

Community-Based Social Marketing Recycling Pilot

Prepared for City of Waltham

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Community-based social marketing is an innovative approach to facilitating behavior change, emphasizing personal contact and communications, and provides an attractive alternative to traditional information-intensive public outreach campaigns.

EXECUTIVE SUMMARY

A 1999 survey indicated that Waltham residents strongly supported increasing the frequency of curbside collection from every other week to weekly collection, even when informed that it would cost taxpayers substantially more. Accordingly, in the fall of 2000 the City made this change, increasing collection costs by \$250,000 per year in the process. A variety of initiatives were employed to publicize the change, including newspaper articles and paid ads, a city-wide postcard, and flyers distributed in utility bills and recycling bins and sent home with school children.

Tonnage increased dramatically during the first few months of weekly curbside collection, but then subsided to the same levels observed during every-other-week collection. These results convinced the City's administration that it was important to uncover the remaining barriers to participation in the curbside program in order to guide future promotional efforts.

Accordingly, in July 2001, the City applied to the Massachusetts Department of Envi-

ronmental Protection (DEP) for a technical assistance grant to undertake a community-based social marketing (CBSM) pilot project. CBSM is an innovative approach to facilitating behavior change, emphasizing personal contact and communications, and provides an attractive alternative to traditional information-intensive public outreach campaigns. It involves identifying the barriers to an activity,

designing a strategy to overcome these barriers using knowledge from the social sciences, piloting the strategy to ensure that it is successful, and then implementing it on a broader scale.

This report details the results of the barrier research that was conducted in Waltham. Further, it describes the CBSM strategy that was devised to overcome identified barriers, and indicates how the strategy was piloted and the results of the pilot. Throughout the report emphasis is given to providing practical

advice that will assist recycling coordinators in adopting the lessons learned from this research.



Of those who were willing to speak to the telemarketer, 99% of the Commitment residents and 98% of the CSD residents were willing to review the sticker.

BARRIER RESEARCH

On November 15th, 2001 two focus groups were conducted that explored recycling in the City of Waltham. The focus groups investigated personal motivations for recycling, knowledge of what can and cannot be recycled, barriers to recycling, perceptions of yard waste collection, and recommendations regarding the current recycling program. In addition to the focus groups, in December 2001 and early January 2002 a telephone survey was conducted with a random sample of Waltham households. The goal was to identify barriers to greater waste diversion, and receive feedback from residents with respect to problems and concerns regarding curbside recycling and yard waste collection. The findings from the focus groups and telephone survey are briefly summarized below:

- ◆ Both the focus groups and telephone survey indicate that knowledge of what is recyclable is poor. Further, fully 18% of survey participants were not aware that they had weekly collection for recyclables;
- ◆ The vast majority of survey participants found recycling to be convenient and were satisfied with the range of items recyclable;
- ◆ Only 17% of survey respondents refer to the recycling guide provided by the City frequently and very few have kept the guide; and
- ◆ Focus group participants indicated that receiving information from the City on the effectiveness of recycling (amount diverted, money saved) would be motivational.

PILOT

Based on the information gleaned from the barrier research, a pilot was designed that made use of decals, commitment, and social diffusion. The pilot consisted of three conditions, with each condition being represented by a recycling route.

Control: The control group had decals applied to their recycling containers and were mailed a letter from the mayor and an extra

decals, but had no other contact.

Commitment: The commitment group also had decals attached to their recycling containers and were mailed a letter from the mayor and an extra decal. However, this group was also contacted by phone prior to the decals being attached and were asked to make a commitment to review the decal and for permission to have their names published in the newspaper.

Commitment & Social Diffusion (CSD): Residents in the third group were treated exactly the same as those in the commitment group except that they were also asked to make a commitment to speak to two or three neighbors about recycling.

The Commitment and CSD pilot areas were similar in size (1314 and 1404 households, respectively). However, the control group's garbage route was nearly twice as large (2151). Despite differences in size, the routes were chosen so as to be demographically similar to each other and the City as a whole. The demographics for each route were determined by using mapping software that overlays US census block groups over the route.

DECALS

A previous pilot in Sonoma County, California demonstrated that mailing decals to households, and asking residents to affix them to their recycling containers, resulted in roughly 25% of households having a decal on their container. Further, driving through the Waltham pilot areas over two consecutive weeks demonstrated that approximately 65% of recycling containers were set out. In an attempt to increase the number of containers with decals beyond 25%, it was decided to hire an agency to affix the decals rather than relying upon residents to do it themselves.

TELEMARKETING

Of those residents who were reached by telephone in the Commitment and CSD pilot areas, fully 88% were willing to speak to the surveyor. Of those who were willing to speak to the telemarketer, 99% of the Commitment residents and 98% of the CSD residents were

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willing to review the sticker. Further, 66% of the Commitment residents were willing to have their names published, while 54% of the CSD residents were willing. Finally, 84% of the CSD residents were willing to speak to neighbors (residents anticipated talking to 867 neighbors).

There were several indications during the pilot implementation that this outreach strategy was well received by Waltham residents. The vast majority of residents who were encountered during the decal application process were grateful to be provided with a decal. Furthermore, a member of the telemarketing staff reported that some of the residents with whom she had spoken had expressed their gratitude for the phone call.

RESULTS

For five weeks prior to and after the implementation of the strategies, the weight of paper and commingled recyclables was recorded for each of the three pilot areas. Analyses of these records indicated that paper tonnage decreased for the Control, Commitment and CSD pilot areas from the baseline to the follow-up (-8%, -30%, -5%, respectively). However, during the same period residential paper tonnage across the City of Waltham decreased by 2%. After adjusting for this seasonal decrease, the paper tonnage for the Control area decreased by 6%, the Commitment tonnage decreased by

28%, and the CSD tonnage decreased by 5%. Commingled tonnage increased for all three pilot areas, with the Control, Commitment, and CSD residents increasing their commingled tonnage by 2%, 7% and 17%. On a seasonally adjusted basis, however, the Control and Commitment commingled tonnage decreased by 11% and 6%, respectively, while the CSD pilot area showed a modest increase of 4%.

Finally, the non-seasonally adjusted overall tonnage showed a -5%, -22% and -1% change for the Control, Commitment and CSD areas, respectively. When seasonally adjusted, the Control, Commitment and CSD areas decreased their tonnage diverted by -6%, -23% and -1%, respectively.

CONCLUSION

With one exception, the three community-based social marketing strategies tested in this pilot did not positively influence tonnage collected. The lack of positive findings underscores the utility of conducting a pilot prior to broadly implementing a strategy. Further, it suggests that additional piloting is necessary to determine how to effectively overcome the knowledge barriers identified in this project. It may be particularly worthwhile to investigate whether the use of decals is effective when residents are highly motivated to recycle, as they would be in communities in which PAYT has been introduced.

The three community-based social marketing strategies tested in this pilot did not positively influence tonnage collected.

An essential first step in the development of effective programs is to understand the factors that lead individuals to engage in waste reduction activities.

PROJECT BACKGROUND

A 1999 survey indicated that Waltham residents strongly supported increasing the frequency of curbside collection from every other week to weekly collection, even when informed that it would cost taxpayers substantially more. Accordingly, in the fall of 2000 the City made this change, increasing collection costs by \$250,000 per year in the process. A variety of initiatives were employed to publicize the change, including newspaper articles and paid ads, a city-wide postcard, and flyers distributed in utility bills and recycling bins and sent home with school children.

The City's administration and recycling advocates expected that the added convenience of weekly collection would lead to a steep increase in recyclables tonnage. Further, because the City experiences a net savings of \$14 per ton recycled, the City stood to benefit financially from increased recyclables tonnage while enhancing its efforts to protect the environment. Tonnage increased dramatically during the first few months of weekly curbside collection, but then subsided to the same levels observed during every-other-week collection. These results convinced the City's administration that it was important to uncover the remaining barriers to participation in the curbside program in order to guide future promotional efforts.

Accordingly, in July 2001, the City applied to the Massachusetts Department of Environmental Protection (DEP) for a technical assistance grant to undertake a community-based social marketing pilot project.¹ Community-based social marketing (CBSM) is an approach to promoting environmen-

tally-friendly behavior that places a strong emphasis on identifying the barriers and motivations associated with the activity being promoted. Promoters then design a strategy to overcome the barriers and strengthen the motivations, using psychological knowledge about behavior change. The strategy is next piloted to test its effectiveness and later evaluated when it is implemented community-wide. The City's application coincided with a growing interest at the DEP in testing community-based social marketing as a tool for increasing participation in recycling and waste reduction programs. In fiscal year 2002, DEP provided statewide funding for training, technical assistance and demonstration projects in CBSM for municipal recycling program managers. From a statewide perspective, therefore, the Waltham pilot served as a local demonstration of the use of CBSM to increase recycling participation.

This report details the results of the barrier research that was conducted in Waltham. Further, it describes the CBSM strategy that was devised to overcome identified barriers, and indicates how the strategy was piloted and the results of the pilot.² Throughout the report emphasis is given to providing practical advice that will assist recycling coordinators in adopting the lessons learned from this research.

BARRIER RESEARCH

The first phase of this project consisted of two discrete tasks: conducting focus groups and completing a telephone survey -- each of which is briefly described below. The focus groups allowed residents of the City of Waltham the opportunity to explain in their own words the factors that influence waste reduction in their day-to-day lives. Two focus groups were conducted. In these sessions, a researcher selected by the City of Waltham led the participants through a prepared set of questions. Providing this structure to the focus groups ensured that all significant topics were addressed in each session. During each session, the researcher recorded participants' observations. These observations were tabulated and sent to McKenzie-Mohr Associates for further analysis.

¹ McKenzie-Mohr, D. & Smith, W. (1999). *Fostering sustainable behavior: An introduction to community-based social marketing*. Gabriola Island, B.C.: New Society.

²The project staff gratefully acknowledges the following contributions to the project: The bin decal used in the Waltham pilot was based upon a design originally created by Jessica Nolan, Recycling Program Manager for the City of Cambridge. Greg Smizer, Chair of the Waltham Recycling Committee, took several of the photographs of recyclable items that were used in the bin decal. The demographic analysis of the test areas was provided as an in-kind contribution to the project by Community Maps, Inc. of Columbia, Maryland.

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Focus groups were an essential first step in the development of a survey instrument that could be administered to a much larger and more representative sample of City of Waltham residents. While limited in scope by the number of participants and the qualitative nature of the information obtained, the focus groups nonetheless provided valuable information about the issues residents viewed to be important regarding waste reduction and also how they speak about the topic. As such, the focus groups helped to ensure that the telephone survey would be well constructed and that the questions contained in the survey would be readily understood by the respondents.

The telephone survey consisted almost exclusively of closed-ended questions that could be quantitatively assessed. The purpose of the telephone survey was to better understand the barriers to residents more fully participating in curbside recycling and yard waste collection.

FOCUS GROUPS

On November 15th, 2001 two focus groups were conducted by Research International that explored curbside recycling in the City of Waltham. Residents that lived in multi-family buildings that were served by toters were screened from participating in the focus groups. The focus groups investigated personal motivations for recycling, knowledge of what can and cannot be recycled, barriers to recycling, perceptions of yard waste collection, and recommendations regarding the current recycling program. Further, participants were asked what they believed would motivate people to recycle and what they believed would be the most effective methods to communicate with the public concerning this issue. The protocol for the focus groups is available separately. Responses from the two focus groups are provided below.

The first focus group included eight Waltham residents who had indicated over the telephone that they recycled frequently. In contrast, the second group was comprised of seven residents who indicated that they did not recycle at all and one who recycled occasionally. There were five women in the first focus group and four in the second.

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RECYCLING MOTIVATIONS

Both focus groups began with participants being asked: "If you recycle most or all of the time, what motivates you to do this? If you don't recycle or don't recycle as much as you could, what has stopped you?"

The majority of participants in the recycling focus group indicated that they recycled for environmental reasons. Those who suggested specific environmental motivations indicated that they were concerned with lack of landfill space, wanting to reduce pollution, and wanting to leave a habitable world for their grandchildren. Non-environmental motivations included habit and reduced costs for the City.

In the non-recycling focus group, residents provided a variety of motivations for not recycling. These included:

- ◆ living in an apartment which made storage of recyclables and carrying a container to the curbside difficult;
- ◆ believing that recyclables were picked up every other week and that, as a result, they would have nowhere to store the materials;
- ◆ laziness and inconvenience of preparing materials for recycling (e.g., easier to throw in trash);
- ◆ garbage and recycling collection not being on the same day;
- ◆ the rest of the household not being interested in recycling; and
- ◆ concern about odors and pests that they associate with storing recyclables.

The participants were also asked what would be most likely to motivate people in the City of Waltham to recycle. Residents from both groups suggested that receiving feedback from the City on the effectiveness of the program (amount diverted, money saved) would be motivational. In addition, participants suggested that more convenient bins (e.g., larger, with lids and wheels) and charging people directly for waste collection would affect participation.

Both groups were asked if there was anything that would encourage them person-

Research has identified that the most active half of recycling households contribute 80% of the total materials recycled.

Both recyclers and non-recyclers were able to identify common recyclables, such as newspaper and cans, but many less-common items, such as junk mail and boxboard, were not identified.

ally to recycle more. Several participants in the recycling focus group indicated that the weekly collection schedule and the acceptance of more items had increased their motivation to recycle. Several individuals also suggested that they would recycle more if they had larger recycling containers that would enable them to store more material. In response to the same question non-recycling participants provided reasons as to why they wouldn't recycle rather than what would motivate them to recycle. This was a trend throughout the discussion with the non-recyclers and suggests that if the City is to gain the participation of non-recyclers it will need to implement user-fees for garbage collection. The implementation of "pay-as-you-throw" fees often significantly increases motivation to recycle. Residents who were not recycling indicated that they did not feel pressured by others to recycle, in part because seemingly few people around them are active recyclers. While some of the active recyclers expressed dismay that fellow residents don't recycle, most do not appear willing to speak to neighbors about the issue.

MATERIALS FROM THE CITY

When asked how they learned about recycling, both recycling and non-recycling participants indicated that they had learned about it from pamphlets/flyers that the City had distributed, information in the newspaper, and the local cable channel. Some of the residents still had the flyer.

CONVENIENCE

Participants in the recycling focus group were asked how convenient it was to recycle. These individuals reported that recycling was very convenient. Indeed, one individual commented, "I don't know if it can be made more convenient." Participants in the non-recycling group were not asked about recycling convenience as they were not participating at that time.

While most residents in the recycling focus group were aware that recycling was collect-

ed every week, residents in the non-recycling group were not. Some commented that they might begin recycling now that they knew it was every week.

KNOWLEDGE

Participants from both groups were asked to identify the items that were recyclable. Both recyclers and non-recyclers were able to identify the common items (newspaper, cans, bottles, etc.) that can be collected but many items were not identified by either group (e.g., envelopes, boxboard, etc.).

Participants were then presented with a list of all recyclable items and were asked if they were surprised by anything that was on the list. Several Individuals indicated that they were surprised that junk mail and boxboard were recyclable. Concerns were also raised regarding how paper fiber (newspaper, magazines, etc.) should be prepared for recycling. Participants were not clear on whether these materials should be placed together or separated.

Suggestions regarding how to enhance knowledge of what is recyclable included sending out a newsletter, more frequent distribution of the recycling flyer (perhaps quarterly), and putting a sticker on the container.

YARD WASTE RECYCLING

Both groups were asked to identify the items that are collectable via the yard waste program and were asked when the City picked up yard waste. Members of both groups were able to name the main items that are collected and also identified items that should not be put out for collection. Participants were unclear as to how frequently and at what times of the year yard waste is collected.

The information gleaned from these focus groups was used toward development of the following telephone survey.

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TELEPHONE SURVEY

In December 2001 and early January 2002 a telephone survey was conducted with a random sample of Waltham households. The goal was to identify barriers to greater waste diversion, and receive feedback from residents with respect to problems and concerns regarding curbside recycling and yard waste collection. In general, telephone surveys are more reliable than focus groups in determining barriers. Since focus group participants interact with one another, there is the potential that participants' answers are influenced. Further, they suffer from poor generalizability because they involve only a small number of people.

METHODOLOGY

Overall, 347 households were contacted and asked to participate in the survey. Of these, 40% percent (140) agreed to participate (this level of participation is common for telephone surveys). Of those individuals who wished not to participate, 25 completed a refusal survey (14%), and 183 did not participate at all. This survey has a margin of error of plus or minus 3%, 19 times out of 20.

The full survey included questions that explored the types of materials that residents recycled in their recycling and yard waste containers, frequency of participation, and knowledge and beliefs regarding recycling.

Differences between the respondents who completed the full survey and those who completed the refusal survey were examined. These two groups of respondents did not differ regarding frequency of recycling participation, perceptions of the convenience of recycling, gender or education. The lack of differences between the two groups of respondents increases confidence in the generalizability of the results presented in this report.

Waltham residents who used toters were screened from participating in the survey. Of those who qualified and completed the full survey, 56% were female. Respondents reported on average being between "41-50" and "51-60" years of age and having "graduated college or technical school" and "some university." The majority of residents

lived in single-detached houses (68%) that they owned (69%). On average, 2.6 residents lived in each household.

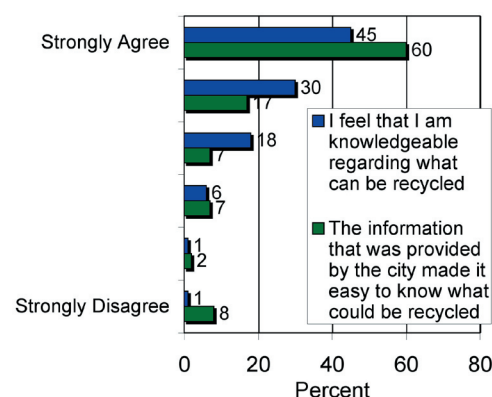
BEHAVIOR

Seventy-two percent of respondents reported recycling "all the time." When combined with those who reported recycling just less than "all the time," fully 85% of participants report recycling frequently.

KNOWLEDGE

Respondents were asked the extent to which they agreed with the statement: "I feel that I am knowledgeable regarding what can be recycled." While a total of 75% of participants reported moderate or strong agreement with this statement, ideally a larger percentage should be reporting that they strongly agree (45% indicated that they strongly agree). This finding suggests that an effective community-based social marketing strategy will need to enhance recycling knowledge despite the fact that residents report that the information that has been provided to them to date has made it easy to know what can be recycled. This assertion is strengthened by the following findings regarding knowledge of what can be recycled as well as self-reported diversion. Further, fully 18% of all participants are not aware that they have weekly pickup of recyclables. Indeed, when asked for further feedback regarding collection services several respondents stressed that collection should be weekly.

CHART: RECYCLING KNOWLEDGE



Fully 18% of all participants are not aware that they have weekly pickup of recyclables. Indeed, when asked for further feedback regarding collection services several respondents stressed that collection should be weekly.

Knowledge of the items that are recyclable is poor. The majority of recyclable items were recalled by less than half of the participants.

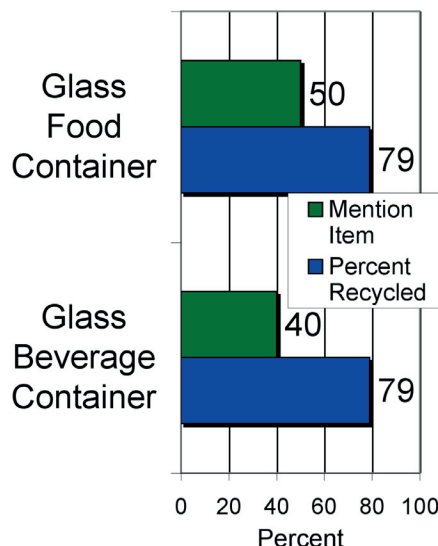
TYPES OF RECYCLABLES

Participants were asked to name as many items as possible that are recyclable through the curbside program. Once they had completed this task, they were subsequently read a list of the items that were recyclable and were asked to estimate the percentage of each that they diverted. For example, if a household believed that they diverted half of all newspaper via recycling, they would have answered 50%. The following charts present the percentage of respondents who knew an item was recyclable (green bars) and the average diversion estimates for each item (blue bars). The items in each chart are sorted from highest to lowest reported diversion.

GLASS RECYCLABLES

Fifty percent of participants knew that glass food containers were recyclable, while 40% knew that glass beverage containers were. While 50% or fewer respondents were able to mention these two items, on average respondents reported recycling 79% of their glass food and beverage containers.

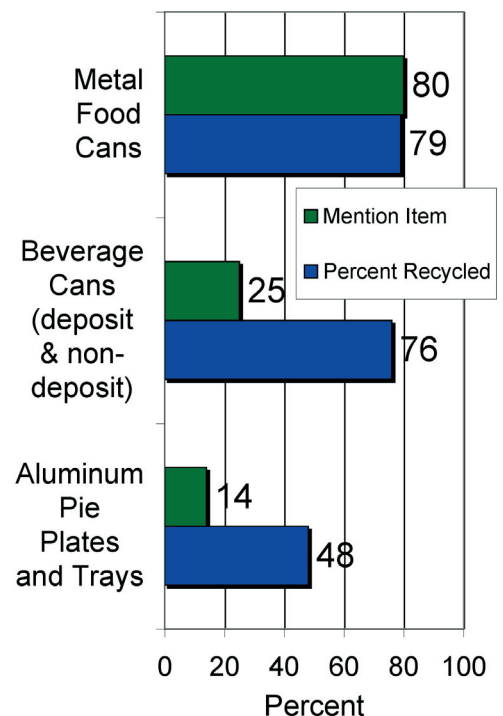
CHART: GLASS - MENTIONED & RECYCLED



METAL CANS AND FOIL

As shown below, metal cans were mentioned by a significant majority of respondents, 80%. Further, participants reported diverting 79% of all metal cans. Recall of beverage cans was much lower than for metal food cans, at 25%. However, when told that metal beverage cans were recyclable, and then subsequently asked what percentage of this item they recycled, respondents indicated that they diverted, on average, 76% of beverage cans. Aluminum pie plates and trays were recalled by only 14% of respondents and only 48% of this item was reported as recycled.

CHART: METALS - MENTIONED & RECYCLED



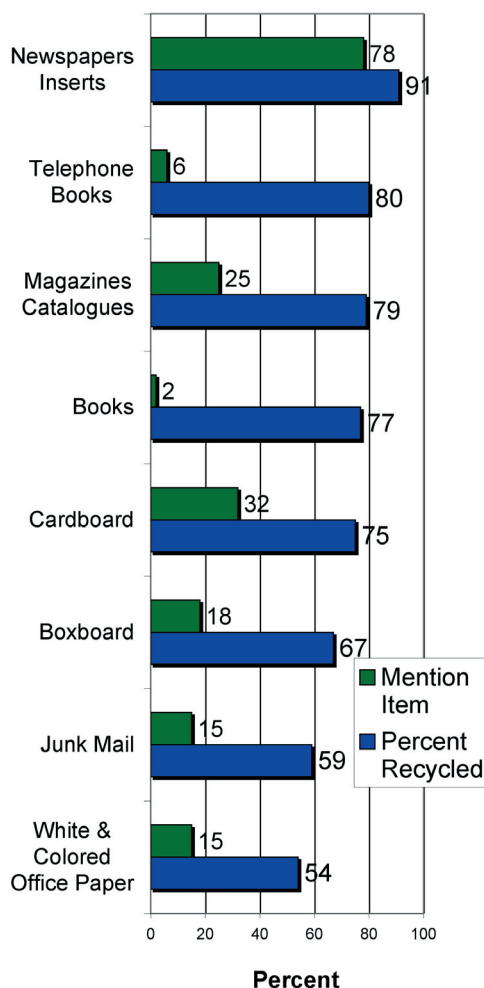
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PAPER AND CARDBOARD

As is clearly demonstrated below, recall of recyclable paper products is, with the exception of newsprint, very poor. For the seven non-newspaper items, knowledge of each item ranged from 2% to 32%.

Reported diversion levels for each of these items is considerably higher, but should be verified by a waste sort. Participants know that recycling is the “right thing to do” and that the survey was being conducted on behalf of the municipality. Consequently, respondents are likely over-reporting the amount that they are diverting for all of the items in order to appear socially responsible. This “social desirability bias” is particularly likely to occur when a person’s actions are not easily verifiable, as is the case here.

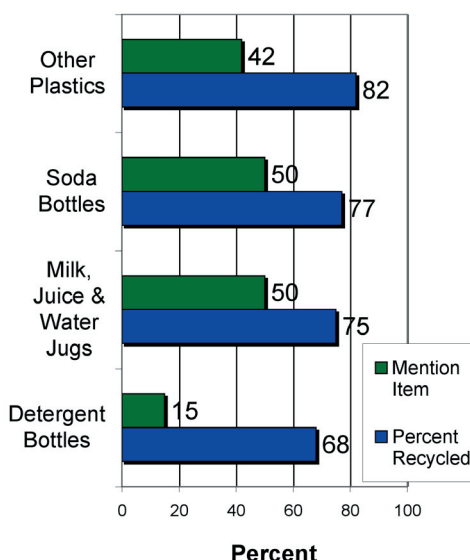
CHART: PAPER - MENTIONED & RECYCLED



PLASTIC RECYCLABLES

As with paper fiber recyclables, recall for plastic recyclables was poor. Fifty percent or fewer identified the four recyclable items. Reported diversion levels were once again significantly higher than recall.

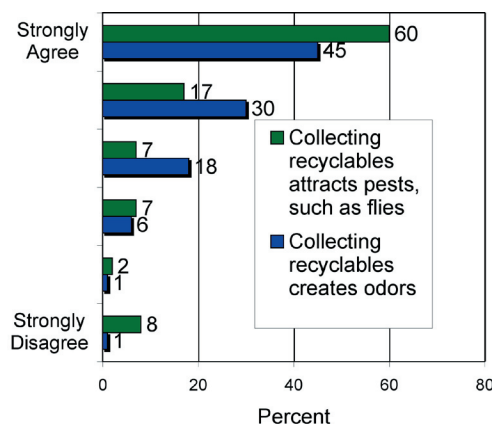
CHART: PLASTIC- MENTIONED & RECYCLED



RECYCLING BELIEFS

Participants were also asked about a number of other facets of the curbside program. As can be seen below, a significant majority (77%) moderately or strongly agree with the statement that collecting recyclables attracts pests, such as flies. Similarly, 75% also moderately or strongly agree that collecting recyclables creates odors.

CHART: PESTS AND ODORS



Three out of four participants believe that recycling attracts pests and flies, and creates odors.

The large majority of respondents find recycling convenient and are satisfied with the range of items that can be recycled.

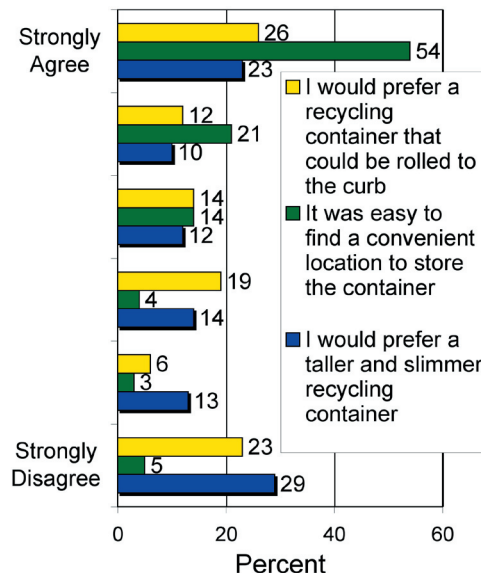
CONVENIENCE

Thirty-eight percent of participants moderately or strongly agreed that they would prefer a container that could be rolled to the curb. In a related item, respondents were asked if it was easy to get their recycling container to the curb. Only 6% moderately or strongly disagreed, suggesting that while some residents might prefer a wheeled cart, they are fairly content with the present container.

Concerning the ease of finding a convenient location to store the recycling container, 75% reported strong or moderate agreement that it was easy to find a location to store the container.

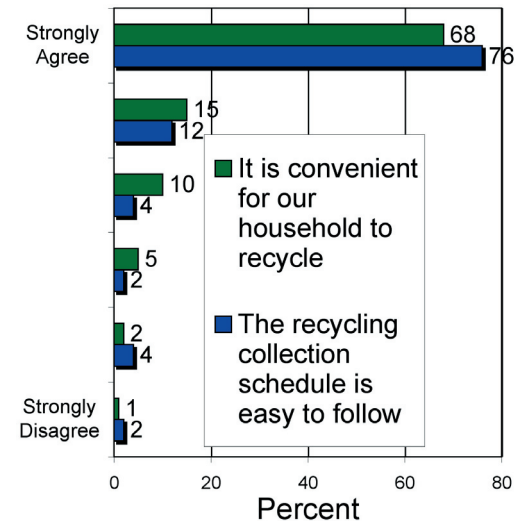
Participants were also asked if they would prefer a taller and slimmer container. While this option appealed to some residents, there was not overwhelming support for a differently shaped container.

CHART: CONTAINER CONVENIENCE



Regarding general convenience, respondents were asked to rate their agreement with two statements: "It is convenient for our household to recycle", and "The recycling schedule is easy to follow." Fully 83% moderately or strongly agreed that it was convenient for their household to recycle, while 88% believed that the recycling schedule was easy to follow.

CHART: GENERAL CONVENIENCE



SATISFACTION WITH RANGE

A majority of participants (74%) indicated that they were moderately or strongly satisfied with the current range of materials that could be recycled while only 3% indicated that they were moderately or strongly dissatisfied.

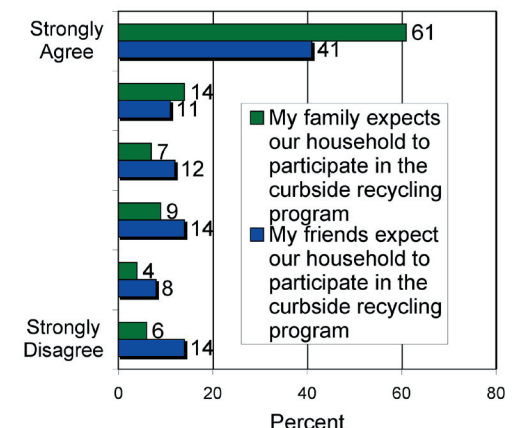
GOOD FOR THE ENVIRONMENT

As expected, the overwhelming majority of respondents (97%) moderately or strongly agreed that, "Participating in the curbside recycling program is good for the environment."

FRIENDS EXPECT US TO PARTICIPATE

Participants were also asked the extent to which they agreed with two statements that measure normative pressure to participate in curbside recycling. As shown below, 75%

CHART: NORMATIVE EXPECTATIONS



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moderately or strongly agreed that their family expected them to participate in curbside recycling. In contrast, 52% moderately or strongly agreed that their friends had similar expectations.

RECYCLING INFORMATION

Sixty-nine percent of respondents reported that they remembered receiving recycling information from the City earlier in the year. Those who reported receiving the information were subsequently asked if they still had the information. Fully 73% reported that they did (50% of all respondents).

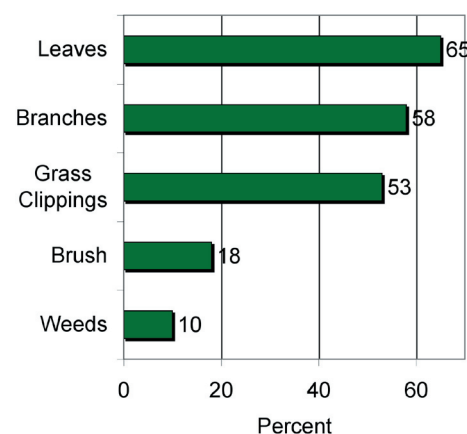
The participants who reported that they still had the recycling information were then asked how often they referred to this information when they had questions about what can be recycled. Thirty-four percent reported that they referred to the guide all or nearly all of the time (17% of all respondents). Finally, to gauge residents' receptivity to receiving information in the mail from the City, participants were asked: "In general, when you receive an envelope with the City seal on it, do you open it and read it or treat it as junk mail and throw it away?" Ninety-six percent reported that they open correspondence from the City.

YARD WASTE RECALL

Participants were asked to name as many items as possible that could be picked up via the curbside yard waste collection program. As can be seen below, knowledge of the various items that can be collected is quite low, ranging from a high of only 65% for leaves to a low of 10% for weeds.

Respondents were also asked how frequently yard waste was collected. Fifteen percent reported that it was weekly, 45% believed it was biweekly, and 39% were unsure. Finally, participants were asked whether they had any problems or concerns with the present collection services or the information materials that were provided. Nearly half of the respondents raised concerns. The most frequent complaint regarded yard waste collection. Respondents felt that collection of yard waste was inconsistent, did not run late enough into the fall, and had an unclear pickup schedule. The next most frequent concern involved the recycling container. Of those respondents who commented on the container, all but one wanted a larger container (one found it too heavy). Finally, participants raised concerns regarding the recycling of cardboard. In particular, they found it difficult, time consuming, and inconvenient to prepare.

CHART: YARD WASTE ITEMS MENTIONED



Knowledge of the items that can be picked up for yard waste collection is poor as is knowledge of the yard waste collection schedule.

One of the most significant challenges in delivering an effective recycling program is that not only does behavior need to be changed, but these changes also need to be sustained over time.

DEVELOPMENT OF CBSM STRATEGIES

The focus groups and telephone survey suggested several promising community-based social marketing strategies. Based upon the research conducted, the following emerged as important elements of an effective strategy to divert more recyclables and yard waste.

KNOWLEDGE

Knowledge of the collection schedule and what items are divertable needed to be improved. Fifty percent had kept the recycling information that the City had delivered and only 17% referred to it frequently.

One way to overcome the lack of knowledge that residents have regarding what is recyclable is to affix stickers to the side of recycling containers. Stickers have two advantages over more traditional methods of enhancing knowledge of what is recyclable. First, since they are attached directly to the container, they cannot be misplaced, thrown out or lost. Second, because the sticker is on the recycling container, it serves to provide timely and convenient information on what is recyclable at the point at which a resident is considering recycling an item.

The telephone survey gauged support for affixing decals to the sides of the recycling containers. Overall, 61% of respondents moderately or strongly agreed that having

stickers on the side of the recycling container would make it easier to know what is recyclable. Given the poor levels of recall indicated earlier for recyclable materials, it was encouraging that so many respondents supported the provision of stickers.

COMMITMENT

Affixing decals to the sides of recycling containers increases the likelihood that residents will become more aware of what items are recyclable. However, it doesn't ensure enhanced awareness, as there is no guarantee that residents will refer to the decals. To further increase this likelihood, residents can be asked to make a commitment to refer to the decals when they have questions. Research demonstrates that residents are more likely to follow through on such commitments if they are made public. Commitments can be made public by asking residents if they are willing to have their names published in the newspaper, along with others who have made a similar pledge.

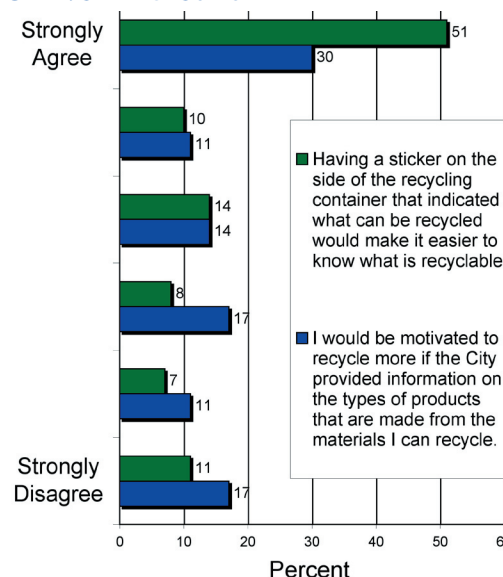
Commitments can also be used to encourage neighbors to discuss recycling with one another. These conversations are referred to as social diffusion and have been found to be one of the most important methods for changing behavior.

STRATEGY FOCUS GROUPS

To test resident support for the use of decals, commitment, and speaking to neighbors, a second round of focus groups was held on February 2, 2002. Two strategy focus groups were conducted, one with men and the other with women. Both focus groups were comprised of residents who recycle and both groups were diverse with respect to age and ethnicity. Below are the key findings of the focus groups (a more detailed description is provided in Appendix A):

- ◆ Attaching decals to recycling containers was favored by both men and women;
- ◆ Decals should make use of graphics to ensure that their content is understandable to a wide audience; and
- ◆ Despite the effective use of commitment in other projects, focus group participants

CHART: STRATEGY SUPPORT



Community-Based Social Marketing Pilot ■

were opposed to being asked to make a commitment, and women in particular were uncomfortable with their names being published in the newspaper.

PRE-PILOT

Participants in the strategy focus groups indicated that they would be unwilling to make commitments. Since commitments have been used effectively in other projects, it was decided to "pre-pilot" their use. Conducting a pre-pilot would provide an accurate assessment of the number of residents who would be willing to: review the decal; have their names published in the newspaper; and speak to their neighbors.

Project staff called Waltham residents listed in the phone book at random until twenty households had been reached. Care was taken to avoid calling residents who lived on the test routes, to prevent the possibility that a resident would be called a second time during the actual pilot. When talking with residents, the staff followed the script that was to be used in the actual pilot (see "Telemarketing Specifications and Scripts" in Appendix C). This pre-pilot revealed the following:

- ◆ Eighty-six percent committed to review the sticker;
- ◆ Sixty-seven percent gave permission for their name to be published;
- ◆ Seventy-five percent agreed to talk to an average of two to three neighbors about the decals, demonstrating that social diffusion had the potential to augment the effects of the phone calling that was to take place during the pilot.

PILOT

Based on the information gleaned from the barrier research and the pre-pilot, a pilot was designed that made use of decals, commitment, and social diffusion. The pilot consisted of three conditions, with each condition being represented by a recycling route. Each of these routes included areas where the percentage of residents participating in the program was moderate to high. The focus groups suggested that little could be done to encourage non-recyclers to participate, short

of introducing PAYT. As a consequence, it was decided to pilot the strategies in areas with moderate to high levels of participation. The goal was to increase the amount of material recycled by current participants.

Control: The control group had decals applied to their recycling containers and were mailed a letter from the mayor and an extra decal (see Appendix C), but had no other contact.

Commitment: The commitment group also had decals attached to their recycling containers and were mailed a letter from the mayor and an extra decal. However, this group was also contacted by phone prior to the decals being attached and were asked to make a commitment to review the decal and for permission to have their names published in the newspaper.

Commitment & Social Diffusion (CSD): Residents in the third group were treated exactly the same as those in the commitment group except that they were also asked to make a commitment to speak to two or three neighbors about recycling.

The Commitment and CSD pilot areas were similar in size (1018 and 1086 households, respectively). However, the control group's garbage route was nearly twice as large (2039). Despite differences in size, the routes were chosen so as to be demographically similar to each other and the City as a whole.¹ The demographics for each route were determined by using mapping software that overlays US census block groups over the route. See Appendix B for more information on conducting this type of analysis.

¹ At the time of the decal application it was discovered that there were parts of the Control and CSD routes that had been unknown to the project staff when the demographic analysis was conducted. Furthermore, some streets that were thought to be part of the Commitment group were actually part of the CSD group. When the analysis was redone, it was found that the Control group was somewhat different demographically from the other two groups and from the demographics of the City as a whole. This experience underscores the importance of going over route maps with the drivers themselves before assuming they are accurate.

Seventy-five percent agreed to talk to an average of two to three neighbors about the decals, demonstrating that social diffusion had the potential to augment the effects of the phone calling that was to take place during the pilot.

Communities planning to apply decals to recycling bins should explore the use of municipal workers with a responsible supervisor or committed volunteers, if possible. If temporary laborers are used, adjust expectations accordingly and plan to provide substantial supervision.

DECALS

A previous pilot in Sonoma County, California demonstrated that mailing decals to households, and asking residents to affix them to their recycling containers, resulted in roughly 25% of households having a decal on their container. Further, driving through the Waltham pilot areas over two consecutive weeks demonstrated that approximately 65% of recycling containers were set out. In an attempt to increase the number of containers with decals beyond 25%, it was

TABLE: ESTIMATED STRATEGY SPECIFIC EXPENSES¹

	Control	Commit	CSD
# of Households	2039	1018	1086
Decals	\$749	\$374	\$479
Telemarketing	-	\$2869	\$3182
Decal Application	\$624	\$366	\$398
Printing & Mailing	\$1489	\$733	\$782
Total Costs	\$2862	\$4341	\$4841
Cost per Household	\$1.40	\$4.26	\$4.46

decided to hire an agency to affix the decals rather than relying upon residents to do it themselves.

The decal shown on the following page was attached to recycling containers over two consecutive weeks.

Department of Public Works

¹ Some of the expenses in this table have been adjusted to provide the most realistic estimate of the cost to deliver each strategy.

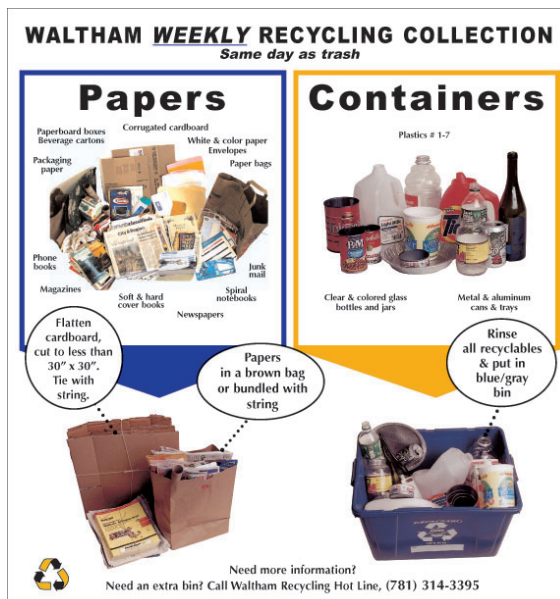
staff could not be spared from day-to-day tasks to apply the decals to bins, so a temporary labor agency was hired to provide workers for this task. A training session for the workers was held prior to the decal application. The specifications used to obtain quotes, and the training session agenda, can be found in Appendix C, along with lessons learned.

Decals were affixed to approximately 45% of the bins in the three pilot areas. In part, this lower-than-expected application rate (it will be recalled that 65% of bins were set out over the two weeks of observation) may have been due to work delays. Decal application sometimes occurred many hours after the recycling truck had passed through an area. It is likely that some residents had retrieved their bins from the curb before a decal could be applied. Other communities considering this approach are referred to Appendix C for recommendations on completing decal application in a timely manner.

TELEMARKETING

A telemarketing firm was hired to make phone calls to residents in the Commitment and CSD pilot areas.² Given the importance of these conversations as part of the CBMS strategy, the scripts are provided below:

Hello, my name is _____ and I am calling for the City



² The specifications used to procure telemarketing services can be found in Appendix C. They are annotated with lessons learned during the procurement process. These specifications include the two scripts used for the phone calling. Waltham asked telemarketing firms to quote on the cost for making either two or three attempts to reach residents. The City chose to have the telemarketer make three attempts, which is fairly standard practice to maximize the number of households reached. Appendix C also contains the script for a training video that was prepared for the telemarketing staff.

of Waltham's Recycling Department. Could I speak just for a moment to the person in your house who would handle recycling?

REPEAT INTRODUCTION IF ANOTHER PERSON COMES TO THE PHONE. I'm calling to give you a little information about the recycling program and also to ask you a couple of questions about it. This should take less than 3 minutes. Would that be ok?

1. First of all, did you know that Waltham now collects recyclables every week on trash day rather than every other week?
1.1 [IF YES] – Good. We're finding that most people do know.

1.2 [IF NO] – Yes, you can now set your recyclables out with your trash every single week on trash day. It's a lot more convenient that way than storing them for two weeks, and then trying to remember if it's the right week for recycling.

2. My second question is: Does your household have a recycling bin?

2.1 [IF YES] Good. Is your bin big enough?
[If yes, skip to item 3]

2.1.1 [IF NO] Well, the City now has bins that are about 4 gallons larger than the ones that were handed out when the recycling program started. You can also get a second bin from the City for only \$3. I can give you the phone number to call if you'd like [781-314-3395] or, you'll be getting some information in the mail the week of May 20th with the phone number in it. Would you like the phone number now, or would you rather wait?

2.2 [IF NO] Well, bins are available from the City if you'd like one. I can give you the phone number to call if you'd like [781-314-3395] or, you'll be getting some information in the mail the week of May 20th with the phone number in it. Would you like the phone number now, or would you rather wait?

3. So, I also wanted you to know that between May 6th and May 17th, we'll be attaching decals to recycling bins while they're at the curb. The decal has big, beautiful photographs on it that show

all the things that are recyclable in the City's program. We'll also be sending you a second decal in the mail the week of May 28th, just in case you'd like to put one in another convenient location, like the inside of a kitchen cupboard door or in the pantry.... So my question for you is: Would you be willing to take a careful look at the decals when they arrive and also to refer to them later if you have questions about whether something's recyclable?

4. [IF NO] Well, thank you for taking the time to talk with me and have a good day (evening).

4.1 [IF YES] Thanks! That's great! The City is also planning to purchase an ad in the Daily News Tribune in order to recognize everyone who has made this pledge to review the decal. We also think that printing an ad with the names of recycling program supporters will get more people interested in the program. We can print your first and last name, or just last and initial. There is no cost to you whatsoever. May we include your name, and if so, how would you like it to appear?

4.1.1 [IF YES] Thank you. Am I speaking to _____? Is this spelling correct? Thank you again for your time. It's been a pleasure talking with you. Have a good day (evening).

The script that was used with the CSD pilot residents was identical to the one provided above, except that residents were also asked to speak to their neighbors. That portion of the script is provided below:

5. OK, here's my last question. We're simply not going to be able to reach everyone by phone during this campaign. So, in order to help spread the word about the decals, we're asking if each person we contact might be willing to mention the decals to a neighbor or two, and pass along the request that people take a careful look at them when they get them. Is this something you could help us with?

5.1 [IF YES] Thank you. How many neigh-

Decal application sometimes occurred many hours after the recycling truck had passed through an area. It is likely that some residents had retrieved their bins from the curb before a decal could be applied.

Of those residents who were reached in the Commitment and CSD pilot areas, fully 88% were willing to speak to the surveyor. Of those who were willing to speak to the telemarketer, 99% of the Commitment residents and 98% of the CSD residents were willing to review the sticker.

bors do you anticipate being able to talk with? ____ That's great! We will send you an extra decal in the mail, just in case it turns out that someone didn't get one. I have your address as _____. Is that correct? . [If not, make correction in spreadsheet.] Thank you again for your time. It has been a pleasure talking with you. Have a good day (evening).

5.2 [IF NO] OK, that's fine. . It has been a pleasure talking with you. Have a good day (evening).

As shown in the table below, of those residents who were reached in the Commitment and CSD pilot areas, fully 88% were willing to speak to the surveyor. Of those who were willing to speak to the telemarketer, 99% of the Commitment residents and 98% of the CSD residents were willing to review the sticker. Further, 66% of the Commitment

residents were willing to have their names published, while 54% of the CSD residents were willing. Finally, 84% of the CSD residents were willing to speak to neighbors (residents anticipated talking to 867 neighbors). Further information regarding the telemarketing and mailing can be found in Appendix C, including lessons learned in using these strategies.

There were several indications during the pilot implementation that this outreach strategy was well received by Waltham residents. The vast majority of residents who were encountered during the decal application process were grateful to be provided with a decal. Furthermore, a member of the telemarketing staff reported that some of the residents with whom she had spoken had expressed their gratitude for the phone call.

TABLE: TELEMARKETING RESULTS

	Control	Commit	CSD
Households Reached ¹	NA	385	431
Spoken To	NA	340(88%)	377(88%)
Review Sticker	NA	99%	98%
Names Published	NA	66%	54%
Speak to Neighbors ²	NA	NA	84%

¹ The number of households called includes those who were willing to speak to the surveyor and those who were not. It does not include those households who had toters, had language barriers, or who had more than one phone.

² Commitment and social diffusion group residents agreed to speak to a total of 867 neighbors. Note that this number is likely inflated due to residents' desire to be seen as helpful.

RESULTS

To assess the effectiveness of the CBSM strategies, five weeks of baseline and follow-up data was collected for each of the three pilot areas (the weight of paper and commingled recyclables was recorded). The baseline measurements occurred from March 18th to April 23rd, while the follow-up measurements occurred between July 1st and August 5th.

The table provides the percentage change from the baseline to the follow-up for the three pilot areas. Positive percentages indicate that the tonnage of recyclables collected increased from the baseline to the follow-up. The table also provides the seasonal change that occurred from the baseline to the follow-up period for the whole city. As shown, paper tonnage decreased for the Control, Commitment and CSD pilot areas from the baseline to the follow-up (-8%, -30%, -5%, respectively). However, during the same period residential paper tonnage across the City of Waltham decreased by 2%. After adjusting for this seasonal decrease, the paper tonnage for the Control area decreased by 6%, the Commitment tonnage decreased by 28%, and the CSD tonnage decreased by 5% (all seasonally adjusted differences are shown in brackets).

Commingled tonnage increased for all three pilot areas, with the Control, Commitment, and CSD residents increasing their commingled tonnage by 2%, 7% and 17%. On a seasonally adjusted basis, however, the Control and Commitment commingled tonnage decreased by 11% and 6%, respectively, while the CSD pilot area showed a modest

increase of 4%.

Finally, the non-seasonally adjusted overall tonnage show a -5%, -22% and -1% change for the Control, Commitment and CSD areas, respectively. When seasonally adjusted, the Control, Commitment and CSD areas decreased their tonnage diverted by -6%, -23% and -1%, respectively.

CONCLUSION

With one exception, the three community-based social marketing strategies tested in this pilot did not positively influence tonnage collected. The lack of positive findings underscores the utility of conducting a pilot prior to broadly implementing a strategy. Further, it suggests that additional piloting is necessary to determine how to effectively overcome the knowledge barriers identified in this project. It may be particularly worthwhile to investigate whether the use of decals is effective when residents are highly motivated to recycle, as they would be in communities in which PAYT has been introduced.

The three community-based social marketing strategies tested in this pilot did not positively influence tonnage collected.

TABLE: PERCENT TONNAGE CHANGES FROM BASELINE TO FOLLOW-UP (SEASONALLY ADJUSTED RATES)

	Control	Commit	CSD	Seasonal
% Paper Tonnage Change	-8% (-6%)	-30% (-28%)	-5% (-3%)	-2%
% Commingled Tonnage Change	+2% (-11%)	+7% (-6%)	+17% (+4%)	+13%
% Overall Tonnage Change	-5% (-6%)	-22% (-23%)	-1% (-2%)	+1%