

2008

Bentley College

Damien Browne

Virginia Carr

Patrick Oroszko

[CITY OF BOSTON]

Citizens' Recycling Plan

Contents

BACKGROUND..... 3

 City of Boston Environmental Sustainability Mission 3

 Overview of Single Stream Recycling Pilots 3

Overview of Social Marketing..... 4

 SETTING OBJECTIVES..... 4

 Social Marketing 5

 Key Concepts of Social Marketing..... 5

 Developing a Social Marketing Campaign: Framework and Tools..... 6

City of Boston Recycle More, Trash Less Social Marketing Campaign..... 7

Attachment A..... 19

 Stages of Change..... 19

Attachment B 20

 Sample Survey Questions..... 20

Attachment C 22

 Sample Written Prompt 22

Acknowledgments..... 23

BACKGROUND

City of Boston Environmental Sustainability Mission

The City of Boston recognizes the potential dangers¹ associated with the increase in greenhouse gas (GHG) concentrations² and the resulting climate changes. On April 13 2007, Mayor Menino signed an Executive Order which established a goal for Boston to reduce emissions of greenhouse gases by 80 percent by 2050. To accomplish this goal, Mayor Menino established a comprehensive Climate Action Plan and committed to establishing a Community Climate Action Task Force in order to mobilize, educate, and change the behaviors of the city of Boston and put its citizens and municipalities on the path to sustainability. As part of the order, City Hall committed to a series of initiatives to reduce greenhouse gas emissions and reliance on foreign oil, increase recycling efforts across the City and protect residents and businesses. On July 3, 2008, Mayor Menino signed his second Executive Order on green initiatives, the “Green Building Maintenance Order,” focused on increasing the purchase of environmentally preferred products such as green cleaning supplies, expanding the recycling programs in City facilities, and advancing additional green policies across the City.

Overview of Single Stream Recycling Pilots

City Hall recognizes that the collection, transportation and disposal of solid waste is detrimental to the environment because it consumes fossil fuel energy and produces methane gas (an environmentally harmful GHG emission). The City recognizes that recycling has the following benefits:

- Reduces the need for landfilling and incineration
- Saves energy and prevents pollution caused by the extraction and processing of virgin materials and the manufacture of products using virgin materials
- Decreases emissions of greenhouse gases that contribute to global climate change
- Conserves natural resources such as timber, water, and minerals
- Helps sustain the environment for future generations³.

City Hall also recognizes that recycling has a financial benefit because every ton of recycling saves the City \$70 in waste disposal fees. The City of Boston has historically provided its residents with recycling services including weekly curbside pickup of paper, bottles, and cans, and seasonal or special pickups for other materials. According to the Climate Action Plan, in FY 2007, Boston residents recycled over 17,000 tons of paper, bottles, and cans, 8,000 tons for yard waste, 500 tons of TVs and computer monitors, and 5,000 tons of large appliances, thereby reducing emissions by over 10,000 tons of eCO₂. As part of the

¹ See <http://www.cityofboston.gov/climate/pdfs/CAPJan08.pdf> for list of potential dangers from rising GHG emissions

² The gases of greatest concern are carbon dioxide, methane, nitrous oxide, and halocarbons

³ <http://www.epa.gov/epaoswer/non-hw/muncpl/faq.htm#2>

Executive Order on Climate Change, the City has committed to increasing recycling of all material by 10 percent by 2012.

To meet its goals, the City is investigating ways to increase participation, tonnage, and cleanliness of its weekly residential curbside recycling collection program. In 2007 and 2008, the Public Works and Transportation Department (PWTD) conducted "Recycle More, Trash Less" pilots. The pilots tested the feasibility of collecting residential recyclables (plastic, metal, and glass containers) mixed together in one enclosed recycling container. This collection method is known in the recycling industry as "single-stream" collection.

The objectives of the pilots were to:

1. Test if larger recycling receptacles and clear plastic bags increase recycling tonnage and participation
2. Test single-stream recycling
3. Test semi-automated and automated collection using of 95 and 65-gallon carts
4. Evaluate what methods are expandable to other neighborhoods

The program gauged the impact the carts have on participation rates, total tonnage collected, and spillage on the street. Households in the pilot received either a 95 or 65-gallon wheeled-cart. Residents who put their recycling on the curb in front of their houses were allowed to use clear plastic bags instead of recycling bins. The clear plastic bags were offered to these residents because many have been unable to recycle due their inability to store recycling bins. The pilot program was deemed a success with a 52% increase in the amount of trash recycled in the piloted neighborhoods.

Overview of Social Marketing

SETTING OBJECTIVES

Based on the success of the Single Stream Recycling Pilots, the program will be rolled out city-wide in 2008/2009. The goal of the program is to increase resident's recycling rates and to achieve a ratio of 50% recycling and 50% trash disposal in the city. Currently, the City's recycling rate is approximately 18%.

To support the City of Boston's citizen recycling initiative, Bentley College developed a citizen recycling program to increase the participation rate in the Recycle More, Trash Less program. The plan's initiatives are based on the concepts of social marketing and use proven behavior change management tools designed to enhance the success of the City's recycling program. The scope of this program is limited to recycling efforts for residents within the City of Boston, as requested. The program includes two phases:

a short-term 6 month to 1 year social marketing program and a longer term 1 – 3 year financial incentive program.

To support the recycling program, we developed the following Mission statement for the City of Boston recycling program to frame and guide our activities:

City of Boston: Recycling Mission

We, the City of Boston, recognize that the disposal of trash contributes to increasing greenhouse gas emissions and, ultimately, to global warming. Therefore, we are committed to expanding its recycling program to reduce GHG emissions and improve the environmental health of the city. Our goal is to increase recycling rates by implementing a single-stream recycling process aimed at reducing the complexity of recycling. We aim to reach a citywide recycling rate of 50% by 2012 while realizing that our ultimate goal is to eliminate the waste stream entirely. We commit to researching and implementing improvements of all recycling issues relevant to Boston to enhance the city's quality of living. We recognize that a robust recycling program is essential to the city's path towards sustainability and we commit to providing one to the residents of Boston.

Social Marketing

Our program is based on the concept of social marketing. Social marketing is defined as the use of commercial marketing concepts, the four P's [see [Figure 1](#)], to help change people's behaviors towards more healthy and sustainable practices. Unlike commercial marketing, in which the goal is to sell a product, the goal of social marketing is to promote change for the betterment of society. Social marketing does so through a specialized framework which helps move people through the various "stages of change" required to adopt a behavioral change [see [Attachment A](#)]. Social marketing has been proven to be effective at bringing about behavioral change, especially for recycling and other environmental initiatives.

Key Concepts of Social Marketing

The key concepts of social marketing include:

- The ultimate objective of social marketing is to influence action
- Action is taken only when a person believes that the benefits received outweigh the cost incurred
- Effective programs are based on understanding the audience's perceptions
- The target audience is seldom uniform in its needs and must be segmented
- The program must incorporate the 4 P's of marketing: Product, Price, Place, and Promotion
 - Create an attractive "*Product*" (the benefits associated with the desired behavior);
 - Minimize the "*Price*" the audience believes must be paid (increase the convenience of the action, reduce financial disincentives)
 - Make the product available in convenient "*Places*" for the audience

- “Promote” the behavior with creative initiatives and through channels that target the audience



Figure 1: The Four P's of Marketing

Developing a Social Marketing Campaign: Framework and Tools

Highly successful social marketing campaigns all follow a similar framework. This framework includes the following critical steps, which we used to frame our City of Boston recycling program.

- Set objectives
- Identify barriers to change
- Target your audience
- Design a strategy that utilizes “tools for change”
- Implement the strategy
- Measure achievements and evaluate

Social marketing programs are more than education. Social marketing uses various tools that have been proven effective at promoting behavioral changes. These tools, which emphasize personal contact, can be used to reduce or remove the barriers that often undermine the effectiveness of social education campaigns. Social marketing tools include:

- Prompts
- Personalized Communication
- Norms
- Feedback
- Mass Media
- Financial Incentives

Our goal is to build upon the single-stream pilot programs completed by Boston with our social marketing and financial incentives program. We will utilize these social marketing and financial incentive tools to encourage Boston residents to change their behavior regarding recycling.

City of Boston Recycle More, Trash Less Social Marketing Campaign

Step 1: Set an objective

The first step in creating our campaign was to define the objectives and goals that we will use to measure the success of the program. City Hall has already set its objective – to achieve a rate of 50% recycling of solid waste in Boston. Our goal is to support City Hall in this endeavor as well as to help increase the participation rate of the Recycle More, Trash Less single-stream recycling program it's being rolled out across the city.

Step 2: Identify Barriers to Change

If sustainable behaviors are to be adopted widely by the public, barriers to engaging in that activity (whether real or perceived) must be identified, understood, and overcome. There are many ways to identify barriers – including literature reviews, focus groups, and surveys. City Hall has already taken a step towards identifying potential barriers that may affect the success of the single-stream recycling pilot through its Citizens' Survey. We will use the results and feedback generated from this survey as our basis for the development of our social marketing program. Although the City has taken steps towards understanding the perceptions of its citizens in regards to recycling, City Hall must continue its efforts by periodically surveying citizens about the city's recycling efforts. We recommend City Hall survey citizens every 3 to 6 months. Engaging in a two-way conversation and acting on the barriers identified through that conversation will help strengthen the recycling program and promote increased participation. To support the City's efforts, **Attachment B** is a survey that can be used to identify barriers to change.

Barriers Identified from Pilot Program Survey Results

Based on an analysis of the survey responses from the pilot program, the following issues, concerns, and barriers to adoption of the recycling program were identified:

- Confusion about what can be recycled
 - Can Styrofoam, plastic bags, and metal tops to glass bottles be recycled?
- Size of Carts/Amount of Carts
 - Carts too large/unwieldy for some residents, including senior citizens and residents who live in apartments with many steps leading to the street
 - Too many carts were delivered to tenant buildings
- Motivation
 - Lack of reasons to recycle
- Concern with cleanliness of the City (i.e. spillage on the streets)

- Complaints that trash pick-up procedures resulted in spillage on the streets
- Concern with orderliness of the City (i.e. carts left on the sidewalk)
 - Complaints that carts were left on the sidewalk and were unsightly

Step 3: Target Your Audience

The results of the Citizens' survey show that the City needs to segment its audience (i.e. residents) to address the different concerns/barriers faced by each. For example, senior citizens had different concerns with the recycling programs (the carts were too large for them to use) versus apartment complexes (who received too many carts for the number of tenants). Additionally, the survey results suggested that those who live in houses with steps down to the street had more difficulty with the larger carts than those with easy street access. After identifying the concerns of different segments, we developed initiatives to overcome the barriers that each faces.

Step 4: Design Your Strategy – Tools for Change

Initiative 1: Address known issues to overcome barriers

The following actions should be taken to overcome the barriers identified through Citizens' survey results:

Identified Barriers:

- Confusion about what can be recycled
- Size of Carts/Amount of Carts

Action: Use of Prompts

Prompts are an effective way to influence people and encourage sustainable behaviors. In order for prompts to be effective they must:

- Be noticeable/visible
- Be self-explanatory
- Be presented in close proximity to the behavior/action

The City of Boston should use the following prompts to overcome the above barriers:

- Create magnets with recycling information on them that residents can hang on their refrigerators to remind them of what can be recycled. To improve the proximity of the prompt to the action, adhere this same information to the carts.
- Providing continual prompts is key to changing behavior. The City should provide cards in the mail and in the recycling cart itself throughout the year to encourage specific recycling behaviors. Instructions should periodically be left in the carts for citizens on how to handle yard waste, dispose of Christmas trees, or recycle e-waste. Prompts such as flyers about recycling Christmas trees can also be provided to Christmas tree sellers to hand out to customers.

- The City should encourage landlords to discuss recycling with their apartment buildings. The City should provide signs that landlords can hang near recycling and trash receptacles in common areas to encourage recycling. The City should also provide recycling magnets as discussed above to landlords who can provide them to new tenants who move into the complex.

Educational Prompts Specific to Cart Distribution (Size of Carts/Amount of Carts):

- Educational prompts should be used to educate citizens on the various size bags, bins, and carts available to them. Prompts should be tailored to specific audiences. For example, educational pamphlets should be provided in senior centers about the different recycling bins to help educate seniors that they can exchange the carts for smaller bins, and thus encourage them to recycle more [Note: these prompts will likely only be needed as the single-stream recycling program rolls out.]
- During the first 6 months of the program rollout, mailers should be provided to citizens to encourage them to exchange their carts for different sizes if the size provided is not adequate.

Identified Barriers:

- Motivation

Although not explicitly mentioned in the survey results, a key barrier facing recycling programs is a lack of motivation to recycle. For many, the “cost” (i.e. inconvenience) of recycling outweighs the benefits of engaging in the behavior. One way to motivate people to adopt recycling is through the use of norms.

Proposed Action: Norm Appeals

Norm appeals are based on the theory that people will act in the way that they perceive is “standard” or “normal” in society. Norm appeals tap into the powerful influencing force that is peer pressure (known more formally as social diffusion). Norm appeals make it more likely that people will observe others doing the desired activity and will be motivated to engage in the behavior as well. In order for norms appeals to be effective, the appeals must:

- Be visible
- Communicate how a person “should” behave
- Use captivating information
- Emphasize what a person may lose as a result of inaction (i.e. social isolation)
- Be easy to remember
- Create and communicate community goals

The City of Boston should use the following norm appeals:

- The use of the blue carts is already a visible norm appeal for recycling. Affix decals to recycling carts to encourage others to recycle and enhance the visibility of the norm. Adopt a slogan such as “We Recycle” or “Boston Recycles” to create a sense of “peer pressure” around recycling.

- Use communication mediums including the website, newspaper, and home mailers to create a presence around recycling. Update the website monthly with new information on recycling and provide home mailers quarterly regarding the program. The more information citizens receive, the more likely they are to internalize the message that recycling is the “norm” in Boston. See **Attachment C** for an example of an effective written norm appeal that could be adapted to Boston.
- Communicate Boston’s goal to achieve its 50% recycling rate. Provide feedback on how citizens’ actions are helping Boston to reach its goal. Communicate Boston’s environment sustainability achievements.

Identified Barriers:

- Concern with cleanliness of Boston
- Concern with orderliness of Boston

Proposed Actions: Feedback

Behavior change requires continual reinforcement of the action to be taken. Feedback can be used to provide the audience with information on the impact of their actions. Providing feedback helps create a sense of accomplishment and is an important element of building motivation for a desired activity. Furthermore, feedback supports norm appeals by showing that others are participating in the activity.

Providing feedback is more than letting citizens know where Boston is in terms of reaching its goal; it’s also about listening to their concerns and addressing them accordingly. The City of Boston should:

- Provide positive feedback to residents about recycling in Boston. This feedback can be communicated through mailers, news stories, and newspaper articles that feature stories about citizens and local businesses who participated in the program.
- Feedback should be provided through community signs which track the progress of the recycling program by posting the community recycling rate.
- To show citizens that the City is listening to their concerns, it’s important to make operational changes that address concerns that are identified. The Citizens’ survey revealed that citizens are concerned with the cleanliness of the City and have voiced concerns that the recycling program has resulted in increased spillage onto the street. First, City Hall should investigate this concern by conducting an audit of its trash disposal activities. If the concern is confirmed, then the Recycling Department should discuss the issue with the Public Works and Transportation Department (PWTD) and work to improve the recycling/trash pick up practices. Once addressed, City Hall should communicate its efforts to its citizens to reinforce that it is listening to them as a way to encourage the desired behavior (i.e. recycling).
- To address the concerns regarding recycling carts being left on the sidewalk, City Hall should provide feedback to residents that their carts should be moved from the street after recycling has been picked-up. The City should use prompts (such as flyers left in the mailboxes of houses who leave their carts in the streets) to remind them that their carts should be moved. The City

should also build upon its use of norm appeals by letting residents know that what they are doing is against the “normal” practice for recycling. As more residents move their carts, the norm appeal will be further enforced.

Initiative 2: Use Mass Media/Public Events to drive adoption and awareness

Action:

- Mass Media
- Personalized Communication

Mass Media

Leveraging large-scale events to support and cross-promote various sustainability initiatives can maximize exposure while minimizing total costs. Existing programs should be utilized and the city can partner with numerous committed corporations that can gain recognition for their efforts while the city gains efficiency in the scale of events. Advertising for these events should be propagated through numerous free or nearly free channels of communication. During these larger scale events, the recycling efforts, energy initiatives, and other projects should be showcased at the same time. Through cross-promotion and free advertising, these events can have a large impact and a more pervasive effect on changing the assumptions, thoughts, and most importantly, the behavior of Boston’s citizens.

Large scale public events the City should engage in include:

- **Corporate recycling programs** – Special events and ongoing recycling programs should be leveraged. Best Buy⁴ offers free in-store recycling for a number of consumer products including cell phones, batteries, and ink cartridges. For large appliances, including televisions, Best Buy will remove old appliances with purchase and delivery of an existing appliance. Best Buy is piloting recycling programs across the country allowing consumers to bring all solid waste, such as old televisions, computers, monitors, and other electronics, even if not purchased from Best Buy, to be recycled. Staples⁵ offers similar services, but charges \$10 to accept, transport, and recycle large items. Boston should coordinate with these large retailers by strategically aligning with times where electronic waste increases, such as:
 - December 2008, when holiday purchases frequently mean old electronics are thrown away
 - February 2009, when television broadcasting will convert to all-digital and analog televisions with antennae will require a converter box (high likelihood that citizens will replace analog TVs with digital ones)⁶
 - May 2009, when college students move out and typically generate excessive trash

⁴ www.bestbuy.com/recycling

⁵ <http://www.staples.com/sbd/content/about/soul/recycling.html>

⁶ <http://www.dtv.gov/>

- **EPA light bulb initiative** – The EPA hosts educational events informing consumers about the benefits, both financial and environmental, of switching from inefficient incandescent lights to compact fluorescent lights (CFLs)⁷. Boston currently works with the EPA and its Change a Light, Change the World program in which people bring in their old light bulbs to exchange them for a cost- and energy- saving CFL. The program is another, already established venue which City Hall should use to co-promote the recycling program and educate those already interested in sustainability. Additionally, new consumers can be educated at these programs, increasing the overall success rates of other various programs going on in Boston.

Promotion - The city of Boston has dozens of opportunities to utilize free or nearly free forms of publicity. From the City of Boston webpage to local TV, radio, and print channels, large scale events can be highly publicized and ensure a high rate of success. Avenues of garnering the most attention to these events include:

Television – Local television stations run public service announcements when provided with the appropriate requests. Additionally, large environmental events such as recycling drives, especially when combined with other fun events throughout the city, can get more attention by being directly reported on by stations. Local stations that would promote events in some manner include WCVB, WHDH, and WBZ.

- **Print** – The Boston Globe, Herald, and the Metro are frequently read news sources that thousands of Boston residents rely upon each day for news and entertainment. Notices and ads in the local events in all of these newspapers, and even highlighted stories for these events, can be extremely effective in generating interest and attendance at these events.
- **Radio** - Local radio stations have proven to be champions of local causes and usually sponsor public service announcements or directly sponsor or participate in positive community events. Local radio stations include: KISS 108, Mix 98.5, WBCN 104.1, WFNX 101.7, WBOS 92.9, WTKK 96.9, and JAMN 94.5, and could all assist at different times in generating the interest needed to make these events worth doing and worth repeating.

Personalized Communication and Cross Promotion

To maximize their value, public environmental events should also be used to cross-promote the various initiatives of Boston and other organizations and to engage in personalized communication with citizens. The City should utilize these events to educate the community on recycling, appropriate e-waste disposal methods, energy efficiency and to answer any questions they may have. Since it is likely that consumers at the program are interested in recycling, they are more likely to participate in the other programs, thereby increasing the overall success rates of various City-sponsored initiatives. The City can use the events to gain commitment from citizens to recycle by providing personal interaction at booths

⁷ <http://www.epa.gov/region1/changealight/>

that will help to demonstrate that recycling is an issue that Boston is truly concerned about. Boston should also increase the frequency and detail of its recycling news letter⁸.

Initiative 3: Learn from Best in Class – Create Financial Incentives/Disincentives

Action:

➤ Financial Incentives

The City of Boston has ambitious goals in terms of recycling. Boston is aiming to divert 50% of the city's waste stream to recycling. To put that in perspective, Seattle, which has an extensive recycling program which includes financial incentives, currently diverts 47.5%⁹ of its waste stream to recycling. If Boston is going to achieve its goal, it must incorporate financial incentives and disincentives, a key element of social marketing, into the City's long-term recycling program. Like Seattle, recycling and waste management programs in other successful cities have found that financial incentives/disincentives are the most powerful tool in changing the behavior of residents.

According to social marketing theory, financial incentives/disincentives should be used if three conditions exist. The goals of the City of Boston meet all three criteria:

- *People are unlikely to take action without the incentive/disincentive.*
 - Incentives provide motivation for the audience to engage in an activity that they otherwise wouldn't and financial incentives have proven to be particularly effective for encouraging adoption of recycling in US cities. It is highly unlikely that Boston can reach its goal without financial incentives in place.
- *The incentive/disincentive can be left intact indefinitely.*
 - Short-term monetary incentives have not been shown to produce long lasting changes in behavior. In order to change behavior, incentives have to be able to be left in place indefinitely.
- *Anticipated benefit justifies the investment.*
 - The benefit of instituting the incentive program must outweigh the cost of implementing it. Based on the high recycling rates of other cities with incentive programs, the benefits of the program outweigh the cost of implementing it.

We recognize that City Hall is not currently considering a "Pay as you Throw" (PAYT) system to increase recycling. However, we think it is a vital program necessary to significantly increase citizen participation. There are other reasons to implement a PATY system besides increases in citizen participation. In some sense PAYT is only fair. In the current system, local taxes pay for the trash service and residents each have to pay their share regardless of how much they trash. So if a household is committed to recycling and has very little waste, they are currently subsidizing the wasteful habits of their neighbor who

⁸ <http://www.cityofboston.gov/subscribe/>

⁹ <http://www.wmnorthwest.com/seattle/index.html>

generates large quantities of trash. It raises the questions, why should these two households be asked to pay the same amount of money, when one household is using the service much more than someone else? Trash service can be thought of like utilities, for example the more electricity used, the higher the bill. It would be outrageous to charge all people the same amount of money regardless of how much electricity they used and a PAYT program applies this principle to trash.

In addition to positive environmental impacts, recycling is now proving to be a way for a city to help the bottom line. Recycling a ton of waste is becoming less expensive than trashing a ton of waste, according to a study recently released about the recycling program in New York City. It was a comprehensive 3 year study, conducted by DSM Environmental Services Inc. who presented these findings to the Natural Resources Defense Council. In fact, City Hall has already recognized that recycling has a financial benefit because every ton of recycling saves the City \$70 in waste disposal fees. With the rising cost of landfills, including the rising fuel costs to transport waste, recycling is expected to be significantly less expensive than throwing things away in the years to come. Recycling a ton of waste will continue to become less expensive as more residents participate, since more recyclables will be picked up per trip therefore driving down the marginal cost.

Certainly, there are drawbacks to implementing a PAYT program. There will be initial pushback from residents. There is also the issue of illegal dumping. With some of the options, the City would incur cost by needing to enforce penalties. However, it is possible to overcome these issues. Below is a chart from the EPA's website¹⁰ that includes potential barriers and possible solutions. Not all of these barriers/solutions will apply depending on what form of PAYT Boston chooses.

Potential Barrier	Possible Solutions
Illegal dumping/burning	<ul style="list-style-type: none"> - Educate residents about PAYT - Provide several legal diversion options
Uneven revenues/revenue shortfall as residents generate less waste	<ul style="list-style-type: none"> - Plan for reduced waste amounts is steady-state when setting prices - Use multi-tiered pricing
Multi-family housing	<ul style="list-style-type: none"> - Include charges in rent - Under a bag based system, have tenants purchase bags - Use bar code readers on building garbage chutes
Perception that waste collection is free/PAYT is a tax increase	<ul style="list-style-type: none"> - Educate residents about PAYT - Set prices as levels residents will accept
PAYT is regressive/low-income residents feel greater impact	<ul style="list-style-type: none"> - Offer these residents rebates, coupons, or discounts - Offer free bags to recipients of general assistance
Overstuffing of containers	<ul style="list-style-type: none"> - Set weight limits on containers
Lack of support from private waste haulers	<ul style="list-style-type: none"> - Involve haulers in the planning process

¹⁰ <http://www.epa.gov/epaoswer/non-hw/payt/pdf/workshet.pdf>

	- Pass ordinance mandating haulers offer variable rates
--	---

Overall, there are over 6,000 communities in the United States using some form of a PAYT program, also known as unit based or variable pricing. This includes over 60 US cities that have populations over 100,000, which represents roughly 25% of US cities with more than 100,000 residents. There is great deal of flexibility in terms of PAYT programs and cities have the ability to design a program that works for their particular community. There is also assistance available, as the EPA’s America Big Cities Program is dedicated to helping large cities establish PAYT programs. We recommend work with the EPA to design and implement a financial incentive program.

Below are some examples of how communities around the country and in the Commonwealth have implemented financial incentives/disincentives to increase their recycling rate and decrease the amount of trash headed for landfills:

National Examples:

- Seattle, WA
 - If 10% or more of a trash receptacle is made up of recyclable material, it will not be picked up (see Figure 2)
 - Businesses face fines for this offense after two warnings
 - Residents also pay for trash service based on the size trash receptacle they use, the larger the receptacle, the greater the cost
 - Conversely, recycling is free



Figure 2: A Seattle garbage hauler heads back to his truck after tagging a bin that contained recyclable material¹¹

¹¹ <http://www.msnbc.msn.com/id/6945626/>

- Pittsburgh, PA
 - Similar system to Seattle, with a fine system in place for residents who have recyclable materials found in trash

- Austin, TX
 - Residents must pay a fee to increase the size of their trash receptacle
 - If residents have excess trash that will not fit in their receptacle, they must pay a fee to have the additional trash picked up

- San Jose , CA
 - Residents must pay for trash based on the size of the receptacle they choose
 - Residents who exceed the amount of trash that will fit in their receptacle, must put a sticker on additional trash bags if they are to be collected, stickers cost \$6.25 each
 - Recycling is free

As an example of the type of results that are possible, when San Jose implemented their program, there was a 46% decrease¹² in the amount of waste sent to the landfill, and a 158% increase in the amount of recyclables collected.

Local Initiatives:

- Worcester, MA
 - Requires residents to purchase city trash bags (\$1 per bag sold in 5 and 10 packs)
 - Recycling is free

- Hopkinton, MA
 - Trash bags will not be picked up if accompanying recycling bin is not on the sidewalk as well

- Tewksbury/Billerica/Burlington/Tyngsborough, MA
 - 4 communities entered an agreement to hire 1 waste management company, household trash will now be collected in 64 gallon totes only – only 1 tote will be distributed to a household
 - Program will be launched in 2009, communities have not yet decided what to do in the event that a household has excess trash

A local success story is that of Worcester, the second largest city in the Commonwealth. Since Worcester has implemented the (PAYT) system mentioned above, the city has reduced its waste by 45%, with recycling responsible for 37% of the waste stream diversion. In the first 7 years of this program, Worcester reduced its waste by an estimated 40 million pounds¹³. Several other Massachusetts

¹² <http://www.cbsm.com/Chapters/incentives.lasso>

¹³ http://americancityandcounty.com/mag/government_payasyouthrow_payoff/

communities have similar programs, the latest being Shrewsbury which will roll out a new PAYT program in August.

Although implementing a PAYT program is a large undertaking, it is one that is necessary if the City of Boston is serious about reaching a recycling rate of 50%. Financial incentives, which are part of social marketing, are a key tool in encouraging people to change their behavior. As the examples above demonstrate, the impact of implementing a PAYT system is significant.

Composting Program

Increased participation in the composting program would be another benefit of a PAYT program. Considering the positive environmental impacts of composting, Boston should consider changing the current system. Currently, the City of Boston has a program in which residents can purchase a compost bin for \$35 or a kitchen scrap bucket for \$10 (\$7 with purchase of compost bin) which serves as a financial disincentive. An increase in the percentage of residents who compost their waste rather than trash it would aid the effort to decrease the amount of waste going to landfills. In line with social marketing “tools of change,” Boston should reduce or eliminate the cost of bins and buckets and make them more readily available. Implementing a PAYT program, would provide more incentive to for citizens to participate in the composting program.

In addition to the financial incentive to decrease the amount of trash, the City of Boston should make it more convenient for residents to recycle food scraps. Kitchen scraps make up approximately 30%¹⁴ of Americans’ trash. Some cities, like San Francisco, pick up food waste to be composted, such as fruit and vegetable scraps, coffee grounds, egg shells, etc. in biodegradable bags on the same day the recycling is picked up. Therefore, if Boston residents had access to approved bags, and the City of Boston added this to the trash and recycling pick-up, it would result in an increase in the participation rate. As compost can be sold, it would be another way to generate revenue for the city as well as a way to decrease the amount of trash in landfills. It is particularly important to divert food from landfills, since food decomposes and omits methane, a greenhouse gas that has a warming effect 23 times as potent as carbon dioxide. Since Boston is already considering a proposed indoor composting center that will generate electricity by capturing and burning this methane gas, increasing participation in the composting program will be vital to the center’s success.

Steps 5 and 6: Implement, Measure and Evaluate

The next step in our social marketing plan is to implement the strategy in a way that best supports the City of Boston recycling program. Once implemented, the final step is to evaluate the results in order to determine whether the tools are effective at increasing the adoption of the recycling program. First, the City must set targets by which to measure itself. For the recycling program, City Hall is already measuring its impact on participation rates, total tonnage collected, and spillage on the street. We did not have access to City’s Hall’s established rates for these targets so we have not made specific recommendations regarding them. However, below is a simple table that includes our estimates as to the effect that our recommended changes could have on the overall recycling rate in Boston. City Hall

¹⁴ <http://cwmi.css.cornell.edu/TrashGoesToSchool/Composting.html>

should make these targets visible internally and report on them monthly to all involved departments (Mayor’s Office, Public Works, Recycling Department, etc).

Table 1: Recycle More, Trash Less Estimated Effect

Year	Action	Recycling Rate
2008	<ul style="list-style-type: none"> • Current Program 	18%
2009	<ul style="list-style-type: none"> • Single stream recycling • Begin social marketing campaign • Eliminate composting fees 	26%
2010	<ul style="list-style-type: none"> • PAYT Program 	41%
2011	<ul style="list-style-type: none"> • Expand collection: pick-up food for composting 	46%

It is also important that there be a transparent reporting structure so that residents are made aware of the progress. As being green becomes more mainstream, residents will want to know that their efforts are having a positive impact. The City should use prompts, including publicly posted signs and home mailers, to communicate and celebrate the increase in recycling rates as the program is rolled out. This communication should be done at least monthly and no less than quarterly. Additionally, when the PAYT program is announced, we recommend that Boston release the plans for spending the revenue generated by this program. One way to address pushback from residents is to spell out something concrete that will exist because of this increased revenue. Whether the money goes towards additional environmental programs, or something unrelated like a program that aides seniors, children, or public safety in general, residents will be more willing to accept this change if they are made aware of the positive impact it will have on their community, in addition to the environment.

Conclusion

In order to achieve a rate of 50% recycling in Boston, City Hall must implement a robust social marketing program that includes a financial PAYT incentive program. We believe that using both social marketing tools, including prompts, norm appeals, and feedback, as well as financial incentives, will significantly increase the participate rate. Based on the results of other cities, we believe Boston is capable of achieving a goal of close to 50% by the end of 2011.

Attachment A

Stages of Change

The transtheoretical model (TTM) of behavior change states that people move through a series of stages before adopting a new behavior. The theory can be used to help guide individuals to make behavioral changes and explain why an individual has not been successful in making a behavior change. The six stages of change are:

- *Precontemplation*: A person does not feel that the behavior is relevant and has no intention of adopting the behavior
 - At this stage a person must be shown why the behavior is relevant through educational and/or “conscious-raising” activities
- *Contemplation*: A person is aware that a problem (climate change) exists and is thinking about addressing it but hasn’t committed to an action
 - At this stage, messages should promote the benefits of implementing the change/action
- *Preparation/Determination*: A person makes a commitment to change his/her behavior and gets ready to make the change
 - At this stage, reinforcing messages and tools to help them take action (providing carts, recycling “how-tos”) should be used
- *Action*: A person modifies his/her behavior and undertakes the action (recycling)
 - At this stage, encouragement and norm appeals should be used
- *Maintenance*: A person continues to engage in the action
 - At this stage, motivational and reinforcing messages should be used
- *Termination*: The person no longer engages in old behavior (trash disposal) and permanently adopts the new behavior (recycling)

[Adapted from http://www.courseweb.uottawa.ca/epi6181/images/TTM_review.pdf]

Attachment B

Sample Survey Questions

1. Does your household recycle?
Yes (go to question 2)
No (skip to question 3)
Don't Know

2. If yes, why do you recycle? [Check all that apply]
Good for the environment
Saves money
Convenient
Easy to do
It's the right thing to do
My neighbors do it
Other

3. If no, why did you choose not to recycle? [Check all that apply]
Don't have recycling bins
Not interested
Costs too much
No time/too much effort
Don't have any recyclables
Don't know how to recycle
Other

For those that answered question 3, thank you. Your participation in the survey is now complete.

4. How satisfied are you with your curbside recycling service?
Very satisfied
Satisfied
Somewhat Satisfied
Neither Satisfied nor dissatisfied
Dissatisfied
Very dissatisfied

5. Please rate the convenience of your recycling program
Very convenient
Convenient

Not convenient nor inconvenient
Inconvenient
Very inconvenient

6. How do you get information regarding the recycling program? [Check all that apply]

Website
Newspaper
Newsletters/Mailers
Word-of-mouth
Television
Radio
Other _____

7. What does your household do most often with yard waste (such as grass clippings, brush trimmings, and leaves)? [Check all that apply]

Curbside yard waste recycling events
Throw it in the garbage
Compost it
Use landscape service
Burn it
Dump them elsewhere (on property, empty lot, etc)
Don't have yard waste
Other _____

8. Do you compost food waste, such as vegetable scraps at home?

Yes (if yes, skip to question 10)
No

9. Would you be willing to separate your food waste from other garbage, if it could be recycled?

Yes
No

10. When you need to get rid of a computer or television, what do you do with it? [Check all that apply]

Throw it in the garbage
Call Public Works to pick up for recycling
Take it to a store that will recycle it
Take it to a public recycling event
Other _____

11. What suggestions do you have for improving the recycling program?

[Adapted from: http://www.ci.fort-collins.co.us/talkingtrash/pdf/ft_collins_garbage_recycling_survey_2005-1222_final.pdf]

Attachment C

Sample Written Prompt

The following prompt was used during a study to measure the effectiveness of various methods for norm appeals. This prompt, used in California, resulted in a 38% increase in recycling rates for the written appeal as compared to 19.6% for the control group. The text of this appeal could be modified for Boston. The text of the appeal was, as follows:

"As a U.S. citizen you probably show your support for our country by voting and paying taxes. Beyond this you may feel that there is nothing more that you can do. However, there are things that you can do. One of these is participation in Claremont's recycling program.

Californians alone produce some 40 million tons of refuse a year - enough to fill a two-lane highway, ten feet deep from Oregon to the Mexican border. Currently, the average person in the U.S. produces about 1,300 lbs. of solid municipal waste a year. Most of this trash goes into landfills, and it is estimated that if present trends continue, nearly all of L.A. County will be without refuse disposal capacity by 1991. RECYCLING uses wastes instead of filling up landfills. RECYCLING extends resource supplies. RECYCLING IS EASY . . . SIMPLY PUT NEWSPAPERS, ALUMINUM, AND GLASS INTO SEPARATE BAGS AND PLACE AT THE CURB ON YOUR REGULAR TRASH COLLECTION DAY. Recycling makes a difference and recycling is happening. Over 80% of Claremonters favor the city's recycling program and other cities are calling to ask how Claremont does it. Help us do it, please recycle."

This appeal uses several of the principles that make norm appeals successful. It does the following:

- Uses vivid language (a two-lane highway, ten feet deep from Oregon to the Mexican border),
- Uses a moderate threat (L.A. County will be without refuse capacity by 1991),
- States clear and specific proposed actions (put newspapers, aluminum and glass into separate bags and place at the curb on your regular collection day),
- Stresses the effectiveness of the actions (recycling makes a difference)
- Makes a "society norm" appeal (over 80% of Claremonters favor...)

Incorporating ideas from this prompt can help increase the effectiveness of the prompts that City Hall is already using to promote recycling among citizens.

[Appeal and discussion adapted from <http://www.cbsm.com/Chapters/preface.lasso>]

Acknowledgments

The City of Boston: Citizens' Recycling Plan was developed by Damien Browne, Virginia Carr and Patrick Oroszko, graduate students at Bentley College, July 2008.

A special thanks to McKenzie-Mohr & Associates whose online book (<http://www.cbsm.com/Chapters/preface.lasso>) helped guide the development of our social marketing plan.