



Streets Division

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To: Ald. Judy Compton and Ald. Brian Solomon

From: George Dreckmann, Recycling Coordinator

Subject: Plastic Bag Recycling

Background

It is estimated that the average American uses 330 plastic bags annually. That means that Madison Residents will use 74,794,500 plastic bags this year. Based upon national averages only .6% of those bags (448,000) will be recycled.

Plastic bags are a significant source of litter, especially around landfills and on bodies of water, such as Madison's magnificent lakes. This has resulted in calls to action by the public around the world. Some nations have enacted a tax on plastic grocery bags; others have resorted to banning them. Several cities in the USA have enacted bag bans including San Francisco and Los Angeles. Other cities have enacted ordinances that require retailers to take bag plastic bags for recycling.

Whole Foods Market has stopped providing plastic bags to its customers. And several area retailers, including Cops, Wal-Mart, and Pierce's Northside Market take back plastic bags from their customers for recycling.

There are several Madison Alders who have expressed interest in ordinances regarding plastic bags. Prior to moving forward with any legislative proposals, the Streets Division was asked to explore options for a city run program for recycling plastic bags and/or reducing their use.

Recycling Markets

There is a market for plastic bags. Plastic bags are most often recycled into plastic lumber or a scrap wood/plastic composite product. These materials are used for a wide variety of outdoor products and for fences and decking.

Typically, recycled plastic bags sold for \$45-\$55 per ton. However, at this time, due to the slow down in the economy and the building sector in particular, plastic bags are not moving very well and prices are at or near zero. That said, we would save \$34.10 for every ton we did not landfill and markets will eventually rebound.

Curbside Collection

The easiest way to recycle plastic bags would be to include them in our curbside collection program. Unfortunately, that is not possible due to the fact that plastic bags get tangled in the sorting equipment at Material Recovery Facilities (MRF).

An August 2007 article on Solon.Com describes the problem at the MRF in San Francisco, CA.

“As the great mass of recyclables moves past the initial sort deck on a series of spinning disks, stray plastic bags clog the machinery. It's such a problem that one machine is shut down while a worker wearing kneepads and armed with a knife spends an hour climbing precariously on the disks to cut the bags out, yielding a Medusa's hair-mass of wrenched and twisted plastic. In the middle of the night, when the vast sorting operation grinds to a halt to prepare for the next 700-ton day, two workers will spend hours at this dirty job.”

This increase maintenance costs and equipment down time is why Recycle America, our MRF operator, has told us that they are not open to accepting plastic bags.

A second option proposed to the Streets Division was having residents attach bags stuffed with plastic bags onto their recycling carts for collection by the recycling crew. This option is not practical for several reasons. First, the recycling trucks do not have any space on which we could place a collection box for the bags. Second, one of the main benefits of our automated recycling collection system is that it for the most part eliminates the need for our drivers to get out of their trucks. Our operators would have to get out of the trucks to remove bags from the carts that would greatly increase their chances of getting injured, especially since our automated recycling trucks are not equipped with low entry cabs.

Given the difficulties of adding plastic bags to our current recycling collection system, we are left with exploring the possibility of collecting the bags separately. We do not have any data on the number of bags we could expect to collect nor how often residents would set bags out. The only way to accurately get this data would be with a pilot project.

This memo will set out an estimated cost to conduct a pilot project and our current best guess on the cost of a citywide curbside program based upon our current collection services for other materials.

Curbside Pilot Program

In order to gather accurate data we believe we would have to conduct a 6 month pilot program using two refuse districts, one on the east side and one on the west side. A pilot program would require funds for public education as well as for collection.

There are approximately 6,000 households in each refuse district, which would mean a total of 12,000 participating in the pilot project. The most efficient way to get information to these residents would be by mail. It is estimated that a mailing of this size would cost \$7,500.

Given the small amount of plastic bags that are accumulated by each household, we believe that the best frequency of collection for a pilot project would be once a month.

We currently divide each refuse district into 9 refuse routes, 5 recycling routes and 4 large item routes. To determine the number of routes we would need for plastic bags, we have to consider volume to some

extent, but the biggest factor in setting the number of routes needed is the distance that has to be covered.

For the start of the pilot we estimate we would use three side-loading packers each with one operator for each refuse district for a total of six for each collection during the pilot. The operating costs for six side-loaders would be \$864 per week or \$5,184 for the project.

The wage and benefit costs for an SMOI is \$28.96 per hour and \$231.68 per day. The daily cost for the pilot program for six SMOI's would be \$1,390.08 and \$8,340.48 for the 6-month pilot project.

It is difficult to justify hiring additional seasonal workers to cover for the SMOI's who will be pulled off their other duties for this pilot project. That means that these workers will have to be taken off brush collection, street repair, stump removal, and large item collection. This will have an impact n these services during the pilot project.

Cost Of Six-Month Plastic Bag Collection Pilot

Public Education	\$7,500
Equipment Costs	\$5,184
Wages and Benefits	<u>\$8,340</u>
TOTAL	\$21,024

City Managed Drop Off Sites

Another option for the collection of plastic bags would be setting up sites that would be managed by the Streets Division. These sites could be located on City property such as parks, waste oil sties, and bus transfer points. We could also enlist the cooperation of retailers so we could place collection points in their parking lots.

In order for such a program to be successful, the sites would have to be conveniently located. For the purpose of this analysis we will look at two alternatives 100 locations and 50 locations. Each site will require a collection container that is reasonably secure to prevent the dumping of materials other than plastic bags. The sites will also have to be easily accessible for our collection vehicles.

The Streets Division would provide collection using a packer truck equipped with a cart tipper. Since the truck would be required to cover the entire city, we believe that we should budget for a two full days of collection. Collection would take place biweekly.

The wages and benefits for a Street Machine Operator 1 are \$28.96 per hour. Sixteen hours of work are needed for this project at a cost of \$463.36 every two weeks or \$12,047.36 annually.

The cost to operate a rear-loading packer is \$15 per hour including debt service, maintenance, and fuel. For sixteen hours of operation the cost would be \$240 for an annual cost of \$6,240.

Containers for the drop off program must look good and be compatible with our collection equipment. Fibrex Company makes several types of collection housings for 95- gallon collection carts that meet these criteria. The Streets Division currently uses Fibrex covers for its oil filter collection program and they have performed well. There may be others on the market, which we will look at if we enter into this program. (Given the number of containers needed for the program outlined in this memo we will certainly have to go out for competitive bids for these containers.) But, for the purposes of this analysis

we will use the prices for the Fibrex products.

There are two types of housings available at this time. One holds three 95-gallon carts and the other a single cart. The larger models cost \$2,500 each and the smaller one cost \$400. The larger model is made of fiberglass and the smaller one of recycled plastic lumber. Both models look good and will protect the cart. They will also prevent the collected bags from blowing. (Photos of the bins are attached to this report.)

For the purposes of this analysis we were asked to project the cost of 100 and 50 drop off locations. 100 of the large containers would cost \$250,000 and 50 would cost \$125,000. 100 of the small containers would cost \$40,000 and 50 would cost \$20,000. Since we have sufficient carts in our inventory we will not need additional funds for carts. However, the cost for 100 95-gallon carts is \$5,000 and for 50 it is \$2,500.

In addition to the cost of purchasing the containers we will have to provide collection service. We would have to run a separate truck to collect the bags if we were to use our current fleet. Since these collection sites will be widely dispersed around town, we will need to plan for two full days of collection to serve the sites every other week.

A rear-loading packer costs \$15 per hour to operate or \$120 per day. The annual cost for every other week collection from the drop off sites would be \$6,240. We will be using an SMOI to operate the truck at an hourly cost for wages and benefits of \$28.96 or \$231.68 per day. The annual cost for wages and benefits would be \$12,047.36. The collection cost for servicing 50 or 100 sites would be about the same. The total annual estimated operating costs for a drop off collection program would be \$18,287.36.

Processing Costs and Revenue

If the City of Madison collected bags curbside or using a drop off system we would have to plan on paying to have the bags baled and shipped to market. Based on preliminary conversations with Recycle America (RAA), our recycling processor, we can expect to pay a processing fee of \$53 per ton for plastic bags. The exact figure would be based upon a negotiated agreement at the time we put a program in place.

RAA has expressed a willingness to share 80% of the revenue from the sale of the bags as we currently do with other commodities they process for us. Unfortunately, at this time low-grade plastic film has no market value. That situation is not likely to change in the next 6 to 8 months.

It is difficult to estimate the volume of material we would collect in either a curbside or drop off program. For the purposes of this memo I estimate we will handle five tons of material from a drop off program and 12 tons curbside. The cost for processing 5 tons is \$265 and for 12 tons it is \$636. For the six month pilot project the cost of processing would be \$106.

City Sponsored Sale of Reusable Bags

The best answer to the question "Paper or Plastic?" is "Neither, I brought my own bags." It is a fact that the best way to decrease the number of plastic bags in the waste stream is to increase the use of reusable bags.

Reusable shopping bags are available from a wide variety of sources. Most are made from cloth or recycled plastic fiber. Some stores sell reusable bags for as little as \$.75. Prices can go as high as \$15, but most consumers can find good bags for less than \$5.

One way to encourage increased use of reusable is for the City to purchase a large quantity of the bags and either resell them at or near cost or give them away to City residents. The estimated cost for 10,000 reusable bags would be \$9,000. The net cost for the bags would depend upon whether they were sold or given away.

Whether or not the bags were sold or given away, there would be staff time involved with the distribution. Distribution could be done at events such as the Farmer's Market and the compost bin sale, or on selected dates at our yard waste drop off sites. Staff costs would be approximately \$2,000.

The best way to do a reusable bag program would be in conjunction with a public education effort aimed at reducing bag usage.

Public Education Campaign to Reduce Plastic Bag Use

In 2008 the Streets Division began running a radio spot called "Bag Zombie" which was aimed at encouraging the use of reusable shopping bags. The ad will run again on a limited basis in 2009.

The Bag Zombie idea could be used as the theme for a multimedia campaign aimed at increasing the use of reusable bags and decreasing the use of plastic bags. This campaign could include print ads, ads inside Madison Metro busses, additional radio ads and TV spots on Madison City Channel as well as cable and broadcast TV if the budget were large enough.

A public education campaign can cost between \$5,000 and \$20,000 annually. The amount of funds available would impact on how many different types of advertising were used and how long the promotion would run during the year. We estimate that in order for this campaign to be effective it would run for two or three years with less being devoted to the effort in the later years.