et al highlighted in their article, and also engages peer-to-peer networks to increase awareness and stimulate action. In this model, each “cell” can be activated based on its individual system of values, as discussed by Rose, Dade and Scott, allowing for the differences between “cells” to be a strength to the marketer or policy maker, instead of an obstacle.

The report makes four recommendations to increase engagement and create more effective communication. These recommendations are focused on marketers reaching their customers, but they can easily be applied to governments or other organizations reaching constituents. First, you must segment your market and create campaigns that appeal to different audiences. Again, this is related to the idea discussed above in Rose, Dade and Scott’s article about targeting different personality types and values systems that exist within a population. Second, the message must appeal to your audience emotionally. Third, the source of information matters: you should identify leaders of your segmented audiences and leverage your connection with them to deliver the message. This relates once again to the credible source issue brought up by Costanzo et al. Wimberly’s final

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Participants Have Already Taken Some Action

Recycling was noted by many as an action that had become a daily routine and priority. Actions related to climate change mitigation, such as turning off lights, lowering the thermostat, and reducing energy consumption were listed as important parts of several participants’ daily routines, but for most, the motivations were financial and not necessarily driven by a desire to mitigate climate change.

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59 Ibid.
60 Costanzo et al, 1986.
61 Wimberly, 2008.
recommendation is that you should have the structures in place to facilitate engagement once people are interested.

This article ties into many of the themes discussed above in relation to the interview and focus group findings from this project, including the need to appeal to different audiences in a way that is personal and meaningful to them. Interviewees expressed the idea that “you can’t have a single approach [to reaching people] … You have to use every avenue out there.” In his interview with the Field Projects team, Mayor McGlynn spoke of “educat[ing] people through marketing.” The need for credible sources and the importance of peer activities on people’s behavior was expressed repeatedly by focus group participants. These subjects were brought up twelve (12) times in discussions with the Field Projects team (see Appendix H). Four (4) people expressed views that, as more and more people begin to make behavior changes, others will start to change too. The remainder of the participants felt that this was only effective for visible actions, like recycling, whereas for the actions that are taking place inside of people’s homes, this concept is more difficult. In order to effectively send signals to residents about what can be done to mitigate climate change and to inform people about the causes of the problem, as six (6) people mentioned, the information must come from an appropriate messenger. “The radicals,” as one participant described environmentalists, “think [one] way and expect everybody else to do it.” This was described as a “bad PR.” Another participant stated that in Medford, “outsiders won’t have an influence … there is an old school way of thinking.”

The focus groups in particular revealed that in Medford, more could be done to tailor messages to different groups, and that it would be more effective to communicate those messages through peers or other credible sources, as outlined in Wimberly’s recommendations.

62 Ibid.
McKenzie-Mohr and Smith’s 1999 book, *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing*\(^{63}\) explores many of the concepts discussed above related to effective messaging, and is included in this report because of the important connections that can be drawn between the authors’ detailed strategy for inspiring individual action to environmentally-beneficial activities based on community-based social marketing (CBSM) principles, and the findings from this project’s qualitative research. Through the use of a literature analysis and qualitative research including observational studies and focus groups, the authors identify the tools for discerning the barriers to behavior change that exist within the target community; a step that is argued to be necessary for the implementation of a successful social marketing program. A discussion of the barriers that exist in Medford will follow below (see Section 3.2.3).

Following careful analysis of the existing barriers, there are several factors that the authors argue can aid in maximizing results of the program’s efforts. The first is gaining tangible commitment from community members, in verbal or written form, which makes it more likely that a person will follow through on a plan, in keeping with an internal desire to appear consistent in word and action, related to the other social-psychological factors discussed above. Use of prompts is another technique that has proven effective, in the form of visual reminders that encourage either one-time or repetitive behavior changes, such as buying a natural product in a store, or remembering to throw recyclables in the appropriate container. Communication materials are extremely beneficial to any marketing campaign. CBSM strategies rely on a vivid presentation of information, which takes into account the target audience and tailors messages accordingly; an important concept that is discussed in detail above. The authors find that most commonly, messages which emphasize losses due

\(^{63}\) McKenzie-Mohr and Smith, 1999.
to inactivity will be more effective than those which focus on savings that can be gained by switching to a new behavior, such as composting.

Establishing community and social norms is another critical element for a CBSM campaign that leads to lasting change. One effective way of creating norms is to model the desired behavior so that others may see it in action. This is in line with the stated strategy undertaken by the City of Medford. In an interview with the Field Projects team, Medford’s Environmental Agent Patricia Barry framed this issue as:

“How can the city expect the residents of Medford to perform these energy efficiency actions when the city themselves hasn’t even performed them yet? So what we believe here at the city is leading by example and going through the process and seeing what we need to do so that we aren’t just preaching, we’re actually teaching and letting other people know what needs to happen and we’re doing that because we’re actually doing it ourselves.”

Now that the City has taken strides to model the desired behavior, Barry says that they are ready to take the next necessary steps to engage the community in mitigating their contribution to climate change. She said, “We’ve been talking about … how to bring the municipal and the residential together.”

McKenzie-Mohr and Smith also argue that compliance and conformity are other idiosyncratic nodes of human behavior that can be called upon to provoke action from individuals. As the articles discussed above by Costanzo and Wimberly emphasize, these authors also argue that enlisting leaders in the community to deliver messages will help with social diffusion of the new information, and the personal connection will increase the chances of success in achieving a desired change in behavior.

“The only way to get to this generation is through the schools.”

64 Ibid.
65 Costanzo, 1986.
3.2.2 Actions Already Taken by Medford Residents to Mitigate Climate Change

Interviewees and focus group participants identified a variety of actions that they have taken which they believe will serve to reduce their individual impact on climate change. One of these actions was recycling, which was listed by all interviewees and participants. Since the recycling rate for 2007 in Medford is 15%, these findings may indicate that, despite the Field Projects team’s variety of recruitment efforts, only a fairly environmentally engaged segment of the population actually participated. Another action that was listed by several individuals was participation in the “Green Up” program through their utility company. This is a program where utility customers can choose to pay a premium for renewable energy sources, essentially ‘greening’ the City’s energy supply. Other actions that were listed included switching to compact fluorescent light bulbs, and the use of rain barrels. Six (6) people in total noted an effort to drive less by riding bikes or using public transportation. Only three (3) interviewees, and even fewer focus group participants, stated that they had undertaken some of the bigger ticket changes to reduce their emissions or energy consumption. These larger scale actions include replacing appliances for more efficient ones, weatherizing homes, and switching to pellet-fueled stoves.

3.2.3 Perceived Barriers to Action

Semenza et al, introduced above, found that in the cases of Houston, Texas and Portland, Oregon, the most commonly cited reason for not changing behavior was that respondents did not know how to change their behavior to reduce their impact. The next most commonly cited reason was that respondents felt that changing only one’s own behavior would not make a difference. In addition, lack of money and time were cited as barriers to behavior change. All of these issues also arose

Lack of Education

Every interviewee stressed the importance of education and there was a consensus that a lack of education is a major barrier to creating climate action in Medford. 12 interviewees believed that the government should play a larger role in educating the public about climate change. Focus group participants supported the results from the interviews; this subject was mentioned in focus group discussions nine times.

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67 Massachusetts Department of Environmental Protection, 2009.
69 Pelletier and Sharp, 2008.
throughout the interviews and focus groups conducted by the Field Projects team as the most important barriers to action on climate change.

Every interviewee stressed the importance of education and there was a consensus that a lack of education is a major barrier to creating climate action in Medford. Twelve (12) of the interviewees believed that the government should play a larger and more aggressive role in educating the public about climate change, what it means, and what can be done about it. It was acknowledged that there is an abundance of information available, but it was stated by these interviewees that without a certain level of basic knowledge about the issue, the information can be difficult to comprehend. An example was given of the existence of tax credits and rebates for energy efficiency improvements. People are unaware of their existence, and without understanding the problem, people will be less likely to search out such programs or to understand their importance. Focus group participants supported the results from the interviews which showed that lack of education is an important barrier to creating behavior change. This subject was mentioned in focus group discussions nine (9) times.

An article by Pelletier and Sharp, was included in this report because it expands on the second most common of the barriers presented by Semenza et al., related to the perception that people have about how individual actions can impact a problem or lead to its solution. This barrier was also found by the Field Projects team to exist in Medford. Pelletier and Sharp examine how different strategies in delivering a persuasive message can be interpreted differently by individuals, and how tailoring the message appropriately can impact its effectiveness and the amount of desired behavior change that actually occurs.

 Scope of the Issue

The scope of the climate change issue was mentioned as a barrier to action 15 times in focus group discussions. Four participants thought that their actions to mitigate climate change would make a difference, and that all of the small steps people take will “add up,” but the same people later expressed a sense of helplessness when dealing with an issue of the magnitude of climate change, a sentiment that was expressed eleven times in focus groups.

71 Pelletier and Sharp, 2008.
A particularly relevant example that the authors highlight involves the reaction in individuals that can occur when they receive information, or a message, about a problem that seems too large to be within their personal control. Fear is sometimes used as a strategy to induce behavior change in people; however the authors posit that in some cases people deal with fear with defensive avoidance, especially in those cases where solutions are perceived to be beyond personal control. In such cases, the authors argue that if fear is to be used as a tactic, it is important to provide all relevant information regarding a problem, and also to present individuals with all of the possible steps that can be taken to help resolve the problem.

The authors conclude that tailoring messages to match three distinct phases of inducing behavior change will be most effective in having the desired changes actually take place. These phases include first making people aware of the problem with information that will provide them with a rationale for the actions and changes that will follow. Second, the authors state that communicating the actions that could be taken, and their importance, to reduce the risks of a problem is necessary. Finally, once people have decided to make a change in their behavior, information on how, when and where specific behavior changes should be implemented is necessary in order for individuals to translate their intentions into real changes.

Other literature by Rose 72 was also chosen by the Field Projects team for inclusion in this report because it supports this idea that an individual’s perception of the scale of the problem and their ability to make a difference is important. Rose 73 focuses on how the media can get in the way of successful action against climate change. He argues that by placing a disproportionate amount of emphasis on the problem of climate change, as compared to what can be done to mitigate the

73 Ibid.
problem, the media creates a feeling in people that the problem is so large in scale that any solution is beyond the control of individuals. In the portrayal of the climate change issue, Rose suggests that to create more behavior change, the messages that are generated need to be more linked to people’s lifestyles and activities (such as ‘green’ products, brands, stores, or vacation alternatives) than to a belief or disbelief in climate change or a focus on the scale of the problem. He also argues that there needs to be a focus on the local and the regional in the media in order for people to become more active. The larger the scale of the problem is the more likely people are to feel that a solution is out of their control.

The concept discussed in the literature above concerning the scope of the problem being a barrier to action seemed to differ between interviewees and focus group participants in this research project. None of the interviewees stated this as a barrier to action, while in the focus groups this topic was mentioned fifteen (15) times. Four (4) participants thought that their actions to mitigate climate change would make a difference, and that all of the small steps people take will “add up,” but the same people later expressed a sense of helplessness when dealing with an issue of the magnitude of climate change; a sentiment that was expressed eleven (11) times in focus groups. People expressed hope that their actions would make a difference – for example, “I want to believe that they [the actions taken] can make a difference.” But, they also expressed doubt. One participant stated that he has doubts that he is making much of a difference, but does it anyways because he would feel guilty if he did not take action. Another respondent said “I hear impending doom” when asked what comes to mind when the phrase climate change is referred to. Another participant felt that the phrase “doesn’t capture the immensity.” Someone else stated that:

“Climate change seems like such a huge, worldwide situation. When I hear climate change, it takes on that big, big aura of ‘I can’t do anything, what can I do about it?’ Whereas if I brought it down to more what I could do then I think it would have more impact. … I can’t do anything about the war in Afghanistan, I can’t stop anything that’s happening in Iraq, I can’t bring peace to the Middle East, I can’t bail out AIG. I’m affected by all of that, I have no control over any of that. But … yes, I can use less electricity, I can do some of those things. It’s not that one thing is more important … it’s just what can I do? These ma-

“I would love to put solar panels on my house but I can’t afford them.”

74 Ibid.
jor problems that face the world, I don’t have the ability to change them. But I have the ability to turn down my thermostat."

Addressing, or developing a strategy to address, the scale of the climate change issue is not something that the interviewees, who are the leaders of Medford’s environmental community, have considered based on the findings of this study. But, it is an important barrier that prevents some people in the community from taking action on climate change. Related focus group findings show that the phrase ‘climate change’ itself can add to the seeming immensity of the problem and the term can also be a barrier to people making behavior changes. Referring to the term ‘climate change,’ one focus group participant described it as “overwhelming.”

However, the understanding and perceptions about what the term ‘climate change’ means seemed to vary among focus group participants. While some thought that it conveyed a message of a problem that was too large for individual action to make any difference, there were others who thought that the term did not create a sense of urgency which would lead to behavior change. When discussing the phrase ‘climate change’ participants made statements such as, “I don’t think it’s descriptive enough,” or “it’s vague … soft.” The idea that the term did not resonate with people or inspire them to make change, either because the problem was made to seem too big or too small, arose during focus groups on ten (10) occasions.

In a different vein, Semenza et al75 also highlighted cost and time as significant barriers to action on climate change issues. The Field Projects team found these factors to be important barriers in Medford as well. Cost and finances were emphasized by all interviewees and focus group partici-

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pants. This factor was expressed to be a major barrier which prevents people from being able to make changes or improvements even if they would like to do so. This barrier was perceived by all interviewees to be prohibitive for the majority of Medford residents, but all interviewees also listed financial constraints as a barrier to the changes that they themselves would like to make. All interviewees expressed a desire to take more action than they were currently taking, but monetary concerns were often stated as being prohibitive. Focus group findings supported the perception from interviewees that cost is a significant factor for Medford residents in making decisions to change their behaviors. One participant stated that “Money trumps everything.” Money was discussed by all focus group participants, and it was brought up specifically in the context of being a barrier to making behavior changes thirteen (13) times. One respondent expressed frustration at how it is “difficult to find the money to make changes.”

Even at the municipal level, finances were stated by the Mayor and the Environmental Agent to be a primary concern which limits the action that the City of Medford can take to mitigate climate change. According to Mayor McGlynn, climate change and environmental concerns come second to finances for the City of Medford.

Time and convenience were also frequently cited (See Appendix H) as barriers by both interviewees and focus group participants. Several interviewees stated a belief that many of the changes that could be made by Medford residents are not made because those changes do not fit easily into an established daily routine. For example, choosing to take public transit, walk or bike, rather than drive a car. Time and convenience were mentioned 14 times in the focus group discussions as factors preventing individuals from changing their behavior to mitigate climate change. Eleven other participants also stated that other priorities, such as work and children, take up the majority of their time.
were mentioned fourteen (14) times in discussions with the Field Projects team as factors preventing individuals from changing their behavior to mitigate climate change. One participant expressed the feeling that “there are more things to do than there is time to do them.” Eleven (11) other participants stated that other priorities, such as work and children, take up the majority of their time. If changes to their daily routines were not convenient, people were less likely to make those changes. Related to convenience, safety was also mentioned by one (1) participant as a barrier to behavior change, specifically to do with reducing automobile use by walking or cycling. The participant said, "I might let my kids ride their bikes to school if I thought there was a proper way for them to go, but there isn’t. They’d get run over."

In addition to the barriers to action discussed by the interviewees above, there are other factors that may be relevant to Medford and should be considered in an examination of the barriers. Semenza et al76 postulate that the difference in the amount of behavior change between the two cities they studied could be due to the structural and social differences of the cities. Portland has more public transportation options, higher recycling rates, more locally-grown food available, and more mixed-use neighborhoods than Houston. These factors, which presumably make it easier for residents to live low-carbon lifestyles, may affect behavior change.

The findings of the research by Semenza et al77 create some important connections between awareness and concern, and the barriers, including local infrastructure, to actual changes to behavior. These findings are also important for consideration in the context of Medford. A perceived barrier that was stated by people in the interview process was the limits of the City government. A belief that the municipal government in Medford is too small

76 Ibid.
77 Ibid.
with insufficient manpower to be effective on climate issues was stated by two (2) interviewees. The remaining interviewees felt that environmental concerns, and climate concerns in particular, are not a high enough priority for the City government. One interviewee said, 

“He [the Mayor] is not being a champion or advocate for ... He ought to be talking about it at all turns, for all to do. The city would be leading by example as best it could. He would be always acknowledging the limits but promoting that you stretch the envelope. ...That needs to happen from the top, and the bottom up is the same thing. Every community organization ought to be saying the same thing to their membership and to their neighbors.”

The fact that these issues are not a priority for the City is in itself perceived as a barrier since strategies to mitigate climate change would be more effective with more resources allocated to them. The structural systems need to be in place in order to make the desired behavior changes feasible.

3.2.4 Incentives for Medford Residents

One of the tools emphasized repeatedly by interviewees as being effective in inspiring climate action is the use of peer pressure. Establishing social norms and generating pressure from colleagues, family members and neighbors is widely thought to be a smart strategy in creating changes in behavior. This strategy is discussed above as part of McKenzie-Mohr and Smith’s Community-Based Social Marketing model. One form of social pressure that was particularly emphasized in the qualitative research performed for this study was the pressure that children exert on their parents. All interviewees felt that schools would be an excellent venue through which to educate students, who would in turn educate their parents and inspire behavior change as they bring home what they learn. It was stated twenty-one (21) times (See Appendix H) that this would be an effective way to educate the community as a whole and to reach many sub-populations within Medford since the school curriculum could reach the entire student body and all of the neighborhoods and communities that they represent. Since families tend to be interested in supporting what their children are doing in school, these interviewees believe that by engaging the children, the children can in turn influence parental behavior. Focus group findings showed similar support for this idea. The school system was mentioned sixteen (16) times during focus group discussion in relation to being a valuable way to increase education and motivate behavior change. One participant explained that when the children talk about what they are learning

in school, and ask questions about the topics that they are doing projects on, the parents often learn about those subjects too.

It was also noted during several interviews that improving or increasing education about climate change issues can serve as an incentive to make changes in behavior, by highlighting the direct benefits that are related to those actions. Examples of incentives to change behavior that were discussed include reducing the negative health effects of pollution, the health benefits associated with walking and biking, and the related healthcare costs that go along with these.

Competition was cited as a potentially effective means of creating incentives to change behavior in both interviews and focus groups. Several interviewees and focus group participants discussed their involvement with or knowledge of a local reality television series called “Energy Smackdown” (See Appendix H) that encourages contestants to make greater reductions in their energy consumption than the other participants. This topic came up in the findings twenty (20) times. The potential for competition between schools was also discussed by one (1) interviewee.

McKenzie-Mohr and Smith describe financial incentives as an additional important tool of a Community-Based Social Marketing program. Financial incentives were also found to be important incentives to create behavior change in Medford related to climate change, based on the findings of this study. Money was discussed twenty-seven (27) times in interviews in the context of providing motivation to change behavior (See Appendix H). It was stated by these interviewees that the use of tax breaks and other financial incentives

Educating the Community Through the Schools.

All interviewees felt that schools would be an excellent venue through which to educate students, who would in turn educate their parents and inspire behavior change as they bring home what they learn. Focus group findings showed similar support for this idea. The school system was mentioned 16 times during focus group discussions in relation to being a valuable way to increase education and motivate behavior change. One participant explained that when the children talk about what they are learning in school, and ask questions about the topics that they are doing projects on, the parents often learn about those subjects too.

Ibid.
would serve to increase the awareness about climate issues and also increase the amount of climate action being taken within Medford. Tax incentives would allow these interviewees to make some of the changes that they are interested in, and so many also feel that such incentives would make those changes more accessible to the greater public as well. In addition to tax incentives and rebates, the importance of demonstrating to people that an action can save them money was also expressed by many interviewees. There is a strong perception that talking about money and lowering costs to individuals will be the most effective way to create change.

This perception was reinforced in the focus group findings. Financial incentives were mentioned thirty (30) times by focus group participants. Two (2) individuals listed tax incentives and rewards specifically, as factors that would potentially inspire them to change their behavior, and another participant described monetary savings as a “huge influencer.” McKenzie-Mohr and Smith recommend the pairing of an incentive at the time that the desired behavior is likely to occur. An example of this is providing a rebate for using reusable grocery bags. Incentives should provide a reward for positive action and when possible, external barriers to action should be removed. This includes such actions as distributing recycling containers to residents, making the desired behavior more convenient, and preferably less expensive than older methods. When possible, a good strategy is to look to neighboring communities to see how they have dealt with similar barriers. This is closely related to the structural systems, discussed above, which are required in order to make the desired behavior changes feasible.

In addition to the creation of financial incentives, there was also some discussion by interviewees of the importance of creating financial disincentives in order to stimulate changes in behavior. An example that was given was the creation of a tax on gas to create a disincentive to drive and will

**Competition**

Interviewees and focus group participants cited competition as a potentially effective incentive to change behavior. They discussed their involvement with or knowledge of a local reality television series called “Energy Smackdown” that encourages contestants to make greater reductions in their energy consumption than the other participants. This topic came up in the findings twenty times. The potential for competition between schools was also suggested by one interviewee.

80 Ibid.
result in behavior changes that mean that people will be more likely to find alternative means of transportation that result in lower carbon emissions.

Two articles, Crompton and Barr, are included in this report because they argue that in order to adequately tackle environmental problems and create significant behavior changes in individuals, it is necessary to move beyond the marketing approach discussed above and to target personal value systems. The importance of values was not something that arose as part of the findings of this report, but this literature suggests that they are another factor that should be considered in the creation of behavior change.

Crompton argues that it is necessary to reassess current approaches to motivating behavior change and that strategies for inspiring behavior change must engage the personal value systems that define the decisions that individuals make. While marketing-type approaches to behavior changes like the ones discussed above may be effective in motivating specific changes on a piece-meal basis, the author argues that such approaches may undermine the potential for more far-reaching and universal changes that they argue are needed. Focusing only on financial incentives and changes that are small and easy for people to make can create behavior change that is motivated not by an underlying sense of values but by smaller rewards. The underlying motivations associated with marketing-based approaches can lead people to make one environmentally favorable change in their behavior, and exchange that behavior for a contradictory one. Crompton highlights that the reasons for adopting particular changes have important implications related to the energy and persistence with which such changes are pursued.
In the article by Barr,\textsuperscript{85} the paradigm that citizen engagement can be achieved by increasing awareness and disseminating more information is again challenged. The author cites numerous papers that demonstrate that there is not a “linear” relationship between information dissemination and action, and that people interpret the information they receive on the environment in terms of their own personal experiences. Like Crompton,\textsuperscript{86} Barr\textsuperscript{87} also discusses the importance of appealing to people’s values and the need to consider psychological factors in developing campaigns to create behavior change.

Barr\textsuperscript{88} characterizes the factors that affect environmental action into three categories: environmental and social values, situational factors, and psychological variables. From other empirical studies, the author asserts that people who are altruistic (as opposed to egotistic), and who are most open to change, are more likely to be engaged in environmental action. The situational factors which affect environmental behavior include an individual’s demographics, ability to access services, and their past experiences and knowledge. Not surprisingly, Barr\textsuperscript{89} has found that people with access to services like recycling pick-up, public transit, or locally-grown food tend to be more engaged in pro-environmental behavior than their counterparts that have limited access to such services. He finds that studies that compare the environmental actions of individuals based on demographics (education, wealth, age, and gender) do not always produce similar results, so he draws no generalizations. Concerning knowledge, Barr\textsuperscript{90} states that how the information is perceived is of much higher importance in determining environmental action than the actual content.

\textbf{Financial Incentives.}

Money was discussed 27 times in interviews in the context of providing motivation to change behavior. Interviewees stated that the use of tax breaks and other financial incentives would serve to increase the awareness about climate issues and also increase the amount of climate action being taken within Medford. In addition to tax incentives and rebates, the importance of demonstrating to people that an action can save them money was also expressed by interviewees. This perception was reinforced in the focus group findings; financial incentives were mentioned thirty times by participants.

\textsuperscript{85} Crompton, 2008.
\textsuperscript{86} Barr, 2003.
\textsuperscript{87} Ibid.
\textsuperscript{88} Ibid.
\textsuperscript{89} Ibid.
\textsuperscript{90} Ibid.
Barr’s discussion of psychological factors begins by again discussing the role that “altruistic” behavior plays in an individual’s decisions. In addition, he says that the satisfaction (the warm-and-fuzzy feeling and general feelings of heightened self-worth) that a person feels from engaging in environmental behavior has a major effect on the continued commitment to action for that individual.

Based on data from a survey of 673 randomly selected households, Barr finds that recycling behavior is most affected by the situational and psychological factors, but that the environmental values piece he discusses above matters little for recycling. More specifically, size of the house, knowledge about what the city accepts in the recycle bin, access to the curbside recycling program, awareness and acceptance of recycling as a social norm, and level of concern about waste issues were found to have positive statistically significant relationships to recycling behavior.

With regards to waste minimization, on the other hand, Barr finds that environmental values and demographic variables play a larger role than for recycling. Not surprisingly, the survey revealed that people who value environmental protection and believe the environment is of value engage in more waste minimization action. He also finds a negative relationship between recycling and waste minimization and concludes that this could be an example of people feeling that they have done their part by recycling and so fail to engage in any other behavior.

Barr highlights the fact that many factors affect an individual’s environmental action, and that promotional activities should depend on what action or behavior policy makers wish to increase.
He discusses how curbside recycling has become a norm that citizens understand and believe to be worth the minimal effort required to perform the action, but that the same has not happened for waste minimization activities. He suggests that a cause of this may be the fact that individuals can respond to waste minimization in a large number of ways, and because of all the divergent actions individuals can take, this may have slowed the adoption of any one activity as a norm like in the case for recycling. A key result from Barr’s study is that the individuals who recycle are not the same individuals who engage in waste minimization activities. This is important for policy makers to understand so as to distinguish the targets of their promotional efforts.

Related to the ideas discussed above about the importance of psychological factors in motivating behavior change, Oshikawa explains the importance of cognitive dissonance and the role that this can play in social marketing campaigns aimed at creating behavior change. This article was chosen for this report and will be briefly examined because of the relationship between these ideas about cognitive dissonance and the potential role that values and morals can play in creating behavior change among residents of Medford. Cognitive dissonance is an uncomfortable feeling that results when an individual holds two contradictory ideas simultaneously. This feeling may be aroused, for example, when making an important or difficult decision, or when being convinced to say or do something that is contradictory to private attitudes, opinions or beliefs. The feeling of dissonance can be alleviated or reduced as the result of attitude change, opinion change, or behavioral change. The concept of cognitive dissonance is often used in conventional marketing strategies, and it could also be applied to social marketing campaigns focusing on environmental behavior. By highlighting contradictions between an individual’s stated beliefs and their actions, the feeling of dissonance can be created. If provided with information on how to effectively change their behavior, such individuals will be likely to make those changes in order to lessen their feelings of dissonance.

In a book by Gardner and Stern, the importance of using many approaches in order to achieve behavior change is emphasized. While considering all of the approaches discussed in the articles outlined above (including information and

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95 Ibid.
96 Oshikawa, 1969.
education campaigns, the framing of the problem, using personally relevant messages for different personality types and values systems, utilizing peer networks and credible sources, and creating social norms), the authors argue that no one strategy is likely to work effectively on its own; an important message for those seeking to create behavior change among residents of Medford. Any campaign to create behavior change in a population should combine several of these approaches in a coordinated effort.

Gardner and Stern, 1996.
Chapter 4

Conclusions and Recommendations
Findings from this project confirm that the level of residents’ knowledge about the issue of climate change is a key factor in creating behavior change that will ultimately lead to a mitigation of climate change, yet prove that knowledge and information alone are not sufficient to inspire the lasting changes in individual actions that will lead to results.

In order to achieve the goals that Medford CAN has set out for itself and the city of Medford, more steps need to be taken to educate residents about the specific behaviors and lifestyle choices that contribute to climate change, and what they can do to alter these behaviors. The issue of climate change needs to be made more visible on a day-to-day basis, so as to begin transforming pro-environmental behaviors into a norm within the Medford community. To this end, the Field Projects team has several recommendations for its client, Susan Altman and Medford CAN.

First, the project team believes it is essential for the city of Medford to expand its current focus on municipal emission reductions to include community and residential emission targets as well. While it is a valuable and potentially effective strategy to lead by example, as explained by Environmental Agent Patricia Barry and Mayor Michael McGlynn, the Field Projects team believes that in the matter of climate change, the luxury of time simply does not exist, both in terms of the possibility of making significant reductions in carbon emissions, and in the potential to capture public interest surrounding these critical issues. It is time for the city to direct its current projects in a broadly marketed public campaign, and encourage residents to join with the Mayor and City Hall in the creation of a true citywide effort. Medford CAN and its members should play a prominent role in this campaign – acting as an advisory board and environmental outreach team for the Mayor and Environmental Agent who are only two people with a limited amount of manpower, knowledge, and resources at their disposal.

However, Medford CAN will need to enlist allies and other resources in order to effectively bring the message about energy efficiency and climate change to all residents of Medford. As noted repeatedly in focus groups and interviews, and confirmed in several literature review findings, individuals are more responsive to new information and suggestions when it is presented in face-to-face interactions, as well as
from members of their own peer group. For this reason, it is important that Medford CAN not see itself as the sole arbiter of the environmental message in Medford, and work to empower other citizens and community groups to take an active role in this task as well.

The Field Projects team was pleased to learn through focus groups that several members of the Kiwanis and Rotary clubs already possess a solid awareness about many of the facts and threats of climate change, its causes, and its potential solutions. These Rotarians and Kiwanians have access to extensive and existing networks of Medford residents (which are generally quite different from those affiliated with environmental groups such as Medford CAN), so armed with an even deeper understanding of climate change and some tools and strategies for disseminating information to their peers, they could greatly increase the overall knowledge-base of the Medford community.

Again, this is a place where Medford CAN members could be of great value. By reaching out to other community groups and offering them training and support to carry messages about climate change throughout Medford, the mission of the organization would be spread farther than they are able to reach in acting independently.

The discussion above centers primarily upon a theoretical shift in approach to climate change mitigation in Medford, whereby efforts are expanded from the municipal level to the community level, and environmental leadership within the city is broadened to include residents and organizations outside the traditional environmentalist sphere. The following paragraphs present some more concrete recommendations for shifting community behavior, based on qualitative findings from this research.

In terms of the barriers to action encountered in this research – that is, those that prevent Medford residents from making the lifestyle and
behavioral shifts that will lead to the greatest reduction in energy use and carbon emissions – the most frequently mentioned were structural and financial.

Structural barriers mentioned most frequently in interviews and focus groups included such things as minimal municipal recycling pickup, limited access to convenient public transportation, and lack of adequate bike and pedestrian trails that would lead to reduced personal automobile use. Findings showed that nearly all participants mentioned recycling in some capacity, and while recycling is acknowledged as an important element of municipal environmental behavior, it is not the most crucial to reducing carbon emission rates. In this light, a more aggressive and deliberate turn to advocacy, information dissemination, and marketing campaigns that revolve around more significant behavioral targets and actions – such as driving less, reducing home energy use, and limiting consumption of energy-intensive disposable consumer goods, is recommended. These campaigns must be highly visible and reach all members of the community. They may require the assistance of a trained marketing professional – preferably with some experience in community-based social marketing – to work independently or with Medford CAN and the city government to devise a strategy appropriate for Medford.

In terms of transportation strategies that will lead to a reduction in carbon emissions, it is suggested that Medford take more active strides towards the installation of clearly demarcated bicycle routes that will enable residents to commute both within and outside Medford via means other than their cars. The potential exists to link routes to those already established in the neighboring communities of Somerville and Arlington, which will give them an even greater use value. Marketing campaigns should also begin to tout the coming of the MBTA’s Green Line into the city of Medford as a positive presence that will enable residents to save money, time, and carbon by using the railways instead of the roads.

In addition to structural barriers, financial barriers were found to be a significant factor preventing individuals from making drastic changes to their lifestyles that would lead to significant reductions in carbon dioxide emissions. Several individuals mentioned having already made small changes in their homes, such as switching to compact fluorescent light bulbs (CFLs), lowering their thermostats, and recycling when possible. Many even reported knowledge of larger changes they could make, as well as interest in doing them, such as converting to more energy-efficient appliances, driving a hybrid car, and installing insulating win-
dows or solar panels on their homes. Yet, most individuals conceded that the high cost of such conversions were too prohibitive to take seriously. While it is acknowledged that cost will always be an influential factor in certain populations, it is also known that several financial incentive programs exist within utility companies, and state and federal governments that provide monetary support to those interested in making substantial investments in energy-reduction measures. Focus group and interview participants occasionally alluded to such measures, but reported not knowing where to obtain information or assistance and therefore not following-through with action. For this reason, it is recommended that Medford CAN compile – or help the city compile – an easily-accessible database, resource bank, or hotline where residents can go to obtain information about available incentive programs. If well-marketed, and taken advantage of by residents, this strategy would significantly increase knowledge and minimize financial barriers to behavior change by providing people with monetary reductions to make large investments more attainable.

Such a project could be implemented through Medford CAN’s official website, which is currently quite out of date – having not been updated since 2004. It is strongly recommended that the organization revitalize this site as soon as possible so that members and residents can conveniently learn about upcoming meetings, access facts and details about climate change and ways they can reduce their energy use, as well as the database of financial incentive programs for which they may qualify.

Providing an informational database is only one example of ways that Medford CAN can aid in the dissemination of information that will lead to emissions-reducing behavior change among residents. The Field Project team also recommends establishing an educational training program for community leaders to provide them with
accurate, specific, and translatable information about climate change that will allow them to better serve their networks of residents and empower their outreach efforts. These community leaders can then conduct their own informational sessions with a likelihood of greater success than if Medford CAN – as an outsider peer group – were to facilitate them.

Along these lines, the Field Projects team recommends a neighborhood approach to educating residents about climate change, whereby block leaders are established to answer questions and hold their neighbors accountable for their behavior and compliance. Focus group results indicated that a significant proportion of participants feel daunted by the scope of climate change, and feel powerless to make substantial impact. Block parties would be an excellent way not only to generate relationships among neighbors, but also to create an initial venue for discussion of key issues, and to help foster a collaborative feeling of empowerment by groups of neighbors working together to solve the climate crisis.

Another way to generate an increase in community involvement in climate change mitigation strategies, as suggested by every interviewee, is to increase environmental education programs in Medford’s public schools. Older residents see the next generation as the key to transforming their community and cultivating a lasting culture of environmentalism throughout society. Additionally, knowledge children gain in school is often carried home with them, thus working to change the behavior of other members of their household. As one Kiwanis club member we spoke to described, it was his teenage sons who ultimately encouraged he and his wife to convert to CFL light bulbs in their home, and to take other energy-saving measures such as lowering their thermostat after learning about climate change at school. Medford CAN could potentially become involved in environmental curricula development, by advising faculty
members, or serving as guest speakers in classrooms.

Medford is also uniquely fortunate to have one of the nation’s top institutes of higher education – Tufts University – within its city limits. This resource has thus far not been utilized to its full capacity, and much can be gained by fostering the relationship between Tufts and the City, particularly in the realm of climate change mitigation, through the exchange of resources and knowledge. Students and administrators could work with both Medford City Hall and individual organizations on larger-scale projects and initiatives to reduce energy use within the university and the rest of town, and foster the relationship between the two entities.

The final recommendation of this report is one of the most challenging, as it requires the reconsideration of use of the term ‘climate change’ which is thus far used quite pervasively both by Medford environmental leaders and in a majority of scientific and media reports on the issue. In several of the focus groups, Medford residents expressed concern, confusion, and dissatisfaction with the phrasing. Some thought it too scary and intimidating, others not scary and intimidating enough. One respondent said it made her think of the weather. This level of ambiguity has lead to the recommendation that Medford CAN and the city of Medford place more emphasis and focus on clarification of the term’s meaning, and on ensuring that educational materials and outreach programs provide clearly-articulated, easily understandable information about the facts and contributing activities to climate change. Creating a stronger level of comprehension about the true meaning of climate change will enable Medford residents to engage more fully with efforts and initiatives occurring both within and outside their community.

Though the work to be done in Medford towards deconstructing barriers and promoting incentives to climate change mitigation behaviors is challenging and extensive, it should be approached with a positive outlook and a can-do philosophy. With strategic organizing on the part of Medford’s city government and environmental and civic organizations, the community will have a strong foundation upon which to help guide ordinary residents into incorporating lifestyle and behavior choices that have a more profound impact on limiting their contribution to carbon emissions and climate change. By bringing in available out-
side resources (such as marketing professionals), engaging school children in the issue to the fullest extent possible, and by working to ensure that clear and articulate factual information is easily available to all populations within the Medford community, the city will begin to move towards achieving its goals of municipal emissions reductions ambitiously set forth in 2001’s Climate Action Plan, and to surpass them by experiencing a notable reduction in residential emissions as well.


1.0 INTRODUCTION TO MEDFORD CLIMATE ACTION NETWORK

Climate change has now arrived at a critical juncture. If significant action is not taken immediately, many experts contend, we may not be able to reverse or even halt the acceleration of greenhouse gas impacts. The reduction targets that scientists say are needed cannot be reached unless the residential sector – individual homeowners, renters, drivers, consumers and voters – makes its own deep cuts in carbon emissions. Unfortunately, major reductions have not yet happened in the United States – in any sector. And the U.S. uses 25 percent of the world’s oil resources and contributes a proportional slice to global greenhouse gas emissions.

Medford, Massachusetts, one of Tufts University’s host communities, has a reputation for progressive action on climate change. The city was the first in Massachusetts to pass and begin to implement a Climate Action Plan (CAP). The plan called for residents and the municipality itself to make reductions in carbon emissions, which it has largely implemented. A Clean Energy Committee, appointed by the mayor, focuses on renewable energy projects, while an active grassroots organization, the Medford Climate Action Network (Medford CAN) advocates for action on climate change. Medford CAN has lead several programs designed to encourage Medford residents to address climate change (see end of this document).

Despite these early successes, however, Medford – parallel to the many other communities without climate change initiatives – continues its struggle to engage a critical mass of residents to address global warming at the local level.

Yet climate change has proven to be highly resistant to the creation of public enthusiasm and willpower – particularly when seeking a civic response is local and personal. Research tells us that, in general, it is extremely challenging to make lasting changes in public behavior. Education alone does not typically achieve the desired result. Although for small, discrete changes – like convincing people to buy a particular brand of juice – private companies have been more successful, this often means investing enormous sums of money in the repetition of very simple attention-getting messages directed at a very specific goal. And this type of marketing works in part because the behavior involved is not the type that people feel very strongly about. However, complex activities that involve deeply held beliefs, ingrained habits, social norms, high cost or personal risk, or that call for repeated action, are much harder to change. Yet these are the very types of behaviors that the general public will have to engage in if civil society – operating at the local level – is to make a dent in climate change, not to mention the 80% reductions that scientists agree will be needed by 2050.

Many environmental activists think that, if they provide compelling information about a problem, people will act. But psychological and marketing research shows us that information is rarely enough. A critical first step in inducing people to respond to climate change is to identify barriers to action, and then to find incentives to overcome their reluctance to act. However, this step is often overlooked. A related mistake is to make assumptions about what causes individuals to act. Assumptions often are wrong. The only way to truly find out is to ask the people whose behavior we want to change.
2.0 EVALUATION QUESTIONS / PROJECT DESCRIPTION

This section presents an overview of the project and identifies the key evaluation goals and questions this project is designed to address.

2.1 Overview

The Field Projects team will perform community-based research among Medford citizens to identify and analyze barriers to and incentives for taking action to slow global warming. The project will focus on energy and energy-efficiency because these are areas in which individual residents can make a significant difference at the local level and thus perceive themselves to be contributing to a global solution, as well as potentially saving significant amounts of money.

The more specific goal is to identify Medford renters and homeowners who pay their own energy bills, and thus are likely to benefit from personal actions to reduce energy expenditures. Because energy and housing costs in the greater Boston area are extremely high, it is reasonable to assume that many Medford families have a strong incentive to cut their energy bills and save money.

With this knowledge, Medford CAN hopes to persuade community members to take more vigorous action to halt climate change. We expect that results from this research will have real-world implications for many other communities, as well.

The core of the project will be quantitative and qualitative research that helps gauge residents’ awareness of the climate change issue, their understanding of its connection to personal energy use, and their motivation for taking action. It will also look at barriers to acting.

The research methodology will include interviews with community leaders and focus groups with residents, as well as a literature review and a comparison analysis of a town similar to Medford that has succeeded in its climate action goals. Key research topics include:

- Interconnection among energy use, energy bills and climate change;
- Residents’ knowledge of home energy-efficiency measures and their relationship to climate change;
- Energy-efficient behaviors/actions that offer the best return on investment and time;
- Barriers preventing study group members from taking the behaviors/actions identified above; and Incentives to increase the number of people taking action/changing behaviors.

In addition, the Project Team will use the results from the interviews and focus groups to produce a draft survey instrument that could be used to survey Medford residents in the future. Medford CAN plans
to use the research findings to design and implement a pilot project to help change behavior of residents in the target groups by motivating them to take effective and substantial action to address climate change.

Medford represents a fairly typical East Coast urban community, with a solid middle-income base and a broad range of cultures. Thus, the city may serve as a model for research involving “average” U.S. residents, and barriers/incentives to reducing personal climate change impacts.

2.2 Project Goals/Evaluation Questions

As discussed above, this project will draw on survey data, focus groups, interviews, and a literature review to better prepare Medford CAN to increase local awareness of global climate change and help individuals and the community take action to control climate change. Based on a series of discussions with Susan Altman (Chair, Medford CAN), the Field Projects team developed a set of goals/questions to be answered by this project. These goals/questions are presented below:

- Are Medford residents aware of global warming/climate change issues?
  - Are different community groups (e.g. different racial groups) more or less aware than other groups? Which groups are most aware? Which groups are least aware?
  - Does physical location in the town affect awareness (as opposed to community group)? Other??

- How knowledgeable are Medford residents of global warming/climate change issues?
  - Are different community groups (e.g. different racial groups) more or less knowledgeable than other groups? Which groups are most knowledgeable? Which groups are least knowledgeable?
  - Does physical location in the town affect knowledge level?
    Other??

- How important do Medford residents think global warming/climate change issues are?
  - Do different community groups (e.g. racial groups) feel global warming is more important than other groups? Which groups feel the issues are most important? Which groups feel the issues are least important?
  - Does physical location affect perceived importance of global warming issues?
    Other??

- What are the perceived barriers for Medford residents to taking action to slow global warming?
  - Do different community groups (e.g. racial groups) perceive different barriers?
  - Does physical location affect perceived barriers?
    Other??

- What incentives would work best to persuade Medford residents to take action to slow global warming?
  - Do different incentives work for different community groups (e.g. racial groups)?
    Other??
• What actions have Medford residents already taken to reduce their individual impact on climate change?
  o Have different community groups (e.g. racial groups) taken different actions?
  o Have residents in different locations taken different actions?
    Other??

3.0 ANALYTICAL APPROACH

This section describes the Project Team’s approach to providing answers to the questions discussed above. As noted above, our approach to this project will involve five main components:

Literature review—The Project Team conduct a literature review focused on global warming/climate change action topics.

Comparison analysis—The Project Team will research a town similar to Medford that has succeeded in its climate action goals to highlight best practices and methods that may be transferred successfully to Medford.

Detailed interviews with influential members of the Medford community—The Project Team will interview key community members, including Medford CAN staff and public officials.

Focus groups—The Project Team will conduct a number of focus groups with residents who represent diversity in Medford (e.g., immigrants, seniors, and low-income people).

Analysis of the information and data collected through the above four components—the Project Team will perform an analysis of the information and data that we collect.

The first component (literature review) will provide background information on global warming/climate change issues facing communities similar to Medford. Topics will include:

Residential and municipal climate change, energy efficiency, and conservation issues
Behavioral change related to environmental issues
Social marketing

The literature review will provide background and context for the research and for the larger grant proposal that is expected to be completed in Spring-Summer 2009 by Susan Altman and other (non-UEP) colleagues.

The comparison analysis will provide a detailed account of “what works” for a town comparable to Medford. Selection of a town for the analysis will be based on demographics, climate, and public organiza-
tional structure. Detailed background information on Medford climate action and a community profile will also be compiled to assist in the comparison. The comparison analysis will highlight best practices and methods that have been successful in the comparison town so that they might provide ideas to Medford CAN about what is possible to implement in Medford.

The interviews and focus groups are meant to collect detailed information on how Medford residents view global warming/climate change issues and what the perceived barriers to and incentives for action are. The interview format will allow for detailed responses to questions and will also allow for us to explore issues through probing answers to questions. The focus group format will also help solicit more information from participants by allowing them to build on one another’s responses. Once we have conducted both the interviews and focus groups, we expect that some additional follow-up may be required with the interviewees (key community and governmental staff) to clarify issues that focus group participants have identified.

In addition to the five analytical components above, the Project Team will use the information collected in the interviews and focus groups to help formulate a valid, reliable, and effective survey instrument to be used in a future project to collect detailed data from Medford residents. We will use appropriate statistical design and implementation methods to ensure that the data collected are valid and reliable.

4.0 OPERATIONAL APPROACH

This section describes the tasks and their sequence that we will perform in completing the work.

4.1 Literature Review

The purpose of the literature review is to synthesize the available literature already out there related to climate change issues affecting Medford and Medford CAN. This task will begin immediately as it provides background information and context for the other analytical pieces. Search topics will include:

- Residential and municipal climate change, energy efficiency, and conservation issues
- Behavioral change related to environmental issues
- Social marketing

The Project Team will review 15 to 20 articles divided equally among the topics listed above.

4.2 Comparison Analysis

The comparison analysis will provide a detailed account of “what works” for a town comparable to Medford. Selection of a town for the analysis will be based on demographics, climate, and public organizational structure. This task will first focus on compiling detailed background information on current and past Medford climate action and creating a community profile. After creating a community profile, the Project Team will work with Medford CAN to conduct a search for a comparable town that has been able to
successfully inspire residents to take action related to climate change (and that has available data and reports documenting their success). The comparison analysis will highlight best practices and methods that have been successful in the comparison town so that they might provide ideas to Medford CAN about what is possible to implement in Medford.

### 4.3 Stakeholder Interviews

The Project Team will conduct interviews with Medford CAN staff, public officials, members of the Advisory Board, and others as agreed with client, to provide context about external factors impacting Medford community involvement with climate change action. The interviews will be designed primarily to collect information on:

- The Medford CAN process and involvement with the community.
- Government involvement in the effort to raise awareness and promote individual action on climate change.
- Interviewee perceptions of climate change awareness and action among Medford residents.

To prepare for the interviews, the Project Team will begin by developing an outline of the types of questions that should be asked of the interviewees. This outline will be circulated to Susan Altman and other reviewers as necessary for comment and review. We will then develop a draft set of interview questions for the Project Team and Ms. Altman to review, and make revisions as necessary.

The Project Team will work with Susan Altman to define a set of interviewees and their contact information. We will conduct as many interviews as possible in person (interviews will be performed via conference call if necessary). For each interview, we will use at least two project staff with one person acting as the primary interviewer and the second acting as a note-taker. We will compile notes from each interview into a format that can later be submitted as part of the final report.

### 4.4 Focus Groups

The Project Team will conduct 2-3 focus groups with Medford residents. We will work with Susan Altman to determine who should be involved with the focus groups. The focus groups will be conducted on the Tufts Medford campus because this will be easy for residents to get to. The groups will focus on collecting detailed information from residents on:

- Their awareness of global warming/climate change.
- Barriers to climate change action.
- Incentives for climate change action.
- Actions they have taken.
For each focus group, we will use at least two project staff with one person acting as the primary group lead and the second acting as a note-taker. We will compile notes from each focus group into a format that can later be submitted as part of the final report.

4.5 Analyze Interview and Focus Group Results

The Project Team will analyze the data from the interviews and focus groups to provide answers to the evaluation questions posed in Section 2. The interviews and focus groups will provide qualitative data including context, examples, and perspectives of residents and community leaders. These data will be supplemented with findings from the literature review and comparison analysis to demonstrate results and provide recommendations to Medford CAN.

4.6 Develop Medford Residents’ Survey Instrument

Once the analysis of the interviews and focus groups is complete, the Project Team will develop a draft survey instrument that can be used in a future project to conduct a statistically valid survey of Medford residents. The draft survey instrument will be designed to collect information on topics such as:

- Actions residents have taken
- Their awareness of global warming/climate change
- Barriers to climate change action
- Incentives for climate change action
- Other topics to be determined from interview and focus group results

Developing an effective and valid survey requires significant preparation. Full survey implementation would involve designing an implementation plan, developing the survey instrument, developing the sampling frame, pre-testing the survey, and finally, conducting the survey and compiling results. These steps require extensive background research, including interviews with key stakeholders and possible survey respondents. Given the project time frame and resources, it is not feasible for the Project Team to conduct a full survey implementation. However, the interviews and focus groups will provide the necessary data for the Project Team to develop a quality survey instrument to be used in survey implementation in the future.

The Project Team will develop a draft version of the survey instrument in MS Word format and deliver that version to Susan Altman for comment and review. Based on Ms. Altman’s review, we will revise the survey instrument and incorporate any final comments on the instrument’s contents and visual design. The final draft survey instrument will be included with the final report (discussed below).

4.7 Develop Report

1It is possible a very small-scale survey would be feasible to implement in the time frame for this project. However, given the sampling frame issues and the likely small number of responses, the Project Team believes a survey of this type would not be statistically valid and would not add data that the interviews and focus groups do not already cover. To use resources more efficiently, we recommend that a more robust survey instrument be designed during this project, to be implemented at a later date.

A-7
Once the Project Team has completed its analysis of the data, we will develop a draft report and deliver that report to Susan Altman for review and comment. We will organize a meeting to discuss the draft report with Ms. Altman and other key personnel. We will revise and finalize the draft report incorporating comments.

4.8 **Presentation to Medford CAN and City Officials**

The Project Team may present a summary of findings at a public meeting in Medford, which is to be arranged by the client.

5.0 **Schedule and Deliverables**

The Project Team schedule to complete this project appears in Table 5-1 on the following page.
<table>
<thead>
<tr>
<th>Task/Action/Deliverable</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
</tr>
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<td><strong>MOU</strong></td>
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<td>Draft MOU/Workplan</td>
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<td>Complete Final Literature Review</td>
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Memorandum of Understanding
between Tufts University Field Projects Team No. 8 and Susan Altman

I. Introduction

Project (i.e., team) number: 8
Project title: Medford Climate Action Network (Medford CAN): Inspiring the Local Response to Climate Change: An Examination of Barriers and Incentives
Client: Susan Altman

This Memorandum of Understanding (the “MOU”) summarizes the scope of work, work product(s) and deliverables, timeline, work processes and methods, and lines of authority, supervision and communication relating to the Field Project identified above (the “Project”), as agreed to between (i) the UEP graduate students enrolled in the Field Projects and Planning course (UEP-255) (the “Course”) offered by the Tufts University Department of Urban and Environmental Policy and Planning (“UEP”) who are identified in Paragraph II(1) below (the “Field Projects Team”); (ii) Susan Altman, further identified in Paragraph II(2) below (the “Client”); and (iii) UEP, as represented by a Tufts faculty member directly involved in teaching the Course during the spring 2009 semester.

II. Specific Provisions

(1) The Field Projects Team working on the Project consists of the following individuals:

Zoe Harris, Jacqueline Holmes, Brielle Kissel and Dallase Scott.

(2) The Client’s contact information is as follows:

Client name: Susan Altman
Key contact/supervisor: __________________________
Email address: Susan.Altman@comcast.net
Telephone number: 781-395-4664
Web site: http://www.medfordclimateaction.org

(3) The goal/goals of the Project is/are:

Please see Section 2.2 of the workplan above.

(4) The methods and processes through which the Field Projects Team intends to achieve this goal/these goals is/are:

Please see Section 3 and 4 of the workplan above.

(5) The work products and deliverables of the Project are (this includes any additional presentations
Please see Sections 4 and 5 of the workplan above

(6) The anticipated Project timeline (with dates anticipated for key deliverables) is:

Please see Section 5 of the workplan above

(7) The lines of authority, supervision and communication between the Client and the Field Projects Team are (or will be determined as follows):

Jacqueline Holmes will serve as the main contact person for the classroom and the client. Susan Altman has formed an Advisory Committee for this project and other climate change-related issues in Medford. At least one member of the Field Projects Team will attend each meeting held by Susan Altman and the Advisory Committee. All contact between the Field Projects Team and the Advisory Committee members will go through Susan Altman as the contact person.

(8) This project will follow the standard guidelines with regard to payment/reimbursement by the client to the Field Project Team for any Project-related expenses; namely, the client will submit $100 to an expense reimbursement fund that will be distributed to teams (through the UEP department) on an equitable basis. The Field Projects Team will keep and submit to the department prior to June 1, 2009 any project-related receipts for expenses up to $100, and be reimbursed through the expense reimbursement fund.

III. Additional Representations and Understandings

A. The Field Projects Team is undertaking the Course and the Project for academic credit and therefore compensation (other than reimbursement of Project-related expenses) may not be provided to team members.

B. Public distribution of the Field Projects results and research

Because the Course and the Project itself are part of an academic program, it is understood that the final work product and deliverables of the Project (the “Work Product”) – either in whole or in part – may and most likely will be shared with others inside and beyond the Tufts community. This may include, without limitation, the distribution of the Work Product to other students, faculty and staff, release to community groups or public agencies, general publication, and posting on the Web. Tufts University and the Field Project Team may seek and secure grant funds or similar payment to defray the cost of any such distribution or publication. It is expected that any issues involving Client confidentiality or proprietary information that may arise in connection with a Project will be narrow ones that can be resolved as early in the semester as possible by discussion among the Client, the Field Projects Team and a Tufts instructor directly responsible for the Course (or his or her designee).
C. Ownership of data, research materials and report
The client is expected to review all research data and notes. All deliverables allow for comments by client which will be incorporated satisfactorily into final deliverables. If the client uses the report in its entirety, normal citation procedures should be followed. If the client needs to summarize or rework individual sections, findings, or quotes from the report, she will contact one representative (to be determined) of the Field Projects Team for notification and approval.

D. Institutional Review Board Processes
It is understood that this Project may require the approval (either through full review or by exemption) of the Tufts University Institutional Review Board (IRB). This process is not expected to interfere with timely completion of the project.

IV. Signatures

For Susan Altman, Medford Climate Action Network
By: Susan Altman
Date: ___________

Representative of the Field Projects Team
By: Jacqueline Holmes
Date: ___________

Tufts UEP Faculty Representative
By: Robert Russell
Date: ____________
Institutional Review Board Approval

Re: IRB Study # 0902007
Title: Improving the Local Response to Climate Change: An Examination of Barriers and Incentives
PI: Jacqueline Holmes
Co-Investigator(s): Zoe Harris, Dallase Scott, Brielle Kissel
Faculty Advisor: Rusty Russell
IRB Review Date: 2/4/2009

February 5, 2009

Dear Jacqueline,

I have reviewed your Application for Exempt Status for the above referenced study. This study qualifies as exempt from review under the following federal guidelines:

Exempt Category 2 as defined in 45 CFR 46.101 (b). For complete details please visit the United States Department of Health and Human Services Office (DHHS) for Human Research Protections (OHRP) website at: http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.htm#46.101

Any changes to the protocol or study materials that might affect the exempt status must be referred to the Office of the IRB for guidance. Depending on the changes, you may be required to apply for either expedited or full review.

If you have any questions, please contact the Office of the IRB at (617) 637-3417.

Sincerely,

[Signature]

Yvonne Wakefield, Ph.D.
IRB Administrator
### Table C-1. Selected Statistics for Medford and Arlington, Massachusetts

<table>
<thead>
<tr>
<th>Category</th>
<th>Medford, Massachusetts</th>
<th>Arlington, Massachusetts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>Percent of Population</td>
</tr>
<tr>
<td><strong>SEX AND AGE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Population</td>
<td>55,670</td>
<td>100%</td>
</tr>
<tr>
<td>Male</td>
<td>26,137</td>
<td>46.9%</td>
</tr>
<tr>
<td>Female</td>
<td>29,533</td>
<td>53.1%</td>
</tr>
<tr>
<td>Median Age</td>
<td>37.8</td>
<td>--</td>
</tr>
<tr>
<td>10 to 14 years</td>
<td>2,587</td>
<td>4.1%</td>
</tr>
<tr>
<td>15 to 19 years</td>
<td>2,282</td>
<td>5.6%</td>
</tr>
<tr>
<td>20 to 24 years</td>
<td>3,091</td>
<td>8.5%</td>
</tr>
<tr>
<td>25 to 34 years</td>
<td>9,177</td>
<td>16.5%</td>
</tr>
<tr>
<td>35 to 44 years</td>
<td>9,365</td>
<td>16.8%</td>
</tr>
<tr>
<td>45 to 54 years</td>
<td>6,816</td>
<td>12.2%</td>
</tr>
<tr>
<td>55 to 59 years</td>
<td>3,545</td>
<td>6.4%</td>
</tr>
<tr>
<td>60 to 64 years</td>
<td>2,050</td>
<td>3.7%</td>
</tr>
<tr>
<td>65 to 74 years</td>
<td>4,390</td>
<td>7.9%</td>
</tr>
<tr>
<td>75 to 84 years</td>
<td>3,055</td>
<td>5.5%</td>
</tr>
<tr>
<td><strong>HOUSEHOLD TYPE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total households</td>
<td>21,354</td>
<td>100%</td>
</tr>
<tr>
<td>Family households</td>
<td>13,377</td>
<td>62.6%</td>
</tr>
<tr>
<td>With children under 18 years</td>
<td>5,123</td>
<td>24.0%</td>
</tr>
<tr>
<td><strong>EDUCATIONAL ATTAINMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population 25 years and over</td>
<td>39,940</td>
<td>100%</td>
</tr>
<tr>
<td>Less than 9th grade</td>
<td>1,691</td>
<td>4.2%</td>
</tr>
<tr>
<td>9th to 12th grade, no diploma</td>
<td>2,879</td>
<td>7.2%</td>
</tr>
<tr>
<td>High school graduate (or equivalency)</td>
<td>12,023</td>
<td>30.1%</td>
</tr>
<tr>
<td>Some college, no degree</td>
<td>6,195</td>
<td>15.5%</td>
</tr>
<tr>
<td>Associate’s degree</td>
<td>1,981</td>
<td>5.0%</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>9,022</td>
<td>22.6%</td>
</tr>
<tr>
<td>Graduate or professional degree</td>
<td>6,149</td>
<td>15.4%</td>
</tr>
</tbody>
</table>

Table continued on following page.
<table>
<thead>
<tr>
<th>Category</th>
<th>Medford, Massachusetts</th>
<th>Arlington, Massachusetts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>Percent of Population</td>
</tr>
<tr>
<td>RACE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>44,471</td>
<td>80.8%</td>
</tr>
<tr>
<td>Black or African American</td>
<td>5,699</td>
<td>10.4%</td>
</tr>
<tr>
<td>Asian</td>
<td>2,930</td>
<td>5.3%</td>
</tr>
<tr>
<td>Hispanic or Latino (of any race)</td>
<td>3,716</td>
<td>6.7%</td>
</tr>
<tr>
<td>Two or more races</td>
<td>622</td>
<td>1.1%</td>
</tr>
<tr>
<td>U.S. CITIZENSHIP STATUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign-born population</td>
<td>11,779</td>
<td>100%</td>
</tr>
<tr>
<td>Naturalized U.S. Citizen</td>
<td>4,976</td>
<td>42.2%</td>
</tr>
<tr>
<td>Not a U.S. Citizen</td>
<td>6,803</td>
<td>57.8%</td>
</tr>
<tr>
<td>LANGUAGE SPOKEN AT HOME</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population 5 years and over</td>
<td>52,632</td>
<td>100%</td>
</tr>
<tr>
<td>English only</td>
<td>38,259</td>
<td>72.7%</td>
</tr>
<tr>
<td>Language other than English</td>
<td>14,373</td>
<td>27.3%</td>
</tr>
<tr>
<td>Speaks English less than “very well”</td>
<td>6,606</td>
<td>12.6%</td>
</tr>
<tr>
<td>INCOME (in 2007 inflation-adjusted dollars)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total households</td>
<td>21,354</td>
<td>100%</td>
</tr>
<tr>
<td>Median household income (dollars)</td>
<td>67,100</td>
<td>--</td>
</tr>
<tr>
<td>Mean household income (dollars)</td>
<td>80,942</td>
<td>--</td>
</tr>
<tr>
<td>HOUSING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total housing units</td>
<td>22,543</td>
<td>100%</td>
</tr>
<tr>
<td>Year Structure Built:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1939 or earlier</td>
<td>14,475</td>
<td>64.2%</td>
</tr>
<tr>
<td>1940 to 1949</td>
<td>1,400</td>
<td>6.2%</td>
</tr>
<tr>
<td>1950 to 1959</td>
<td>1,688</td>
<td>7.5%</td>
</tr>
<tr>
<td>1960 to 1969</td>
<td>1,083</td>
<td>4.8%</td>
</tr>
<tr>
<td>1970 to 1979</td>
<td>1,184</td>
<td>5.3%</td>
</tr>
<tr>
<td>1980 to 1989</td>
<td>1,737</td>
<td>7.7%</td>
</tr>
<tr>
<td>1990 to 1999</td>
<td>375</td>
<td>1.7%</td>
</tr>
<tr>
<td>2000 to 2004</td>
<td>492</td>
<td>2.2%</td>
</tr>
<tr>
<td>2005 or later</td>
<td>100</td>
<td>0.4%</td>
</tr>
<tr>
<td>Occupied housing units</td>
<td>21,354</td>
<td>94.8%</td>
</tr>
<tr>
<td>Owner-occupied</td>
<td>13,558</td>
<td>63.5%</td>
</tr>
<tr>
<td>Renter-occupied</td>
<td>7,796</td>
<td>36.5%</td>
</tr>
<tr>
<td>COMMUTING TO WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers 16 years and over</td>
<td>28,437</td>
<td>100%</td>
</tr>
<tr>
<td>Car, truck or van (drove alone)</td>
<td>18,873</td>
<td>66.4%</td>
</tr>
<tr>
<td>Car, truck or van (carpooled)</td>
<td>2,947</td>
<td>10.4%</td>
</tr>
<tr>
<td>Public Transportation</td>
<td>4,522</td>
<td>15.9%</td>
</tr>
<tr>
<td>Walked</td>
<td>980</td>
<td>3.4%</td>
</tr>
<tr>
<td>Mean travel time to work (minutes)</td>
<td>26.5</td>
<td>-</td>
</tr>
</tbody>
</table>
Appendix D

Draft Survey Instrument

Medford Climate Action Network Survey
Susan Altman

Inspiring the Local Response to Climate Change: Survey of Medford Residents

Please take a few minutes to fill out this survey on attitudes and opinions about energy use and climate change in Medford. This survey has been mailed to a random sample of people living in Medford to help the Medford Climate Action Network (Medford CAN) assess local awareness and action regarding climate change, as well as to assist Medford CAN in understanding what barriers and incentives people face with regard to climate change action. Your response to this survey will help Medford CAN make improvements to our organization so we can better achieve our goals concerning community action.

This survey is completely voluntary and your responses will be kept completely confidential. Any results from the survey will be summarized across the sample and will not associate responses with a specific individual or household. In addition, we will not ask for any identifying information. Please return the survey in the enclosed stamped envelope. If you have any questions about the survey, feel free to contact the Help Desk for this survey at [phone number] or Email: Address@url.com.

Thank you very much for your participation in this survey.

General Information

How long have you lived in Medford? ________________

What area of Medford do you live in or identify with (e.g. West Medford, Wellington, Hillside, etc.)? ________________

How many people live in your household? ________________

Do you rent or own your own home?

Rent ○
Own a single-family home ○
Own a multi-family home ○

Do you pay your own utility bills?

○ ○ ○
Yes No Unsure

Are you the one in your household who handles bill paying?

○ ○ ○
Yes No Unsure
Gender: ________  Age: ________  Occupation: ________________

What is the highest level of education you have completed?
High school or equivalent  ○
Some college  ○
Bachelor’s degree  ○
Master’s degree of PhD  ○

What political party do you associate with?
Republican  ○
Democrat  ○
Independent  ○
Other ________________  ○

What is your combined household income?
Less than $25,000  ○
$25,001 to $35,000  ○
$35,001 to $50,000  ○
$50,001 to $75,000  ○
$75,001 to $100,000  ○
$100,001 to $150,000  ○
More than $150,000  ○

Where you born in the United States?
○ ○ ○ ○
Yes  No  Unsure

What is your ethnicity?
White  ○
Black or African American  ○
Asian  ○
Hispanic or Latino (of any race)  ○
Two or more races  ○
Other ________________  ○
Climate Change Issues

On a scale of 1 to 5, (with “1” being “Not strongly at all” and “5” being “Very strongly”), how strongly do you associate the following words with the term “climate change?”

<table>
<thead>
<tr>
<th>Word</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Weather</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Al Gore</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Government</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Pollution</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Carbon</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Temperature increases</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Ozone layer</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Recycling</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Global warming</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Polar bears</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Other __________________</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

Who/what do you think are the top five contributors or causes of climate change?

1. ______________________________________
   2. ______________________________________
   3. ______________________________________
   4. ______________________________________
   5. ______________________________________

Do you think that people’s behaviors/lifestyles are a major cause of climate change?

   O  O  O
   Yes  No  Unsure

Have you ever looked for information on climate change?

   O  O  O
   Yes  No  Unsure
If yes, where did you/do you typically look for information on climate change? (Please check all that apply)

- The Internet
- Printed media (newspapers, magazines, etc.)
- Television
- Radio
- School
- Conversations with friends or neighbors
- Conversations with experts
- Environmental groups
- Non-profit groups
- Government
- Other

Who/what are the top five sources of information about the environment that you trust and consider credible?

1. 
2. 
3. 
4. 
5. 

Do you have children enrolled in Medford Public Schools?

- Yes
- No
- Unsure

If yes, how much of the information that you get about environmental issues do you get from your children?

- All
- Most
- Some
- None
On a scale of 1 to 5 (with “1” being “Not important at all” and “5” being “Very important”), please rate the following questions.

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>How important do you feel the issue of climate change is?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How important do you consider climate change to be compared to the other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>issues that you face in your daily life?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How important is climate change to Medford’s Public Officials?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How important do you think your own actions are in reducing climate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>change?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you feel that your individual household’s actions can make a difference in reducing climate change?

- Yes, my actions can make a big difference
- Yes, my actions can make a little difference
- No, one household cannot make a difference
- Other __________________________

Who should have the primary responsibility for reducing climate change?

- Individuals
- Federal Government
- Local and state government
- Non-profit organizations
- Corporations
- Other __________________________

Do you think that climate change is a problem that requires government action?

- Yes, it requires immediate action
- Yes, but it does not require immediate action
- No, the issue does not require government action
- No, climate change is not a problem
- Unsure
On a scale of 1 to 5 (with “1” being “Not enough” and “5” being “More than enough”), do you think the following groups of people are doing enough to deal with climate change?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medford government</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Non-governmental organizations in Medford</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Environmental groups in Medford</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Businesses and industry in Medford</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>Medford residents</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>People in my neighborhood</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>My household</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
</tbody>
</table>

Is there anything you think the following groups of people can do to reduce climate change (that they are not already doing)? If yes, please describe what could be done.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medford government</td>
<td>o</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>Non-governmental organizations in Medford</td>
<td>o</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>Environmental groups in Medford</td>
<td>o</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>Businesses and industry in Medford</td>
<td>o</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>Medford residents</td>
<td>o</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>People in my neighborhood</td>
<td>o</td>
<td>o</td>
<td></td>
</tr>
<tr>
<td>My household</td>
<td>o</td>
<td>o</td>
<td></td>
</tr>
</tbody>
</table>
On a scale of 1 to 5 (with "1" being "Not effective at all" and "5" being "Very effective"), how effective do you think the following activities are at reducing climate change?

<table>
<thead>
<tr>
<th>Activity</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycling in the home</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business/Industrial recycling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reducing home energy consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buying more efficient appliances (such as EnergyStar products)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changing light bulbs in your home</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raising taxes on polluters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flying less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a programmable thermostat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air-sealing and insulating your home</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving a fuel-efficient car</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investing in renewable technology (e.g., solar panels)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Have you done any of the following to reduce your energy consumption or environmental impact? If yes, please describe why you took this action; if no, please describe why you did not take this action.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycling in the home</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Reducing home energy consumption</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Buying more efficient appliances</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Changing light bulbs in your home</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Driving less</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Flying less</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Using a programmable thermostat</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Air-sealing and insulating your home</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Driving a fuel-efficient car</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>Investing in renewable technology (e.g., solar panels)</td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
</tbody>
</table>
Can you give any examples of any actions, programs, or projects Medford government has undertaken to reduce energy consumption or environmental impact in Medford?

____________________________________________________________________________________

____________________________________________________________________________________

Can you give any examples of any actions, programs, or projects that other organizations in Medford have undertaken to reduce energy consumption or environmental impact in Medford?

____________________________________________________________________________________

____________________________________________________________________________________

**Additional Feedback**

Please list any suggestions or comments you have concerning climate change action in Medford.

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

____________________________________________________________________________________

Thank you for taking the time to fill out our survey. We rely on your feedback to help us improve our organization. Your input is greatly appreciated.
Interview Guide for Stakeholder Interviews

Interview Guide for the Department of Urban and Environmental Policy and Planning Field Project Investigation of Barriers and Incentives to Climate Change Behavior in Medford, Massachusetts

Tufts University’s graduate Department of Urban and Environmental Policy has currently employed one of its ten annual Field Project teams to investigate issues of climate change and pro-environmental behavior in Medford, Massachusetts. Our purpose for this interview is to gauge what leaders in the community are thinking about these issues.

1. Can you tell us the name and a bit about the mission of the organization/group you represent?

2. What is your position in the organization?

3. Please do your best to describe the population/community that you represent.

4. Within this population, do you recognize individuals who actively engage in pro-environmental behavior?

5. Do you perceive this population as one that has taken more or less action to reduce their personal carbon emissions as compared to other populations/communities in Medford?

6. Do you perceive an understanding within the population that you work with about what the climate change problem is? (ie. what the causes of the problem are? or what they can do to mitigate the problem?)

7. Do you perceive there to be a disconnect between the information that is available regarding climate change, and the actions that the people in Medford are taking?

8. What steps do you think could or should be taken to bring about more pro-environmental behaviors in Medford?

9. What, if anything, is your organization doing to promote knowledge and or action with regard to climate change?

   a. How effective to you think these actions are/have been?
b. Do you think the actions you have taken are sufficient?

c. What other actions could you take/would you like to take?

d. Do you think those actions would be more effective? Why? What would make them so?

10. Do you feel that anything prevents you from taking actions that you think would be more effective in encouraging people to mitigate their contribution to climate change?

11. Have you taken any personal action to mitigate your own contribution to climate change?

   a. Do you think you could do more?

   b. What? Why don’t you?

   c. Where do you get most of your information on climate change?

   d. Do you perceive a difference between the actions you have taken and the actions that others in your community have taken?

12. If you perceive that people in your community should or could be taking more action, what do you think is necessary in order to achieve that? (Incentives? Policies? Public service announcements? Etc.)

13. Do you think there are enough resources (money, time, manpower) in Medford to implement new strategies?

14. If there were enough resources, do you think residents would, on a whole, be receptive to new, community-wide initiatives? What about small business owners?

15. Would you be able to provide us with contact information for residents from your organization or acquaintance who might be willing to participate in one of our community focus groups? Or, are there any upcoming meetings or events that we could attend to solicit contact information from any interested parties?
Facilitation Guide for Focus Groups

Medford Climate Action Network:
Inspiring the Local Response to Climate Change:
An Examination of Barriers and Incentives
COMMUNITY FOCUS GROUP FACILITATION GUIDE

Note: We are aiming to get responses to the following topics by using the questions listed below each topic. Some questions fall into more than one topic, they will be marked with the number of the other topic to which it applies.

Introduction
   Tell us briefly about your neighborhoods.

1. What is the overall knowledge and awareness of climate change?
   • Which activities contribute to climate change?
   • What are some actions that people can take to limit their carbon emissions or energy consumption?
   • Which of these actions are most effective?
   • Where do you hear about climate change?
   • Have you ever looked for more information on climate change?
      Where did you look? Did you know where to look?
      Was the information easy to get? Was it easy to understand?

2. How important are climate change issues?
   • Do you consider climate change to be an important issue compared to the other issues that you face in your daily life? Which other issues are more important (values)? Why?
   • Do climate change issues influence your daily activities?
      What have you seen from Medford’s Public Officials to show that climate change is important to them?

3. What are the perceived barriers to taking action on climate change?
   • If you or your family has not taken any action to reduce energy use in your home, why haven’t you?
      Do you think that individual actions can make a difference when it comes to climate change?
4. What types of incentives would be most effective in persuading people to take action on climate change?
   
   - How do you feel about the level of action that the City is taking with respect to climate change? Should there be more or less action from the City?

   Who do you think should be initiating actions to reduce the causes of climate change? (Nobody? Individuals? Government?)

5. What actions have people already taken against climate change?

   Could we have a show of hands if you or your family members have taken any measures to reduce energy consumption in your home?

   What made you make those changes?

   What benefits, if any, have you seen from those actions?

   Do you think that these actions can save you money?

   Are there more actions that you would like to take? What prevents you from doing so?

   What are your neighbors and friends doing to reduce their energy use?

   Do their actions affect yours?

   Do you think your actions affect theirs?
## Statistics on Focus Group Participants

Table G-1. Tabulation of Focus Group Participants by Age, Sex, Level of Education, Home Ownership, Neighborhood, Utility Bills, Household Bill Paying, and Number of People in Household.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>Median Age [b]</td>
<td>51.7</td>
</tr>
<tr>
<td>Less than 30</td>
<td>1</td>
</tr>
<tr>
<td>30 to 40</td>
<td>2</td>
</tr>
<tr>
<td>41 to 50</td>
<td>4</td>
</tr>
<tr>
<td>51 to 65</td>
<td>9</td>
</tr>
<tr>
<td>Older than 65</td>
<td>1</td>
</tr>
<tr>
<td>Not Reported</td>
<td>1</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10</td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
</tr>
<tr>
<td><strong>Level of Education</strong></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>4</td>
</tr>
<tr>
<td>Some College</td>
<td>5</td>
</tr>
<tr>
<td>Bachelor’s</td>
<td>4</td>
</tr>
<tr>
<td>Masters/PhD</td>
<td>5</td>
</tr>
<tr>
<td><strong>Rent or Own Home in Medford</strong></td>
<td></td>
</tr>
<tr>
<td>Rent</td>
<td>3</td>
</tr>
<tr>
<td>Own</td>
<td>15</td>
</tr>
<tr>
<td><strong>Neighborhood [c]</strong></td>
<td></td>
</tr>
<tr>
<td>Central Medford</td>
<td>1</td>
</tr>
<tr>
<td>Hillside</td>
<td>1</td>
</tr>
<tr>
<td>Lawrence Estates</td>
<td>2</td>
</tr>
<tr>
<td>Main Street</td>
<td>1</td>
</tr>
<tr>
<td>Mystic Valley Parkway</td>
<td>1</td>
</tr>
<tr>
<td>North Medford</td>
<td>3</td>
</tr>
<tr>
<td>South Medford</td>
<td>2</td>
</tr>
<tr>
<td>Wellington</td>
<td>2</td>
</tr>
<tr>
<td>West Medford</td>
<td>6</td>
</tr>
</tbody>
</table>

Table continues on following page
# Statistics on Focus Group Participants

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utility Bills</strong></td>
<td></td>
</tr>
<tr>
<td>Pay One's Own Bill</td>
<td>18</td>
</tr>
<tr>
<td>Do Not Pay One's Own Bill</td>
<td>0</td>
</tr>
<tr>
<td><strong>Household Bill Paying</strong></td>
<td></td>
</tr>
<tr>
<td>Primary Person Responsible for Household Bills</td>
<td>14</td>
</tr>
<tr>
<td>Not the Primary Person Responsible for Household Bills</td>
<td>4</td>
</tr>
<tr>
<td><strong>Number of People in Household</strong></td>
<td></td>
</tr>
<tr>
<td>One</td>
<td>2</td>
</tr>
<tr>
<td>Two</td>
<td>7</td>
</tr>
<tr>
<td>Three</td>
<td>3</td>
</tr>
<tr>
<td>Four</td>
<td>3</td>
</tr>
<tr>
<td>Five</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Participants</strong></td>
<td>18</td>
</tr>
</tbody>
</table>
# Common Themes Emerging from Interviews and Focus Groups

Table H-1. Counts of Themes Mentioned during Interviews and Focus Groups

<table>
<thead>
<tr>
<th>Theme</th>
<th>Number of Times Mentioned</th>
<th>During Interviews</th>
<th>During Focus Groups</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barriers to Climate Action:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Restrictions</td>
<td>27</td>
<td>30</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Time Constraints</td>
<td>24</td>
<td>13</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Lack of Education/Disconnect between Beliefs and Actions</td>
<td>17</td>
<td>15</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Poor Communication about Climate Change Issues</td>
<td>8</td>
<td>15</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Safety [a]</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td><strong>Incentives for Climate Action:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial Incentives</td>
<td>27</td>
<td>30</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>School Environmental Programs</td>
<td>21</td>
<td>26</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Adult Education</td>
<td>17</td>
<td>15</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Environmental Project Visibility</td>
<td>13</td>
<td>16</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Government Participation and Leadership</td>
<td>12</td>
<td>12</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Peer Pressure</td>
<td>7</td>
<td>12</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Bike Lanes and Public Transport</td>
<td>5</td>
<td>6</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td><strong>Community Action/Activism: [b]</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Bulbs</td>
<td>13</td>
<td>14</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Recycling</td>
<td>14</td>
<td>15</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Wind Turbine</td>
<td>12</td>
<td>12</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Energy Smackdown</td>
<td>12</td>
<td>8</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Drive Less</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

[a] This theme refers specifically to safety of biking conditions. The unsafe conditions (e.g. lack of bike lanes) were cited as a barrier to taking action to reduce the amount of driving interviewees and focus group participants do on a daily basis.

[b] These themes refer to actions interviewees and focus group participants have already taken (e.g. replaced their light bulbs, participate in Medford’s recycling program), actions people could take to reduce their carbon emissions (e.g. drive less), as well as programs or projects that people associated with climate change action (e.g. the wind turbine in Medford and the Energy Smackdown program).