

# RECYCLING IN WILLIAMSTOWN



## ENVIRONMENTAL PLANNING 302



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## **Table of Contents**

|  |           |
|--|-----------|
| <b>Introduction</b>  | <b>1</b>  |
| <b>Recycling Background</b>                                      | <b>3</b>  |
| <b>History of Recycling in Williamstown</b>                      | <b>4</b>  |
| <b>Law</b>   | <b>6</b>  |
| <b>Community Profile</b>   | <b>6</b>  |
| <b>Recycling in Williamstown Today</b>                           | <b>9</b>  |
| <b>Research Methods and Project Plan</b>                         | <b>13</b> |
| <b>Ideas for Changing Transfer Station Design and Function</b>   | <b>15</b> |
| <b>Policy Recommendations</b>                                    | <b>24</b> |
| <b>Increasing Knowledge of Recycling: Rationale and Strategy</b> | <b>31</b> |
| <b>Conclusion, Acknowledgement, References</b>                   | <b>35</b> |
| <b>Appendix</b>  |           |

## Introduction

As students in the Fall 2007 Environmental Planning class, we were asked by the Williamstown Department of Public Works (DPW) and by the Williamstown Recycling Committee (WRC) to work on a project involving the town's current recycling program. Specifically, our clients were Scott Park from the DPW and Hank Art from the WRC seen in **Photo 1**.



**Photo 1**

**Clients: Hank Art (L) and Scott Park (R)**

## Client Goals

The aim of the semester-long project was to investigate the current town recycling program and make recommendations both on how the recycling experience in Williamstown could be enhanced and how rates of recycling in Williamstown could be increased. Here, we define rate of recycling by dividing the mass of waste diverted, that is, recycled, over the total mass of materials in the waste stream all together.

$$\text{➤ Recycling Rate} = \frac{\text{Waste Diverted}}{\text{Total Waste}}$$

## Scope of the Project

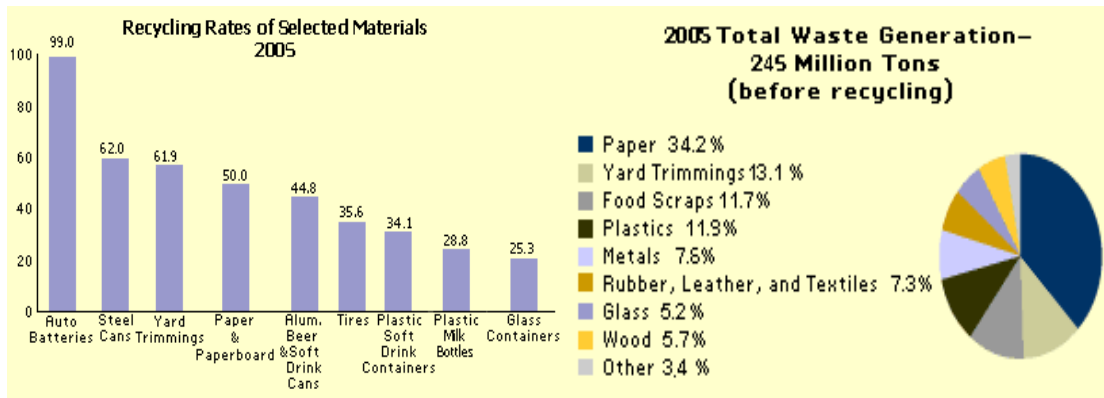
In order to meet the goals of our clients we began by investigating the ways in which Williamstown residents currently recycle. After beginning to understand the current recycling programs available to residents, we began to research in three focus areas for improvement. These areas were transfer station improvements, policy changes, and education and information strategies. By considering and implementing the found recommendations, we are confident that rates of recycling in Williamstown will increase and people's overall satisfaction with the recycling experience will be enhanced.

## Recycling Background

The three R's of sustainable waste management are Reduce, Reuse, and Recycle. Recycling, the last line of defense when it comes to sustainable waste management, is most effective when it can close the loop between consumption and acquisition. This requires that waste materials be collected and processed, manufactured back into usable products, and then once again purchased in high demand by consumers. Recycling prevents the emissions of pollutants, creates jobs, encourages greener technologies, saves energy, conserves raw materials, and reduces the need for incinerators and landfills (U.S.EPA 2007).

With the expansion of recycling infrastructure over the years and the coinciding increase in demand for recycled raw materials, more and more waste products are finding their way out of trash cans and into recycling bins. An assortment of the most commonly recycled materials and their relative significance to the municipal solid waste total can be seen in **FIGURE 1**.

**FIGURE 1: SIGNIFICANCE OF COMMON RECYCLABLES**



U.S. EPA 2007

Familiar household items that contain a large percentage of recycled material include newspapers, paper towels, steel cans, and aluminum, plastic, and glass beverage containers. Other more unusual applications for recycled materials include plastics in carpeting, benches, and pedestrian bridges, as well as in glassphalt, an asphalt alternative (U.S. EPA 2007).

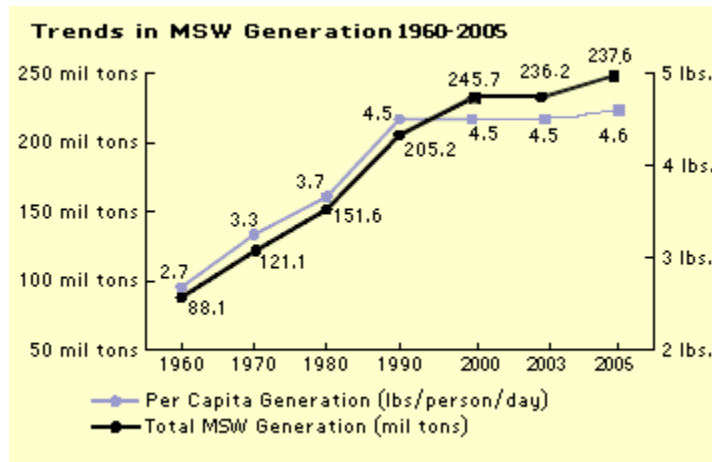
Today the most common methods of collecting recyclables are curbside pickup, drop-off centers, buy-back centers, and deposit/refund programs. In 2005, there were nearly 9,000 curbside programs in the United States, with approximately 500 material

recovery facilities processing the output. Just twenty years ago only one curbside pickup program existed in the United States (U.S. EPA 2007).

United States residents, businesses, and institutions produced in excess of 245 million tons of municipal solid waste in 2005, approximately 4.5 pounds per citizen per day. Of this total, 32 percent is saved through recycling or composting, with the rest going to incinerators (14%) and landfills (54%). The recycling of these materials helped prevent the release of approximately 49 million metric tons of carbon dioxide into the atmosphere, about equal to the annual emissions of 39 million cars or 11 billion gallons of gasoline (U.S. EPA 2007).

While these statistics are encouraging, as can be seen in **FIGURE 2** there is still a long way to go. Per capita and total municipal solid waste production skyrocketed during the 1960s and has been on the rise ever since. Although the trends appear to leveling off in recent years, there is still no sign of significant decline.

**FIGURE 2: TRENDS IN WASTE GENERATION**



U.S. EPA 2007

### **History of Recycling in Williamstown**

The recycling in Williamstown was initiated in 1970 by students at Williams College. In 1984 the Williamstown Transfer Station opened to service the waste and recycling needs of Williamstown residents and commercial haulers who chose to use the facility. The transfer station had previously been the town’s landfill and prior to that use was a gravel pit. At this time Williamstown had a contract to send it waste to the Springfield Material Recovery Facility (MRF). In 1988, Williamstown joined the

Northern Berkshire Solid Waste Management District (NBSWMD). The NBSWMD consists of twelve towns, each located to the north of Pittsfield. Sandy Totter is the executive director of the NBSWMD.

In 1989 Williamstown passed a bylaw that mandated recycling in Williamstown. The bylaw was updated in 2000. In 2004 Williamstown ended its contract with the Springfield MRF. In the past Williamstown's recycling was brought to North Adams, from where it was hauled to the Material Recovery Facility in Springfield. However, North Adams doubled the tipping fee at its transfer station, without notifying Williamstown of the change in advance, and as a result Williamstown ended its partnership with North Adams and the MRF. The elevated tipping fee made it more cost effective to send recycled goods to the Bennington Paper Board facility and the Clifton Park facility in New York than it was to work with North Adams. All current member towns of the NBSWMD send their recyclable to these two facilities because the NBSWMD enters into contracts on behalf of its member towns.

Williamstown was once of the three top recycling districts in the state according to the Massachusetts Department of Environmental Protection. The town's recycling rates have dropped over the last decade. The Recycling Committee has been contacted by concerned citizens about problems with the town recycling program including lack of information on how to recycle in the town as well as complaints regarding the confidence that residents have in the recycling programs of the private haulers.

The former Chairman of the Williamstown Selectmen, Jack Madden, visited the town where his son lives and was impressed by the town's recycling facility which was designed in a drive-thru format that provided an efficient and enjoyable experience for recyclers. Madden initiated the creation of a Recycling Committee in Williamstown to enhance Williamstown's recycling program and to improve the design of the transfer station. The Committee was started in 2005. The Williamstown Recycling Committee has a current membership of eight Williamstown residents and is led by one of our clients, Hank Art. (Art, Park, Kaiser, Kennedy)

## **Law**

Chapter 56 of the Williamstown bylaws, established in 1989 by order of the Board of Selectmen states that “Residents and businesses in town shall separate waste material into the following categories before depositing for disposal: glass and cans, paper, other waste.” The chapter goes on to appoint the Board of Health “Responsible for the promulgation of regulations consistent herewith and enforcement of these provisions.”

Chapter 153 of the Williamstown bylaws, established by order of the Board of Health, establishes guidelines for the storage and disposal of waste and recycling and puts forth regulations governing private haulers. Section 153-3 states that “All residents and businesses are to implement a program of recycling” and “that all persons obtaining a permit to haul refuse must institute a program of collection of refuse and recyclables.”

Section 153-6 goes on to demand that “All persons must recycle all materials determined to be recyclable by the Williamstown Board of Health.” Enforcement is laid forth in Section 153-9 and states that “Whoever, himself or by his servant or agent or as the servant or agent of any other person or firm or corporation, violates any of the provisions of these regulations is subject to a fine as stated in Chapter 1, General Provisions, Article II” and “Each day of violation, after written notice, is a separate violation.” According to Chapter 1, Article II of the bylaws, the first offense of the above stated regulations results in a warning, followed by a \$50, \$100, and \$200 fine for each subsequent violation. (Williamstown bylaws)

## **Williamstown, MA Community Profile**

When looking closely at the recycling programs in any given town, it is imperative to consider the social context in which those programs are set-up. The character of the community has an effect on both how a recycling program might look and how well it actually works. A Williamstown community profile is integral to understanding the experience of recycling in Williamstown, and to compare this community to other more successful recycling communities in the state of Massachusetts.

Williamstown is not unlike many other small New England towns. Being that it is a college town, there exists a diversity of peoples with many different life histories and

heritages. There are many lifetime residents, just as there are many who come to Williamstown to work at the college or other institutions. In the year 2000, the racial makeup of the town was 90.79% White, 2.72% Black or African American, 0.11% Native American, 3.12% Asian, 0.12% Pacific Islander, 0.77% from other races, and 2.37% from two or more races. Hispanic or Latino of any race were 2.77% of the population (US Census 2000). Founded in 1749, the town *today* operates on the old New England style town meeting, which is reflective of the town's lasting colonial character.

Williamstown is distinctly characterized by its hosting of about 2,000 students who attend Williams College. As home to the Williamstown Theatre Festival, The Clark Art Museum and the Williams College Museum of Art, the town is often revered for its emphasis on the arts. The museums, theatre festival, college and idyllic scenery all contribute to Williamstown's high rate of visitors and part-time residents. However, understanding the aspects of the Williamstown community that pertains to recycling will require a look beyond this observational description and into more concrete demographics.

Williamstown has a population of 8,220 people, 4,305 of whom are registered voters (*Town of Williamstown Valuations and Levy Statistics FY 2008*). There are a total of 2,753 households that are categorized as can be seen in Table 1. A significant point to take away from table 1 is that 365 of the households in Williamstown are listed as vacant residential, showing that a large percentage of the homes are used as part-time or second homes. In assessing Williamstown's recycling program it is important to know how many household are actually producing waste and recyclables, not just how many households there are in the town.



**Table 1. Williamstown Housing Profile**  
*(Town of Williamstown Valuations and Levy Statistics FY 2008).*

|                    |       |
|--------------------|-------|
| single family      | 1,888 |
| condominiums       | 185   |
| two family         | 110   |
| three family       | 27    |
| four family +      | 17    |
| mobile homes       | 41    |
| vacant residential | 365   |
| commercial         | 117   |
| industrial         | 14    |

Within these waste producing sources, household businesses etc. it is important to know which are recycling at the transfer station and which are using private haulers. The Department of Public Works lists a total of 2,753 permanent waste producing households, 945 of which purchased annual transfer station stickers. Williams College the largest of member of the commercial sector uses a private hauler, as does the vast majority of the commercial sector.

The median household income for Williamstown, according to the 2000 US census, was \$51,875. When compared with the median household income of the US as a whole, \$41,994, one can see that the town enjoys a certain degree of affluence. Median income, although it cannot give a complete understanding of the town, can be very useful in comparing Williamstown to other Massachusetts towns with top recycling records. **Table 2** shows the median incomes of four towns with the highest recycling rates in Massachusetts as compared with the median income and weaker recycling rates of Williamstown.

Without trying to draw conclusions about the affect of affluence on recycling, this table is useful to reveal one common town attribute that is shared by the four top recycling towns in the state, that is, a high median income among households. From a socioeconomic standpoint it is interesting to note this particular characteristic because

Williamstown shares the characteristic of high median income, while simultaneously deviating from the high rates of recycling. Here, we see that much can be learned from these towns, in that we are to a certain degree building from a common socioeconomic base.

**Table 2.** Median Household Income of Top Four Massachusetts Recycling Towns as Compared to Williamstown  
(2000 census, U.S. Census Bureau) \*(MA DEP 2006)

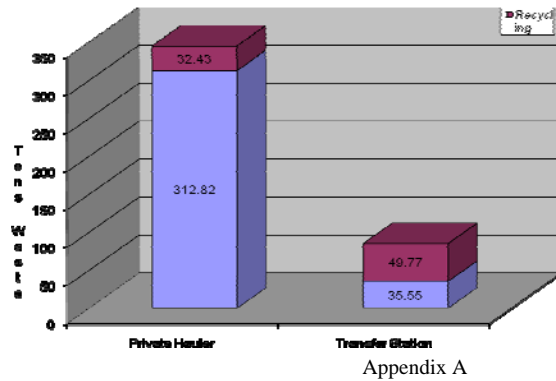
| Town            | Recycling rate* | Median income |
|-----------------|-----------------|---------------|
| Needham         | 69%             | \$88,079      |
| Foxborough      | 65%             | \$64,000      |
| Leverett        | 60%             | \$63,203      |
| East Longmeadow | 63%             | \$62,680      |
| Williamstown    | 47%             | \$51,875      |
| United States   |                 | \$41,994      |

### Recycling in Williamstown Today

Refuse and recycling data were compiled in order to quantitatively evaluate the Williamstown private and public waste management programs. Private hauler data was collected through the Williamstown Board of Health and public transfer station data was collected through the Williamstown Department of Public Works.

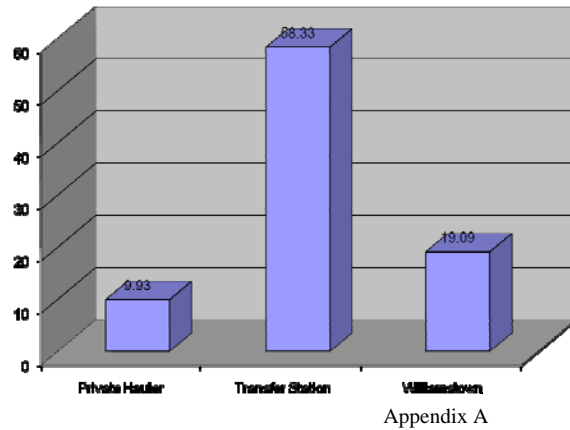
As can be seen in **FIGURE 3**, private haulers process more than four times as much material as the transfer station on a monthly basis, but recycle much less as a proportion of total waste.

**FIGURE 3: Monthly Waste Processing by Sector**



As demonstrated in FIGURE 4, when the private haulers and the transfer station are clumped together to arrive at a total recycling rate for the town, the recycling efficiency of the transfer station is overwhelmed by the greater volume and lower recycling rates of the private sector to produce an overall recycling rate of only 19%.

**FIGURE 4: Percentage Recycling by Sector**



The Massachusetts Department of Environmental Protection reports that Williamstown recycles 47% of its waste (MassDEP 2007). This percentage is arrived at according to EQUATION 1, and only residential waste is considered.

**EQUATION 1: DEP RECYCLING RATE**

$$\text{Recycling Rate} = \frac{\text{Tons Recycled} + \text{Tons Composted} + \text{Tons Hazardous Collected}}{\text{Tons Waste}}$$

MassDEP 2007

The data in FIGURE 3 and FIGURE 4 only include recycling tonnage and leave out composting and hazardous waste tonnage in the calculation of recycling rates. This was

done in order to compare the private and public sectors on an even playing field. Private haulers do not have the capacity to collect composting and hazardous waste, so even those residents that have private haulers bring their composting and hazardous waste materials to the transfer station or another facility equipped to handle the materials. Including these materials in the figures would bias the transfer station rates over that of the private haulers.

When composting and hazardous waste collection figures used by the Department of Environmental Protection are put back into the equation for the town in order to offer a fair comparison with the department's statistic, the town wide recycling rate only increases to 25%, still far short of the rate quoted by the Department of Environmental Protection. The major problem with the Department of Environmental Protection estimate is that waste records from the private sector are not currently reported to the state, and the department drastically underestimates the tonnage processed by private haulers.

Due to the format and quality of current waste tonnage reporting in Williamstown, it is not possible to accurately single out residential waste data in order to draw a direct parallel with Department of Environmental Protection estimates. Looking at the data that is available, it appears that including non-residential waste in the figures above actually increases recycling efficiency in sum, so this factor is not responsible for the disparity in the department estimate and the figures (Williamstown Board of Health).

While the simple answer to this problem would be to have everyone in Williamstown use the transfer station, this is not a realistic solution. According to survey results the two most common reasons for choosing a private hauler over the transfer station were time saved and preferring not to transfer waste in own vehicle, neither of which can be addressed by any type of transfer station modification. Although design changes in the transfer station may reduce the current time requirement of using the facility, it is always going to be easier and less of a hassle to leave garbage by the curbside.

#### **A Trip to the Transfer Station With Tibby Woodruff**

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As a starting point for the project, it is important to understand the current status of recycling in Williamstown. Because a principal goal of the project is to increase community involvement in the recycling program offered by the Williamstown Department of Public Works (DPW), it is paramount that we become fully aware of what the experience of recycling is like in Williamstown today. Here, we present a vignette, or glimpse into the actual Wednesday morning recycling trip taken by Tibby Woodruff, a retired woman who has been living in Williamstown for more than 40 years. Although we cannot expect Tibby to be representative of the recycling experience for *all* Williamstown residents, her trip to the Transfer Station is still a valuable insight into the process, as it is today.

We begin with a description of Tibby's sorting methods at home. In her kitchen, Tibby has three trash bins, rather than the one that you would expect to find in a non-recycling household. In one she keeps a mix of paper products, which include junk mail, newspapers, brown paper bags, office paper, cereal boxes and flattened cardboard. In another bin she keeps "containers" which range from glass bottles and jars of all sizes and colors, aluminum, tin and steel cans, plastic containers of all plastic types and milk and juice cartons. In Williamstown, Tibby tells me, recycling is made much simpler because she can commingle her different types of containers and commingle her mixed papers. In her third bin, Tibby throws those things that cannot be recycled or composted. This list is now bared down to aerosol cans, Styrofoam, plastic grocery bags (which can be returned to the grocery stores) incandescent light bulbs, window glass, dishes, glasses, pyrex, flower pots (plastic and terracotta), plastic wrapping, wrapping paper, ribbon, soda and beer boxes, pizza boxes, egg cartons and hangers (DPW Flyer).

We load up her mini-van, and are off the Transfer Station, about an eight-minute drive from her house on which is located on Green River Road. Riding in her van, marked with a "Transfer Station Access Sticker" for which she pays seventy-five dollars a year, we pull into the station, which is located off of Route 7, specifically at 671 Simonds Road. Transfer Station Access Stickers are also available on a monthly basis for eight dollars, and secondary stickers for two car households can be purchased for five dollars per year. While residents are charged from \$1.25 to \$2.50 per bag when dropping of non-recyclable refuse, there is no extra charge for bringing recyclables to the transfer station. This "no charge for recyclables" policy is used by the DPW as an incentive for residents to sort out their recyclable materials as

much as possible. As we are the only car on the site, Paul Langlois, the one DPW employee who attends the transfer station operations on a regular basis, comes over to Tibby's van to give her a hand in moving her containers to the right bins. They have a nice conversation, but as three or more cars arrive, Paul's attention is quickly diverted to assuring that each car's load of "stuff" all ends up neatly where it belongs. So, Tibby and I bring her cardboard and mixed papers into the container marked for papers. She throws her one bag of refuse into the compactor. We each take a bucket of mixed containers over to the correct bin, climb up the stairs and dump them. Tibby exclaims, "Will you look at that, somebody dumped all those liquor bottles, I could have taken those up to Vermont for exchange!" She is appalled by this waste of money and seems about ready to jump in to gather the glass liquor bottles and the one aerosol can she sees poking out the top of the pile. After I convince her that it is probably not a good idea to go fishing in the bin, we head back to the car, now with a line of five cars behind her, jump in, drop off a few bits of scrap metal, and we are off. In the course of about five minutes we have successfully gotten the weeks recycling done.

On the ride back to Green River Road, Tibby does not hesitate to express her feelings about the Transfer Station and recycling in Williamstown. "See," she says. "The process is laborious, but it is like second nature to me. I go over to my kids place (in Idaho) and I am flabbergasted that they don't recycle." She also added that even in Williamstown where "you've got this high browed community, people don't recycle because they are just too darn lazy." And it is highly unlikely that she is the only town resident thinking about these issues. Although it is mandatory to recycle in Williamstown, Tibby's anecdotal stories suggest that not all town residents are taking steps to recycle.

### **Research Methods and Project Plan**

In order to accomplish the three objectives of our recycling project our conducted surveys of Williamstown, phone interviews with directors of Williamstown businesses and schools, online research of recycling programs and recycling education campaigns and personal observations of effectiveness of transfer station design. Over a three day period, our team will conduct surveys at the transfer station, Stop and Shop and on Spring Street by the Post Office.

We asked that that surveys be filled out in our presence in order to ensure that transfer station users fill out the transfer station sheet and the private hauler users fill our their sheet. The surveys (Appendix B) will be used to collect data on: 1. residents' knowledge and perception of costs and benefits of recycling 2. how Williamstown residents decide whether to use the transfer station or private haulers 3. the current problems with the town's recycling program 4. ideas of how to improve the program. The data collected will inform the making of our educational materials because the results will give us an understanding of what information residents are currently lacking about their recycling program.

The Massachusetts Department of Environmental Protection states that there are four main reasons why people are motivated to recycle. The reasons are: 1. a perceived effectiveness of recycling 2. concern about the environment 3. social pressure 4. financial motive. Survey results that reveal a weakness in any of these areas will cause us to focus our education campaign on increasing the motivation to recycle by addresses those areas. Similarly Mass DEP notes the two main deterrents to recycling which are 1. Inconvenience and 2. Lack of Knowledge. The surveys were intended to reveal what residents find most inconvenient about their recycling program and what they do not know about their recycling program so that we can create educational materials to rectify those problems.

The surveys will also serve for our second and third project objectives by providing useful data on how residents would like to see the transfer station design change and whether or not residents would be willing to pay for municipal curbside pick up of recyclables.

Another major component of our research was the study of successful recycling education campaigns and town recycling programs in other parts of Massachusetts. We focused on other towns in Massachusetts because campaigns and programs implemented by towns in the same state would confront a similar population and similar regulations to those which Williamstown would face. Our online research will informed us of what educational strategies work best to increase recycling participation. These strategies include where the information should be provided, how it should be designed, what facts people find most significant and what resources are made available by Massachusetts to

assist town efforts. Have other towns been most successful when appealing to environmental or financial concerns of their residents? What types of slogans and symbols are most effective?

Our studies of other Massachusetts towns also involved phone interviews with managers of recycling programs and organizers of recycling campaigns in those towns. The investigation of successful town recycling programs will include a gathering of ideas for transfer station design changes.

Finally, observed for ourselves the difficulties that people encounter when using the transfer station by visiting the site and speaking to Paul Langlois, the man who staffs the transfer station. We made recommendations for design change according to what we learned from our visit.

Using the surveys, the tips from other towns and our own observations at the transfer station, we tackled our three project goals. The first was to come up with recommendations for changes in design and function of the transfer station. Second, we provided policy recommendations focused mainly on enhancing the efficiency of private haulers in the town. Third, we created guidelines on improving the availability of recycling information in the town. We also created some materials to be used for this end.

### **Ideas for Changing Transfer Station Design and Function**

The survey results (Appendix A. 1) from the surveys of transfer station users reveal current difficulties of using the transfer station and provide insight into suggestions for improving the transfer station design. The total number of survey respondents for transfer station users were 29 transfer station users who did recycle and 1 transfer station user that did not recycle. Our recommendations for changes to transfer station design take into account that the town is “recycling” the land where the old landfill was located to serve as the site for the transfer station. This use of the land is beneficial toward the environment because it reduces habitat destruction that would be necessary if a new site were to be constructed. However, working in this manner also limits the type of design changes that are feasible in the space available. We conclude that there are changes that can be made to improve the transfer station and that an entirely new site is not necessary.

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Ques. 1 asked participants what they think can and cannot be recycled at the transfer station. The survey demonstrated that transfer station users were most uncertain about the fact that phone books, junk mail and juice cartons can be recycled at the transfer station. The confusion concerning what can be recycled suggests that the information provided in the town regarding recycling can be improved.

Ques. 2 asked participants why they use the transfer station in place of a private hauler. 67% of respondents said the transfer station is less expensive. 33% respondents answered that they use the transfer station because they enjoy their visits there. We drew from the answers to Ques. 2 that if the transfer station were to maintain lower costs than private haulers, it would remain a popular choice for community members. It is therefore worthwhile to consider how we can improve the transfer station so as to make the experience more enjoyable for those who use the site and also to encourage people to switch to using the transfer station. We do not wish to lose the transfer station because it provides an opportunity to socialize that other recycling programs cannot offer.

Ques 3. asked “What do you consider the greatest challenges to recycling?” The results show that 40% cite time commitment, followed by 27% saying they do not know what is recyclable and what is not and 20% citing the lack of a convenient recycling bin. The challenge of time commitment cannot be easily remedied because it is the extra effort needed to use the transfer station which makes its use less expensive than contracting a private hauler. Once again, the survey results show that there is a lack of information regarding recyclables. Finally, the problem of not having a recycling bin in the house can be solved through a more constant effort on the town’s part to give or sell recycling bins to residents. Grants for these bins can be received from the district. Williamstown has given out bins in the past, but we believe these efforts can occur on a more regular basis and can be more effectively publicized (Park).

Ques. 4 asked “Which of these proposals for changing the transfer station do you consider a high priority?” The two most common responses were first, the need for trash bags to be sold at the transfer station with 60% of the responses. Second, with 34% of the responses was the desire for a container for refundable bins which would be collected on a regular basis by a local charity.

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The DPW informed us that the reason trash bags are not currently sold at the transfer station is because theft and vandalism in the past make leaving valuables at the transfer station a concern. We recommend that the DPW attempt to overcome the challenge of theft with innovative ideas such as having a vending machine at the transfer station to supply garbage bags or to move any valuables to a more secure location for the night. Although the trash bags are not directly related to recycling, survey results indicate that people would find the transfer station more effective if trash bags were to be provided and might be more inclined to use the transfer station over a private hauler. As transfer station users have higher recycling rates than private hauler users, this type of shift would prove beneficial to the recycling rates of the town. The DPW expressed to us that an effort in the past has been made to establish a partnership with a local charity, but no group has yet committed to the proposition. We recommend that if such a partnership were to seem feasible (if the money made from the refundable containers covered the costs of maintaining the collection bin and making regular pick ups, then the container should look similar to the one shown below on Photo 2.



Photo 2 – suggested bin for refundable container donations

[www.lancaster.gov.uk](http://www.lancaster.gov.uk)

The type of container shown above would be ideal for refundable container deposits because it is very mobile and can be collected on a regular basis. It also has small openings, which forces people to deposit recyclables one by one, increasing the probability that they will closely inspect the recyclables to ensure that they are in fact refundable. This degree of attention will enhance the experience of the charity group that would collect the bin and not have to deal with useless containers.

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On Saturday morning November 17, 2007 we visited the transfer station to observe residents depositing their waste and to note any difficulties they had in their use of the station. The transfer station has no protection from the weather. The day we observed visitors coming to the transfer station, the wind was not only making it difficult for people to transfer materials, but was also blowing loose materials around the transfer station. Our proposals for design changes all take into consideration the fact that accessibility to the bins should be as efficient as convenient as possible as people have to deal with whatever weather conditions they confront. If one day in the future, extreme design changes can be made to the facility, they should include covered access such as can be seen in Photos 2 and 3 taken by Alyse Takayesu on a visit to the Montauk transfer station.

Photo 2



Photo 3



Another aspect of the transfer station design that could be improved is the accessibility to the mingled containers bin seen in Photo 5. It currently sits above ground and must be accessed by residents climbing up a set of stairs and dumping in their recyclables. The stairs make it impossible for more than one person to deposit recyclables at a time and could also pose a challenge for elderly people who have to carry heavy loads up the stairs.

Photo 5 – mingled containers bin

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The container for paper collection is problematic in that when full, the materials will fall out of the container seen in Photo. It also requires that people enter the container when it is empty to drop off their paper, rather than allowing for them simply to dump it from above.

Photo 6 – mingled paper bin



After speaking with the DPW, we determined that it would be difficult to change the system with the mixed container bin because that container must be covered and the paper inside of it would not be packed to the optimum capacity if people did not take the time to neatly stack the paper as they do now. However, the DPW did express optimism concerning improvements for the mingled containers bin. That bin could be dropped down a level if the two-tier system which currently exists for the trash bin were expanded. The mingled containers bin could then be located on the lower level, next to

the trash bin and people could walk from their cars to dump their recyclables without having to use stairs. Photos 7 and 8 display the two-tier system which can be expanded to accommodate our suggestion. The movement of the mingled container bin would also make more space available on the top level of the transfer station to reduce congestion and make room for parking.



Photo 7



Photo 8

Another strategy that might be implemented to address the inconvenient bins at the transfer station would be to purchase new bins. The bin in Photo 9 does not require the use of stairs and is covered, which reduces the unintended dispersal of recyclables. This type of bin also can be used for further separation of recyclable products, which could then be marketed for profit. The DPW shared with us their interest in pursuing the sell of separated recyclables such as certain metals and plastics.

Photo 9



[www.northern1.com/services/Recycling-1.jpg](http://www.northern1.com/services/Recycling-1.jpg)

The surveys indicated that one of the changes to the transfer station that should be a priority is the improvement of the information about recycling and on use of the transfer station displayed at the office. Photo 10 and 11 show the condition of the current message board. The message board is currently too small to display information that would be easy for the public to read and does not presently provide many materials to the public.

Photo 10



Photo 11



Photo 12 demonstrates another problem with the current message board which is its location. The message board is located on the office shed seen to the left of the row of cars. If people were to read the information on the message board, they would be blocking the flow of traffic.

Photo 12



In order to remedy the current problems of the message board, the DPW informed us that they would be interested in the idea of making a new message board on the side of

the storage house located near the center of the transfer station and shown in Photo 13 and 14. A larger message board could provide information such as: What Can I Recycle at the Transfer Station?, What's New at the Transfer Station?, Where Can I Find Other Resources on Reducing, Reusing and Recycling? Etc.

Photo 13



Photo 14



#### Tips from other Towns

Members of the Williamstown Recycling Committee recommended that we investigate the Bedford Transfer Station in New Hampshire because they had visited it in the past and were impressed with its design. Jeremy Spooner informed us that their facility is completely covered and has wooden stairs leading up to the containers. He explained that the most important aspect of a good recycling station is to keep the traffic flowing. Mr. Spooner also shared that his most valuable lesson from his training classes were that the recycling containers should be placed before the trash containers at the transfer station so that people are encouraged to think about how trash can be reduced before it is deposited (Spooner).

We also research recycling program and transfer station methods used by other towns with high recycling rates in Massachusetts. Needham, Massachusetts had the highest recycling rate at 69% in the 2006 FY according to Mass DEP website. The Superintendent of the Recycling and Transfer Station, Chip Laffey, raised more than \$180,000 from outside sources in 2005 and in doing so was able to keep down recycling costs for residents (Needham). Chip explained that Needham has such a high recycling rate because even the private haulers deposit what they collect at the transfer station, so

they are able to report the town's waste and recycling volumes accurately. The Needham transfer station handles 96% of the town's waste.

Chip was working on fixing the electronic message board at the entrance of his transfer station when we spoke on the phone and expressed the significance of giving residents up to date information on their recycling program. Chip appreciates that his transfer station is a social center for the town and told me how he forces all the politicians who show up at the station to campaign stand across the street so they don't block the flow of traffic. The containers at the station are color coded and sit recessed below a walkway. Only the paper and cardboard container are covered.

Chip told us that they conducted a survey in Needham to see if people wanted to switch to a curbside program, but 80% of people refused. He noted that the transfer station is "the place where you go to show off your new clothes, car and baby. It's most important for the elderly come here everyday, it's part of their daily routine."(Leffey)<sup>i</sup>

East Longmeadow, MA with a 2006 FY recycling rate of 63% contracts a commercial hauler to do municipal curbside pick up in the town. Sean Kelley from the East Longmeadow DPW explained that their town's "two-pronged approach" involves curbside pick up and the use of a transfer station for more bulky waste. The residents pay for curbside pick up out of their taxes and the town creates the incentive to recycle by having the commercial hauler carry out a pay-per-bag program. Money made from recycling goes back to the town. The transfer station is set up so that a twelve foot wall allows the cars to pull up to the top of the dumpsters and people can easily drop their waste into the containers from the top of the wall. Sean explained that the town does the landscaping of the sight itself, but that it's easy because they are the DPW. He also explained that the MASS DEP has given them grants to purchase sheds for hazardous waste materials. (Kelley)

Leverett, MA with a 2006 FY recycling rate of 60% uses a swap center where goods are sold and the revenue helps cover the costs of the station. They also have a "looking to buy/looking to sell" bulletin board for items that are too large to bring to the transfer station.(EPA website). Richard Drury is the solid waste administrator of Leverett and established a system of a crescent of padlocked wooden sheds. He is proud to proclaim that in 2004 and 2005 the town shipped as much recycling as trash. Richard



concedes that Leverett’s high recycling rates are due to its demographics as 52% of residents have had four or more years of college education and are predisposed to recycling.

Leverett reduces its waste by collecting clothing for the Salvation Army and cans and bottles for donations for a non-profit land trust at the transfer station. These tasks are administered by volunteers (Amherst bulletin). Leverett also encourages the reduction of waste by selling home composters and recycling bins at the town hall and transfer station (ILSR).

### Policy Recommendations

Six different policy options were measured against five criteria in an attempt to determine which options show the most promise for the future of recycling in Williamstown. A rubric showing a summary of the results can be seen in **FIGURE 5**.

**FIGURE 5: POLICY RECOMMENDATION RUBRIC**

|                                  | <b>Municipal Curbside Pick-Up</b> | <b>Change Bylaw: No Extra Recycling Charge</b> | <b>Legal Enforcement</b> | <b>Education</b> | <b>Pay As You Throw</b> | <b>Status Quo</b> |
|----------------------------------|-----------------------------------|--|--------------------------|------------------|-------------------------|-------------------|
| <b>Financial Cost to Town</b>    | 1                                 | 2  | 1                        | 2                | 2                       | 3                 |
| <b>Increasing Recycling Rate</b> | 2(4)                              | 2(4)   | 3(6)                     | 3(6)             | 3(6)                    | 1(2)              |
| <b>Legal Feasibility</b>         | 1                                 | 2  | 1                        | 3                | 2                       | 3                 |
| <b>Community Support</b>         | 3                                 | 2  | 1                        | 3                | 2                       | 2                 |
| <b>DPW Support</b>               | 1                                 | 2  | 1                        | 3                | 2                       | 1                 |
| <b>Total</b>                     | <b>10</b>                         | <b>*12*</b>                                    | <b>10</b>                | <b>*17*</b>      | <b>*14*</b>             | <b>11</b>         |

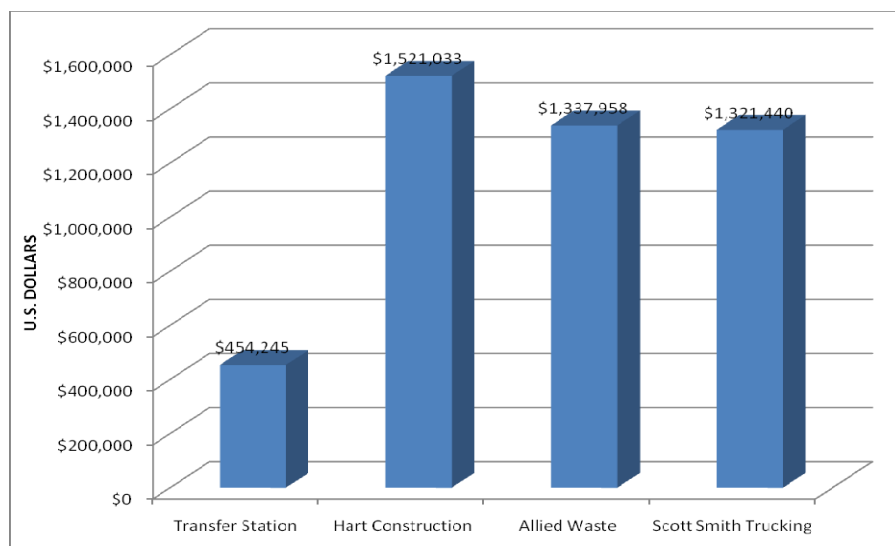
Each policy was given a rating of one to three for each criterion, with one being the least positive and three being the most positive. All criteria were weighted equally with the

exception of ‘increasing recycling rate’, which was given double the weight of all other criteria due to the fact that it is the emphasis of our project. Each policy with a total score exceeding that of the status quo is considered a worthwhile policy initiative, and those policies are marked with asterisks in the summation row. None of the policies are considered mutually exclusive.

### Curbside Pickup

The estimated cost of implementing a municipal curbside pickup program varies slightly depending on what hauler is used as a model. The three curbside pickup providers with the largest customer base in town, Hart Construction, Allied Waste, and Scott Smith Trucking, will be compared in relation to the Williamstown transfer station’s drop-off system. The overall annual cost to consumers extrapolated to town wide coverage for each model is shown in **FIGURE 6**. All estimates assume that each model is scalable to the town wide population and that cost structures would not change with municipal take over.

**FIGURE 6: Total Consumer Costs for Town Wide Coverage**



Appendix B

Nearly 75% of people polled stated that they would be willing to pay for municipal curbside pickup if Williamstown offered the service. This strong support may stem partially from the fact that more than half of private hauler users in Williamstown stated that they do not trust that their private hauler actually recycles the recyclables they leave put out.

Looking beyond the broad community support, there are few other benefits to the change and many drawbacks. The most prominent disadvantage to municipal curbside pickup is the scope of the transition. Depending on the specific strategy the town decided on for the transition, costs would vary, but in most cases would represent a substantial initial investment, with probable returns over a number of years. The legal complexities inherent to running a business with municipal oversight would be a considerable burden, including the establishment of all new contracts and the unionization of public employees. While municipal oversight of curbside pickup would likely lead to a slight increase in recycling rates given the transfer of liability for lack of performance from the private sector to the town, the combination of high costs and legal gymnastics results in very low support from the Department of Public Works.

### **Amend Recycling Bylaw**

Under the current cost structure many private haulers charge one price for disposing of refuse, and then a separate charge if the customer wishes to recycle. This extra charge can be as much as \$10 a month for some residents (Scott Smith Trucking 2007). While residents are required to recycle under Chapter 153 of the Williamstown bylaws, this cost structure creates a financial disincentive for obeying the law. Amending the recycling bylaw by requiring that refuse and recycling be combined into a single

service charge would eliminate this disincentive. Such an amendment would fall under the purview of the Board of Selectman under Chapter 56 of the Williamstown bylaws. Financial issues are beyond the scope granted to the Board of Health in Chapter 56.

It should be noted that this amendment would largely affect the private hauler sector, as the transfer station already combines refuse and recycling under a single service charge. The amendment would not dictate any specific price; it would simply ensure a single service charge. Without the additional financial burden of recycling, it is assumed that those people on the margin, who believe in recycling but not so much that they are willing to make financial sacrifices to do it, may institute recycling programs. This amendment would likely lead to an increase in costs to customers, as private haulers with split cost structures will likely charge what had previously been the rate for the combination of refuse and recycling pickup.

The legal feasibility of passing such an amendment is somewhat involved due to the bureaucratic hurdles inherent in any amendment in town law. It would have to be discussed by the selectmen, be subject to open forum, and finally passed by the board. Pending any unforeseen variables, the process would likely be quite smooth given the absence of any obvious strong opposition. Any opposition from the citizenry would likely come from people who are currently violating the mandatory recycling bylaw and it would therefore be unlikely that they would formally oppose the amendment. Overall, community support for such a measure will likely be more positive than negative, with the Department of Public Works only hesitant on the grounds of legal feasibility.

**Legal Enforcement of Williamstown Bylaw - Chapter 153:**

Legal enforcement of the mandatory recycling bylaw would entail inspection of the waste stream, with resulting fines for violations as set forth in Chapter 1, Article II of the Williamstown bylaws. Residents would incur fines for attempting to dispose of recyclables as refuse at either the transfer station or in curbside barrels, and any hauler found accepting recyclables with refuse would also incur fines as the “servant or agent” of the violating party.

While this policy could potentially result in near maximum recycling rates, the potential cost of supervising all waste transport would be substantial. Given the limited scope of the regulation to within town boundaries, it would likely be near impossible to enforce the law on the haulers’ end, short of following around the collection truck, due to the fact that once the waste enters the truck, it cannot be easily determined whether it came from within or beyond town lines. The majority of fines would therefore accrue to the violating customers themselves.

Ironically enough, legal enforcement receives a low legal feasibility score due to the fact that enforcement falls to the Board of Health, and they currently lack the resources to effectively police the waste stream. The community and Department of Public Works support ratings are both very low for this policy option due to the aforementioned obstacles and the potential detrimental effects on citizen/town relations.

### **Education**

Community education received the highest score in our policy rubric and is absolutely essential to improving recycling rates in Williamstown. The need for better recycling awareness in town was made obvious in our survey, where less than half of all people polled knew that recycling is mandatory. Not only did the survey results

objectively indicate the need for educational outreach, many respondents indicated that better communication and knowledge access were among their top priorities for any future changes in the town's recycling program. Education is the cornerstone of any well run recycling program and improves the efficiency of all other related policy options.

Support for an improved education policy is strong from both the community as a whole and from the Department of Public Works. Legal obstacles are almost nonexistent and financial cost of such things as improving signage, mailing pamphlets, and producing educational magnets are quite reasonable, with state funding available for such endeavors.

### **Pay As You Throw**

The mixed system of curbside and drop-off waste disposal used in Williamstown is a common theme across the state of Massachusetts. In looking over the efficiency of recycling in other municipalities one theme stands out. Of the municipalities with over fifty percent recycling rates, eighty percent utilize some type of pay as you throw system. The top eight recycling municipalities in the state all utilize this system. As can be seen in **FIGURE 7**, this is a much high percentage than the state average.

**FIGURE 7: PAY AS YOU THROW**



The pay as you throw system offers economic incentive for people to reduce, reuse, and recycle. The most common pay as you throw system is the pay by the bag

strategy. Refuse can only be thrown out in specified bags sold by the resident's chosen waste manager, whether that manager is public or private, and the bags are priced to cover waste management costs. Recycling is then normally taken away for free, as recycling costs are built into bag sales. By reducing, reusing, and recycling, customers cut down on the number of bags required and thereby save money. The system is also economically advantageous to waste managers, as tipping fees for refuse are much higher than those for recycling, and pay as you throw encourages recycling. Williamstown utilizes this strategy at its transfer station, which has an exceptional recycling record, but not with its private haulers, whose recycling record is in need of improvement.

In conjunction with a strong education campaign, the pay as you throw system is the holy grail of waste management. The financial costs and legal feasibility of this policy are highly variable depending on the implementation strategy. For instance, the town could go so far as to implement municipal curbside pickup in its attempt to apply the pay as you throw cost structure. On the other hand, the town might decide to do something so simple as to approach a private hauler about transitioning to the pay as you throw system in return for town endorsement as a "green hauler". Another strategy that would fall between the two above mentioned options in terms of complexity would involve the Board of Health adding a clause requiring some type of pay as you throw cost structure into hauler permits. Given the range of possibilities, the policy was given an intermediate ranking on financial cost and legal feasibility.

Community support would likely initially be lukewarm on the policy as it would entail a pretty dramatic shift in the manner in which waste is handled, but the financial and environmental benefits would likely soon become apparent to those susceptible to the

education campaign. The Department of Public Works supports this policy, but worries about the transition.

### **Status Quo**

Given the fact that alternative policy options rank higher than the status quo according to analysis results, leaving the current waste and recycling programs untouched is not a pragmatic option. The major benefits of the status quo all relate to the fact that it is the current system. The infrastructure is already in place to carry out the business as usual model and therefore the transitional costs seen in the other policies is not a factor in the status quo.

### **Increasing Knowledge of Recycling: Rationale and Strategy**

In order to increase recycling participation in Williamstown it is imperative that knowledge of recycling is raised. In addition to changes to the transfer station design and changes to law and policy, our project team will also focus on more internal barriers and motivations to recycling. By internal, I mean to say, those barriers and motivation that are derived from within the individual rather than from external sources such as incentive policies, ease of recycling, design of transfer station etc. According to a synthesis of 67 studies on recycling behavior by Hornick et al., knowledge of recycling (both the benefits of, and how and what to recycle) was identified as the highest correlation to the propensity to recycle (1995). Another study from Somerset, New Jersey showed that people were much more likely to recycle when they had considerable knowledge and confidence pertaining to how, what and why to recycle (Arbuthnot et al., 1976-77). Since the 1970's the body of social science research focusing on recycling behavior has grown significantly and with this the understanding that in no small measure is knowledge of



recycling a key aspect of raising recycling participation. Through the Williamstown Recycling survey and examples from other towns and agencies we are better able to look at the current levels of recycling knowledge in Williamstown, and also, what kind of informational/ educational strategies might work best to increase the current knowledge of recycling.

The Williamstown Recycling survey showed that there is a significant knowledge of recycling deficit among residents.

Chart 1. What do you believe are the current town regulations on recycling?

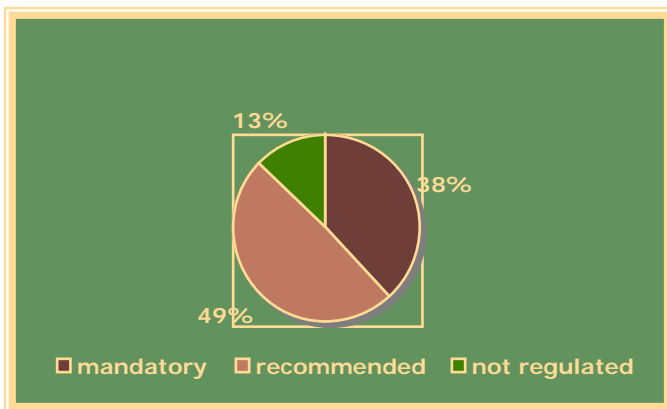


Chart 2. Which statement do you think is true about recycling participation rates in Williamstown over the past decade?

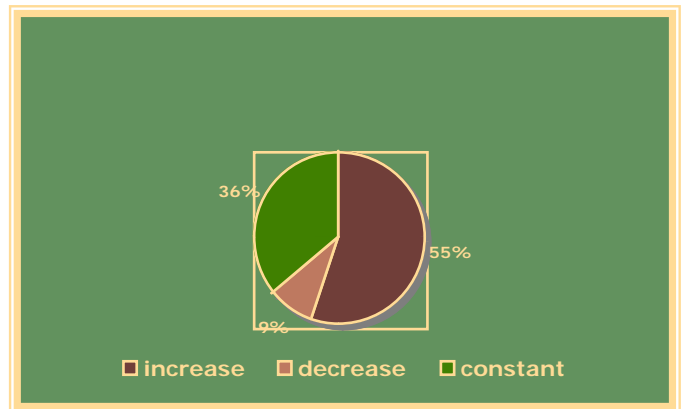


Chart 1 shows that over half of the respondents did not know that Williamstown has a *mandatory* recycling program. Chart 2 shows that over fifty percent of respondents thought that recycling rates have increased over the past decade when in fact according to the Massachusetts Department of Environmental Protection the rates of recycling in Williamstown have suffered a decrease (MASS DEP). This apparent lack of knowledge extends beyond these general questions to more specific questions pertaining what can and cannot be recycled.

In the survey twelve respondents marked “knowing what is recyclable and what is not” as among their greatest challenges to recycling. These responses from within the survey show that informational and educational strategies should be a priority in increasing recycling participation rates among Williamstown residents.

Here the question becomes, how best to implement educational strategies so that they are accessible, useful and effective.

In response to the survey question “Where would you prefer to access information about recycling in Williamstown?” most respondents said town website.

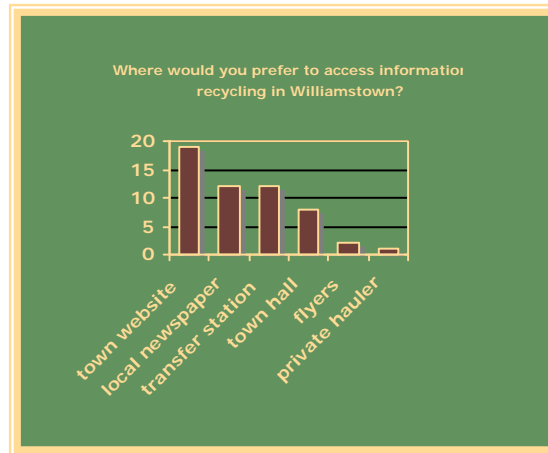


Figure 8

This presents one important avenue for

dispersing information about recycling to residents. Currently the Williamstown town website has very minimal information for recyclers. However, other Massachusetts towns such as Needham, Leverett, East Longmeadow and Newton all have extensive recycling websites that can serve as guides for the creation of Williamstown’s own website. As examples all the websites list very clearly what can and cannot be recycled, some include a section of frequently asked questions about recycling and on the Leverett site, there is a section devoted to congratulating residents for their recycling efforts. To different degrees the websites also include current information on town recycling rates in order to show the effectiveness of residents’ efforts and to increase dedication to recycling. All of the sites also include important links that show the importance of recycling from environmental and economic perspectives.

Beyond significant changes for the Williamstown recycling website, our project team has also created sample materials that can be distributed through mail to Williamstown residents. These include a pamphlet (Appendix D) showing an outline of where recyclables taken to the transfer station go to and how they are processed and other important information about the economic and environmental benefits of recycling. A separate and revised refrigerator magnet (Appendix E) clearly delineating what can and cannot be recycled has also been generated for distribution. The town of East Longmeadow in 2003 received a grant from the Springfield materials recycling facility (MRF) for their recycling efforts. With the money they received the town decided to purchase the printing of recycling information booklet on 100% recycled paper for distribution to residents (Gaumond, 2003). Although Williamstown is no longer part of the MRF, the town DPW is eligible for Massachusetts DEP grants to produce informational materials on recycling.

The third locus of informational strategies will be a short Willynet show that will seek to inform residents about recycling in Williamstown and the current recommendation generated by this project. Through television publicity, changes to the town website and the distribution of informational materials it is with our confidence that the town can increase the knowledge of recycling in Williamstown. With an increase and greater clarity of knowledge the rates of recycling participation should, as shown in many other towns, increase significantly.

## **Conclusion**

The Williamstown Recycling Program can be improved through innovative design changes at the transfer station, through policy changes such as increasing the recycling rates of private haulers and private hauler users and through an increase in the amount of information regarding recycling that is made available to the members of the town.

## **Acknowledgements**

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## **References**

United States Environmental Protection Agency (U.S.EPA). *Municipal Solid Waste*. November 2007. <<http://www.epa.gov/epaoswer/non-hw/muncpl/index.htm>>

Interviews in person, phone conversations, emails and meetings with Hank Art, Chair of the Williamstown Recycling Committee  
Scott Park, Williamstown Transfer Station Supervisor  
Tim Kaiser of the Williamstown Department of Public Works  
Jeff Kennedy of the Williamstown Board of Health

Town of Williamstown. *Town Bylaws*. November 2007.

US Census 2000

Massachusetts Environmental Protection Agency (MassDEP). *Waste and Recycling*. November 2007. <<http://www.mass.gov/dep/recycle/priorities/dswmpu01.htm>>

Williamstown Board of Health. *Refuse Hauler Quarterly Collection Report*.

Detailed list derived from DPW flyer, “What We Recycle in Williamstown”

Phone interview with Jeremy Spooner from Bedford Transfer Station, New Hampshire – 11/28/07

<http://www.mass.gov/dep/recycle/priorities/dswmpu01.htm#recycling>

<http://www.needham.gov/documentview.asp?DID=669>

Phone interview with Chip Leffey Superintendent of the Recycling and Transfer Station – 11/28/07

Phone interview with Sean Kelley from the East Longmeadow DPW – 11/28/07

<http://www.epa.gov/epaoswer/non-hw/recycle/jtr/jtrnet/swapdep.htm>

<http://www.amherstbulletin.com/story/id/50500512005/>

<http://www.ilsr.org/recycling/wrrs/profiles.html>

Hart Construction. November 2007. Personal Correspondence.

Allied Waste. November 2007. Personal Correspondence.

Scott Smith Trucking. November 2007. Personal Correspondence.

(<http://www.mass.gov/dep/recycle/priorities/dswmpu01.htm#recycling>)

Arbuthnot et al. (1976-77). The induction of sustained recycling behavior through the foot-in-the-door technique. *Journal of Environmental Systems*, (6) 355-368.

Gaumond, Leon a. (2003). Press Release: East Longmeadow Receives Recycling Grant. Available: [http://www.eastlongmeadow.org/selectmen/2005AMR/2005Release/release %20- %20recycling%20grant.htm](http://www.eastlongmeadow.org/selectmen/2005AMR/2005Release/release%20-%20recycling%20grant.htm)

Kornick, J. et al. (1995). Determinants of recycling behavior: a synthesis of research results. *The journal of socio-economics*, 24(1) 105-127.

Massachusetts Department of Environmental Protection. (2006). *Massachusetts Municipal Recycling Rates Fiscal Years 1995-2001 and Calendar Years 2002-2006*. Available: <http://www.mass.gov/dep/recycle/priorities/dswmpu01.htm#recycling>

<http://www.needhamonline.com/towndump/RecyclingGuide.html>

<http://calendar.eastlongmeadowma.gov/residents/waste.htm>

<http://leverett.ma.us/>

<http://www.ci.newton.ma.us/dpw/recycling/residents/index.htm>

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