

## 5.0 A SUMMARY OF PROGRAM IMPACTS

The implementation of a bag limit program (less than or equal to three bags) or a user pay/PAYT program has a positive impact on waste diverted from landfill and diversion programs (i.e. recycling and leaf and yard waste<sup>14</sup>). Figure 5.1 illustrates the percentage change in waste to landfill and diversion of the total residential waste stream for the profiled communities before program implementation and in the year 1999. In the majority of cases, the amount of waste disposed has decreased and the amount of diverted materials has increased after program implementation. In fact, for the majority of the profiled communities, the bag limit programs and user pay/PAYT programs have been in place for many years when comparing results in 1999.

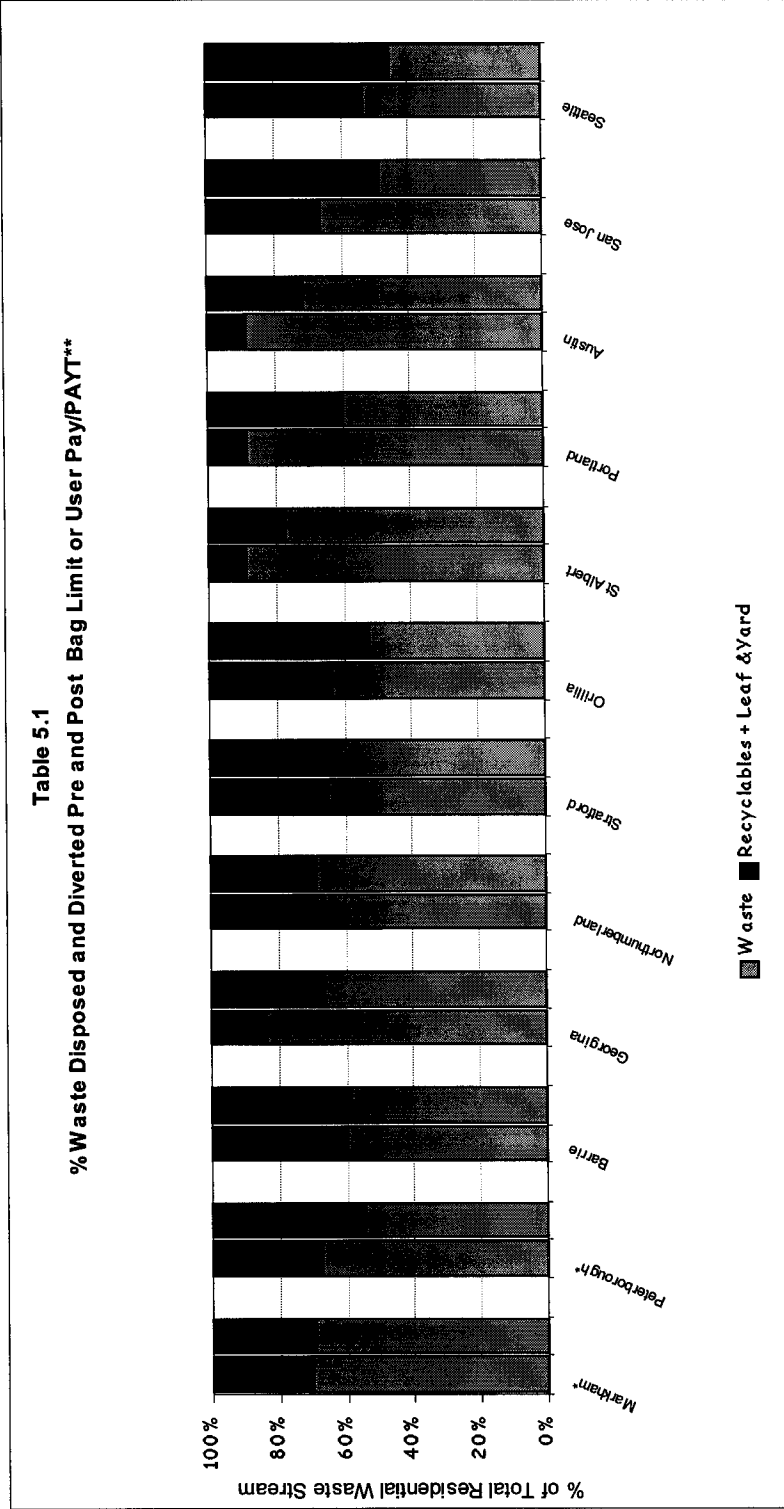
Figure 5.1 suggests that the implementation of bag limit programs (less than or equal to three) or user pay/PAYT programs improves waste diversion over the long term by achieving continued reduction of waste to landfill and increased diversion of recyclables and, to a lesser extent, leaf and yard waste. The greatest improvement occurs with the full PAYT programs, although for many of the profiled communities, new or enhanced recycling and leaf and yard waste programs were introduced at the same time as PAYT. Furthermore, since the introduction of these programs, two of the profiled communities (Cities of San Jose and Seattle) have achieved more than 50% diversion of the single family residential waste stream.

It should be stressed that the results are influenced by other variables such as the number of materials collected through the recycling program over time, the introduction of mandatory recycling by-laws/ordinances or grass clipping bans, and the level of leaf and yard waste curbside collection service provided to the resident. The study attempted to isolate the impacts of these variables as much as possible by addressing the major diversion activities separate from garbage collection.

Showing the percentage change in waste disposed and diversion does not illustrate the impacts on a kg/sfh/year basis. Figure 5.2 plots waste disposed and waste diverted by kilograms per household per year before the introduction of bag limits or user pay/PAYT and in the year 1999. Many of the Ontario based communities demonstrate that some source reduction has taken place following the introduction of bag limits/PAYT. The combined waste and diversion numbers for 1999 are lower than for the pre bag limit/user pay year. The difference can be attributed to source reduction initiatives such as backyard composting, grass cycling, xeroscaping, reuse activities, and purchasing less packaging. The PAYT communities do not experience a reduction in combined waste disposed and waste diversion rates (with the exception of Austin, Texas); in fact, the rate of overall waste generation has increased over time in these PAYT communities.

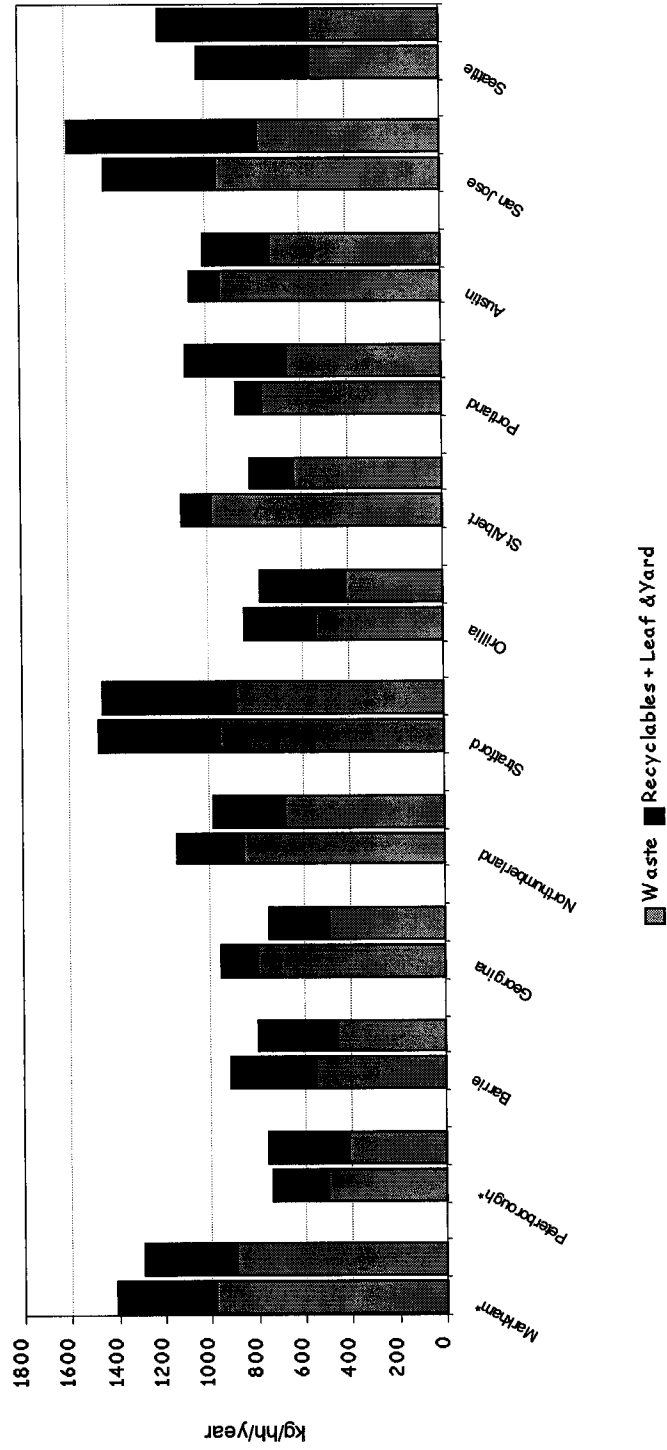
Review of the residential waste disposal and recovery rates measure as kilograms per single-family household per year provides some interesting results. Figure 5.3 shows changes in residential waste disposal and recovery rates for different periods of time. The point of interest is the impact of the programs on waste disposal after the introduction of user pay/PAYT. Prior to the introduction of these programs, six of the ten profiled communities produced over 800 kg/sfh/year, after diversion of recyclables and leaf and yard wastes was taken into account. After user pay/PAYT, all profiled communities experienced a drop in waste disposed immediately following program launch and only one community (Stratford) continued to dispose more than 800 kg/sfh/year (after diversion of recyclables and leaf and yard waste was taken into

<sup>14</sup> Leaf and yard waste has experienced greater fluctuation in some communities but when combined with recyclables the overall diversion is greater after program implementation than before program implementation.



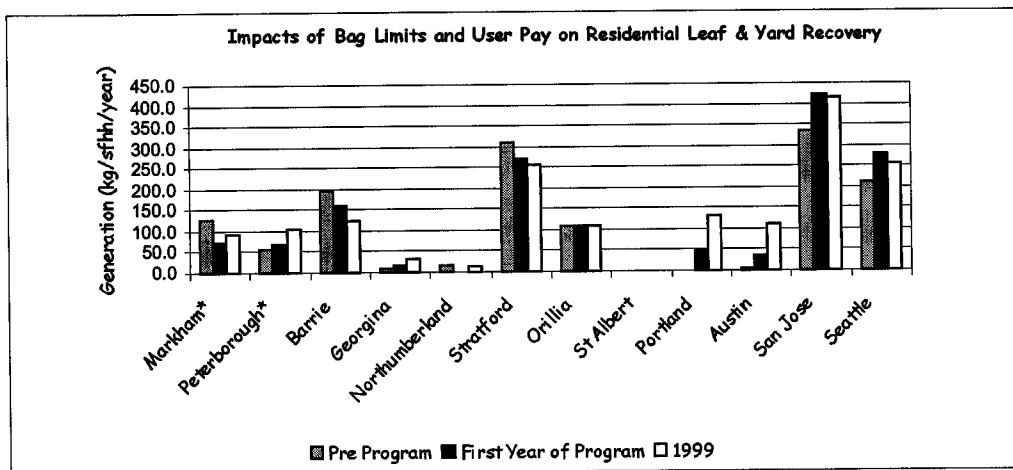
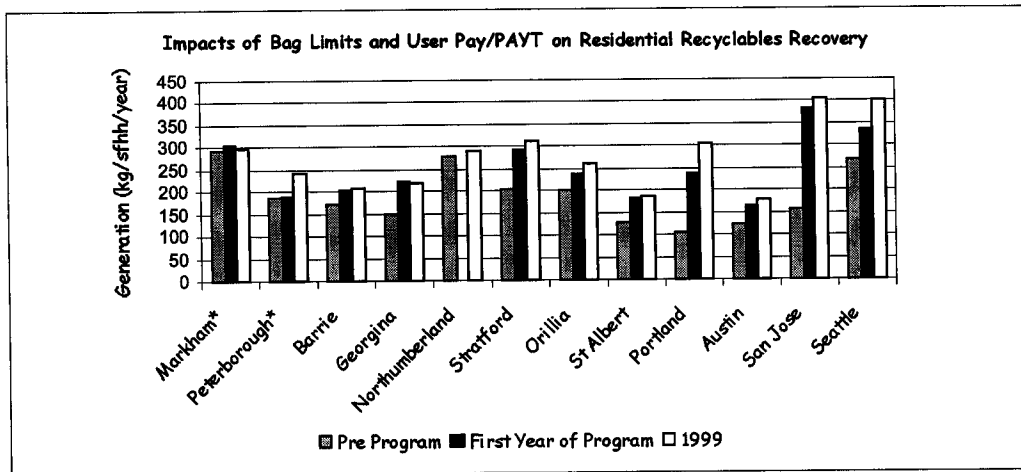
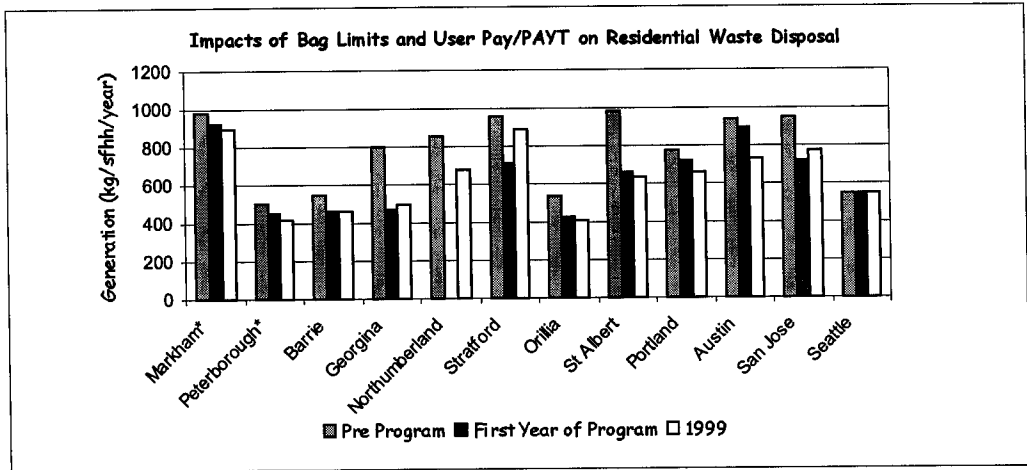
\* Bag limit program \*\* "post" data is 1999

**Table 5.2**  
**Diversion and Disposal Pre and Post Bag Limit or User Pay/PAYT\*\***  
 (kg/hh/year)



\* Bag limit program \*\* "post" data is 1999

**Table 5.3**  
**Impacts of Bag Limit and User Pay/PAYT on the Residential Waste Stream**



\* Bag limit programs

account) several years after. This finding is particularly important for City of Toronto, which will shortly be paying full market rate for waste disposal. Therefore, waste reduction will result in significant annual budget savings.

Recycling rates have all increased on a kg/sfh/year basis after the introduction of bag limit and user pay/PAYT programs, as shown in Figure 5.3. In fact, for all the profiled communities (with the exception of Georgina and Markham) the recycling rate continues to increase over the years. The changes in the amount of leaf and yard waste diverted on a kg/sfh/year basis varies considerably from community to community with only the US subscription PAYT case studies showing an increase in diversion over the years.

## 6.0 FINDINGS AND IMPLICATIONS FOR TORONTO

The research conducted on bag limit and user pay/PAYT programs highlights several key findings is summarized below:

### 1. **Custom Design is Necessary:**

There is no standardized approach to the design and implementation of a user pay program. The level of education and promotional needs, fee structure, and level of recycling and leaf and yard waste curbside collection services varied considerably among the communities studied. Many program operators recommended reviewing other programs before implementation. Studying other programs can help identify potential issues and obstacles that may be avoided during the design and implementation stages. The majority of the communities studied took the additional time during the design stage to investigate the operations of other user pay systems adopted in communities of similar sizes or with similar programs. In response to this need, the US Environmental Protection Agency (EPA) has developed a series of reports and programs to aid communities in developing a customized program that meets the needs of their community.

***Implications for Toronto:** The City of Toronto will need to further examine those communities with bag limits or user pay/PAYT programs, which best meet its residential and infrastructure characteristics and needs. Staff from the City of Austin, Texas recommended implementing the user pay program as a series of pilots over a period of several years, which will enable better feedback and program modification before it is fully operational.*

### 2. **Comprehensive Waste Diversion Program Required:**

Comprehensive waste diversion and recycling programs must be part of a user pay/PAYT program. All the communities highlighted in the case studies had adopted recycling programs, augmented with leaf and yard waste composting programs and backyard composting programs. Optional programs included household hazardous waste depots, bulky waste collection programs and drop-off centres. In many of the cases, the waste diversion programs were robust and continued to evolve and expand over time to meet the changing needs and demands of the residents.

***Implications for Toronto:** The City of Toronto currently provides a comprehensive curbside recycling and leaf and yard waste program (comparable to those programs offered by communities with user pay/PAYT programs already in place), which will meet the needs of a bag limit or user pay/PAYT program. Ensuring the continued evolution of these programs should be an important part of any program design and development.*

### 3. **Public Education is Critical:**

Public education programs play a critical role during the early stages of bag limit or user pay/PAYT implementation. Each of the communities studied has implemented an extensive education and promotion campaign focusing on printed materials, advertisements, and

hotlines. Those cities with PAYT programs, took into consideration the various ethnic groups when designing the communication literature. Some communities tried to incorporate the opinions of the community into the design of the program, although this was more an anomaly than a common strategy. The focus of the education and promotion campaigns was to disseminate information about the program and answer questions from the public. Many of the communications emphasized the environmental and fairness aspects of the program.

**Implications for Toronto:** *The City of Toronto will need to launch an education and promotion campaign well in advance of any program implementation and will need to maintain the communications after the program launch. Furthermore, the City will need to address the various ethnic groups in the city. The City may benefit from involving its citizens in the design of the program through surveys and the establishment of a community advisory group. The adoption of a six-bag limit is the first step in this direction, with bag limited lowered in subsequent years to a three bag limit where the effects are more noticeable.*

#### **4. Separation of Waste Management System Financing a Viable Option in the United States:**

The need to establish a separate “enterprise or utility” fund dedicated to waste management activities was common to the PAYT programs studied. One of the first initiatives identified by those communities featured in the case studies was the development of a waste management fund, separate from the general revenue fund. Many communities were unable to evaluate the true fixed and variable costs and revenues associated with their integrated waste management and diversion programs until a separate waste management fund was truncated from the general fund. The only large Canadian community identified that has established a separate utility fund was the City of Edmonton (see the case study), although it did not experience any changes in waste diverted from landfill as a direct result, because it is simply administered as a flat fee per household with no incentive to reduce.

**Implications for Toronto:** *Establishment of a separate funding source for waste management may be an option for Toronto to consider as a way of slowly moving to a user pay system. The establishment of a utility fund could be coupled with a bag limit program with the gradual transition to user pay. The utility fund may work best if the City of Toronto decides to introduce a variable container program. At some point in the future, waste management costs should also be removed from the tax bill.*

#### **5. Carts and Automated Equipment have Trade-offs:**

Many large municipalities in the United States are moving towards user pay programs that offer a variety of container sizes that are collected using semi-automated collection equipment. Austin, Texas found that the semi-automated system reduced employee injuries and reduced the number of collection crew from a 3-person crew per vehicle to a 2-person crew per vehicle. However, Austin also found that the equipment reduced the number of households serviced per route from 750 households per day to 650 households per day since the cart and semi-automated equipment combination required more time per pick-up.

The Kinnaman and Fullerton (April, 1997) study discovered that bag/tag programs reduce garbage and increase the amount of recycling more than a subscription programs.

**Implications for Toronto:** *The City of Toronto should review other large cities that have switched to semi-automated collection systems to ensure that the benefits outweigh the concerns. The programs described in the case studies have used the technology for several years to determine the short and long-term implications, and can likely provide some valuable insights for Toronto. In addition, the City should identify cities that are located in northern climates that experience snow in the winter and have residential density characteristics similar to Toronto. There may be some concern that access to carts will be a problem in the winter; however, there are examples of communities located in northern climates (such as Minneapolis, Minnesota; St. Albert, Alberta; and Drummondville, Quebec) that have successfully used cart collection systems. These communities should be further examined to see how their cart-based systems work. The City of Toronto may want to consider a number of variations on the cart collection theme including using 32 gallon carts for organics collection augmented with a bag program for garbage.*

#### **6. Multi-Family Buildings Continue to Present Challenges:**

There are no systems currently in place for dealing with individual tenants within multi-family buildings. Most communities have decided not to get involved in servicing multi-family buildings or to charge directly for the individual waste generated by the tenants. Some communities have established increasing variable rates for different volume containers as an incentive to promote recycling within the multi-family buildings. The reasoning behind providing variable container rates that get progressively more expensive as the size of the container increases is to encourage the property manager/owner to promote recycling activities and thereby reduce the container size and the costs incurred. All the communities, however, extended the recycling programs to apartment buildings, providing the tenants with similar opportunities to participate in recycling activities. Although technology exists to weigh commercial waste bins and charge by weight back to the commercial establishment, this technology is not commonly used for multi-family buildings. If viable, it would encourage further waste diversion programs since the property managers/owners are paying by weight instead of volume

**Implications for Toronto:** *No viable options have been identified to charge multi-family households at the individual level. Methods of charging variable rates at the building level have been explored by Toronto staff and options will be presented to the Works Committee in 2001.*

#### **7. Mixed Commercial and Residential Areas Can Present Challenges:**

Communities that have established separate waste collection programs for commercial and residential areas that receive municipal curbside waste collection have run into problems making distinctions between the different programs. Collection crew are more likely to ignore the more complicated system (i.e. user pay) in the mixed residential and commercial areas, as in the case of Barrie which does not require the commercial sector receiving municipal waste collection to participate in its user pay program. This problem has been resolved by applying the same user pay/PAYT rules to the retail and commercial establishments that receive municipal curbside collection which is required by the communities of Orillia and Stratford. Orillia staff report that most of its commercial customers had no problem adapting to the user pay

programs since they recycle most of their waste anyway (mostly paper and OCC). Profiled PAYT communities in the United States do not offer municipal collection service to the commercial sector but in order to promote recycling, the Cities of Seattle and San Jose have eliminated or significantly reduced the franchise fees or certain taxes for commercial establishments with recycling programs.

***Implications for Toronto:*** *If the City of Toronto chooses to implement a user pay system it should apply it to all buildings that receive municipal curbside waste collection in order to minimize confusion and potential administrative burden. Some surveyed communities in Ontario require all commercial establishments that receive municipal waste collection to participate in the user pay program and do not distinguish the residential sector from the commercial sector in any way. Options for implementing various programs are currently being explored by Toronto staff.*

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APPENDIX A  
Survey Template

## User Pay/PAYT Survey

Community \_\_\_\_\_

Contact \_\_\_\_\_

State/Prov. \_\_\_\_\_

Phone # \_\_\_\_\_

Population \_\_\_\_\_

Email \_\_\_\_\_

User Pay/ PAYT	User Pay System	Bag Limit	Pricing	Date Started	% waste diversion increase	% recycling increase	% leaf & yard increase	# BYC increase
Yes	Tag/Bag Container	0						
No		1						
		2						
		3						
		4						

### Program Description

### Pricing/Financing

### Recycling Program

	Before	After
1	Type of recycling program  None Depot throughout community Curbside collection Depot at landfill/transfer station	Type of recycling program  None Depot throughout community Curbside collection Depot at landfill/transfer station
2	Materials collected	Materials collected
3	Material Bans at landfill Yes type No	Material Bans at landfill Yes type No
4	Frequency of collection Weekly Bi-weekly other	Frequency of collection Weekly Bi-weekly other
5	Type of Service  Municipal service Privately contracted by hhld	Type of Service  Municipal service Privately contracted by hhld

6	Financing Municipal taxes Municipal utility fixed fee Pay as you go Private contract arrangement	Financing Municipal taxes Municipal utility fixed fee Pay as you go Private contract arrangement
7	Diversion rate  _____ tonne or ton _____ year	Diversion rate  _____ tonne or ton _____ year

**Leaf and Yard Waste**

	<b>Before</b>	<b>After</b>
1	Type of L&Y collection program None Depot throughout community Curbside collection Depot at landfill/transfer station	Type of L&Y collection program None Depot throughout community Curbside collection Depot at landfill/transfer station
2	Materials collected	Materials collected
3	Material Bans at landfill Yes type No	Material Bans at landfill Yes type No
4	Type of Service Municipal service Privately contracted by hhld	Type of Service Municipal service Privately contracted by hhld
5	Financing Municipal taxes Municipal utility fixed fee Pay as you go Private contract arrangement	Financing Municipal taxes Municipal utility fixed fee Pay as you go Private contract arrangement
6	# hhlds with backyard composters	# hhlds with backyard composters
7	diversion rate  _____ tonne or ton _____ year	diversion rate  _____ tonne or ton _____ year

**Food Wastes (if yes, go to end of survey)**

**Bulky Wastes**

	<b>Before</b>	<b>After</b>
1	Type of recycling program None Curbside collection	Type of recycling program None Curbside collection

2	Materials collected	Materials collected
3	Material Bans at landfill Yes      type No	Material Bans at landfill Yes      type No
4	Type of Service  Municipal service Privately contracted by hhld	Type of Service  Municipal service Privately contracted by hhld
5	Financing	Financing
6	Capture rate  _____ tonne or ton _____ year	Capture rate  _____ tonne or ton _____ year

**Has participation changed over time? How? Why?**

**What supporting education and promotion program was implemented?**

**What illegal dumping problems has your community experienced? How has the problem been solved?**

**Supporting administration requirements? Additional costs for administration?**

**Lessons Learned**

THANK YOU FOR YOU HELP

Food Waste Collection Program

	Before	After
1	Type of food waste collection program None Depot throughout community Curbside collection Depot at landfill/transfer station	Type of food waste collection program None Depot throughout community Curbside collection Depot at landfill/transfer station
2	Materials collected	Materials collected
3	Material Bans at landfill Yes type No	Material Bans at landfill Yes type No
4	Frequency of collection Weekly Bi-weekly other	Frequency of collection Weekly Bi-weekly other
5	Type of Service  Municipal service Privately contracted by hhld	Type of Service  Municipal service Privately contracted by hhld
6	Financing  Municipal taxes Municipal utility fixed fee Pay as you go Private contract arrangement	Financing  Municipal taxes Municipal utility fixed fee Pay as you go Private contract arrangement
7	Capture rate  _____ tonne or ton _____ year	Capture rate  _____ tonne or ton _____ year

APPENDIX B  
Detailed Case Studies

## Bag Limit Case Study Town of Markham

**Relevance to Toronto:** Recent introduction of a 3-bag limit in large urban community within the GTA.

**Demographics:**

Population: 190,000

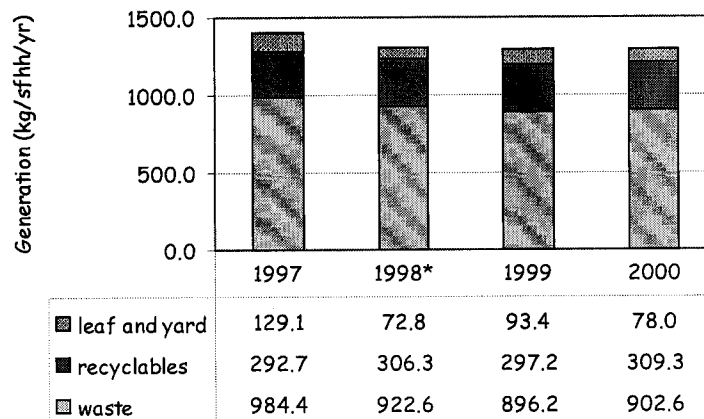
Households: 51,768

- Markham is the largest of nine communities in York Region.

### Town of Markham, Waste Diversion at a Glance

Type of System	Date Started	Years with Data*	% change in waste landfilled (kg/sfhh/yr)	% change in recycling (kg/sfhh/yr)	% change in leaf & yard collection (kg/sfhh/yr)	% diversion (without BYC)
			Compared with baseline year 1997			
3 bag limit system	April 1998	1997				30%
		1998	-6%	+5%	-44%	29%
		1999	-9%	+2%	-28%	30%
		2000	-8%	+6%	-40%	30%

### Markham - Impacts of User Pay



\* Bag limit program introduced April 1998



### Program Description:

- Town of Markham introduced a three bag limit in April 1998, called a "voluntary" bag limit program.
- Twelve additional tags are distributed to each household annually and residents may also pick-up additional tags for free at the Civic Centre and recycling depots.
- Amnesty days are offered twice a year (one in spring and fall) whereby the household can place bags of garbage to the curb without requiring additional tags to be placed on the waste.
- Bags placed at the curb without tags will be collected.
- The three bag limit was established partly due to information from setout studies that showed that most householders placed less than 3 bags of garbage at the curb per week (actual setout average was 2.6 bags/household/wk).
- Maximum weight per bag or container is 50 lb. (22 kg.). Collection crew monitor bag weight "by feel" during collection. Orange stickers are placed on bags that exceed maximum weight and are left at the curb with a notice attached to the bags.
- Prior to the 3 bag-limit programs, residents were permitted to place 6 bags at the curb



### Impacts on Waste to Landfill

Year	SFH*	Tonnes	% Change from base year (1997) in kg/sfhh
1997 (base year)	44350	43,660	
1998	46270	42,690	-6%
1999	48190	43,186	-9%
2000	50110	45,231	-8%

\*Note: SFH Household numbers estimated from Current and Forecast Total Housing By Unit Type, 1996-2021 data posted on Markham's website.

- From 1997 to 1999, waste generation dropped from 250 kg. capita/year to 239 capita/year (6% decrease).
- Approximately 8% of householders are placing more than 3 bags of garbage to the curb on a regular basis.
- Less than 4% of households place additional bags of garbage to the curb without a tag (96% of householders are in compliance).



**Impacts on Recycling**

Year	SFH*	Tonnes	% Change from base year (1997) in kg/sfhh
1997 (base year)	44350	12,980	
1998	46270	14,172	+5%
1999	48190	14,324	+2%
2000	50110	15,500	+6%

\*Note: SFH Household numbers estimated from Current and Forecast Total Housing By Unit Type, 1996-2021 data posted on Markham's website.

- The recycling program has not changed since the introduction of the 3 bag limit program.
- The Town provides weekly curbside collection.
- The recycling program collects the following materials: ONP, OMG, OCC, phonebooks, OBB, books, milk/juice cartons, household paper, kraft paper, molded pulp, clean and coloured glass containers, steel and aluminum cans, plastics (#1 & #2).



**Leaf and Yard Waste**

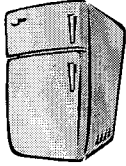
Year	SFH*	Tonnes	% Change from base year (1997) in kg/sfhh
1997 (base year)	44350	5,276	
1998	46270	3,370	+44%
1999	48190	4,503	+28%
2000	50110	3,907	+40%

\*Note: SFH Household numbers estimated from Current and Forecast Total Housing By Unit Type, 1996-2021 data posted on Markham's website.

- The Town of Markham provides weekly leaf and yard waste collection from April to November.
- The Town of Markham introduced a ban on grass clippings concurrent with the implementation of the 3 bag limit program.
- Extensive promotion of the ban began in 1997 and the ban was fully implemented in 1998.
- In the summer, a student monitors bags ahead of the collection crew. By-law infraction notices are given out for bags that contain grass. Bags are not left behind. Second

offenders receive a letter from the Director of Environmental Services that outlines the noncompliance and asks the resident to make an appointment to obtain more information of waste diversion.

- Markham advertises the grass ban through posters, cable t.v., newspaper ads and media releases. The town promotes the alternatives to the public, especially in the spring and fall.



### **Bulky Waste**

- Markham has not changed its policy on the collection of bulky wastes, which it collects for free at the curb.
- Residents must make an appointment to have bulky wastes collected.

### **Changes in Participation over time:**

- A survey conducted in the year 2000 showed the compliance rate for the 3 bag limit program at 96%.
- Residents that place bags without tags at the curb more than two times are sent a letter for the Director of Environmental Services and asked to make an appointment with staff to learn more about waste diversion programs.

### **Education and Promotion:**

- Six months prior to the introduction of the bag limit program, each household received a package of information containing an Environmental Booklet, grass cycling gauge, recycling instruction card, newsletter, etc.
- Newspaper ads ran in the local newspaper.
- Additional packages of information were sent after the launch of the 3 bag limit.
- Currently residents receive an annual package containing 12 tags, a yard waste schedule, a guide on how to use the recycling program and statistics showing the successes of the program.

### **Administration Support:**

- The Town of Markham hires six summer students each year to monitor the program.
- Administration is involved in the distribution of the annual package of information sent to every household.
- The Town has made a list of semi-detached homes and/or townhouses, which it uses to monitor the 3 bag limit.

**Lessons Learned:**

- The Town of Markham stresses the importance of regularly communicating the environmental successes (i.e. increases in recycling rates) associated with the program.
- The Town has discovered better buy-in for the program if it focuses on environmental benefits rather than economic benefits.

## User Pay Case Study City of Peterborough, Ontario

**Relevance to Toronto:** Over 5 years, moved from a 6 to 3 bag limit in 1994, and to a 2 bag limit in 1995. Close to Toronto.

**Demographics:**

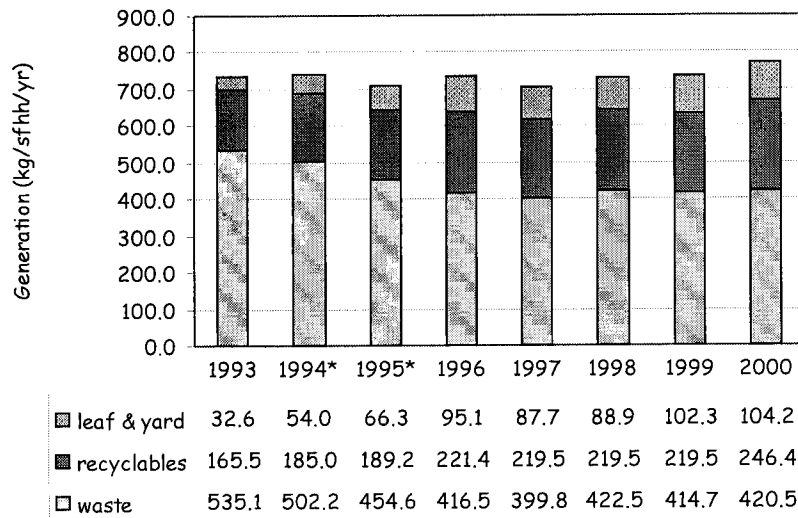
- **Population:** 68,748 (2000)
- **Households:** 29,000

### City of Peterborough, Waste Diversion at a Glance

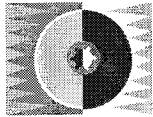
Type of System	Date Started	Years with Data	% change in waste landfilled (kg/sfhh)	% change in recycling (kg/sfhh)*	% change in leaf & yard collection (kg/sfhh)	% diversion (without BYC)
			Compared with baseline year 1993			
Bag Limits	3 bag limit introduced in 1994	1993				+27%
		1994	-6%	+12%	+66%	+32%
		1995	-15%	+14%	+104%	+36%
	2 bag limit introduced in 1995	1996	-22%	+34%	+192%	+43%
		1997	-25%	+33%	+169%	+43%
		1998	-21%	+33%	+173%	+42%
		1999	-23%	+46%	+214%	+45%
		2000	-21%	+49%	+220%	+45%

\*Note: New materials added to recycling program in 1993, 1994, 1995 and 2000.

### Peterborough - Impacts of Bag Limits



\* Bag limit reduced from 6 to 3 in 1994 and 3 to 2 in 1995



**Program Description:**

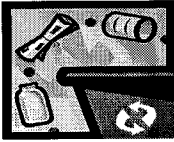
- The City of Peterborough introduced a two bag/container limit per week in 1995. Prior bag weekly limits were 18 bags in 1989, 6 bags in 1990, four bags in 1991 and three bags in 1994.
- An acceptable container is defined as a 120 litres (32 gallon can) or a plastic bag. Containers cannot exceed 23 kg (50lb).
- Households that exceed the two container limit are required to store waste until a subsequent collection period or drop waste at the landfill for a minimum fee of \$5.00.
- The data provided by the City included the following: 1) waste to landfill data includes businesses that participate in the 4 bag business bag limit but excludes most residential multi-units with six or more units. City staff expect these factors to balance out. 2) The recycling tonnages include collection from businesses that participate in the curbside waste collection program and large multi-units.



**Impacts on Waste to Landfill**

Year	HHS	Tonnes	% Change from base year (1993)
1993 (base year)	27,950	14956	
1994	28,100	14111	-6%
1995	28,250	12842	-15%
1996	28,400	11829	-22%
1997	28,550	11414	-25%
1998	28,700	12126	-21%
1999	28,850	11964	-23%
2000	29,000	12195	-21%

- Average set out of 1.2 bags/household/week.



**Recycling**

Year	HHs	Tonnes*	% Change from base year (1993)
1993 (base year)	27,950	4627	
1994	28,100	5199	+12%
1995	28,250	5346	+14%
1996	28,400	6289	+34%
1997	28,550	6268	+33%
1998	28,700	6301	+33%
1999	28,850	6956	+46%
2000	29,000	7146	+49%

\*Note: The recycling tonnages include collection from businesses that participate in the curbside waste collection program and large multi-units.

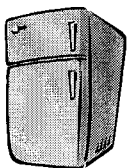
- Weekly collection.
- Curbside Blue Box program since 1987.
- Since 1995, blue box recyclables have been banned from waste disposal.
- The City currently collects: ONP, OCC, OBB, OMG, mixed paper, glass, plastics #1 and #2, aluminum cans and foil, steel cans, empty paint cans, empty aerosol cans, aseptic packages and gable top cartons. Polystyrene can be dropped of at the depot.
- Blue box materials evolved as follows:
  - In 1987, the City collected glass containers, metal cans, ONP and Plastic #1 bottles.
  - Film plastic was introduced in 1991.
  - In 1993, plastic #2 bottles, OMG, OCC and foil were added.
  - In 1994, OBB and phone books were added.
  - In 1995, plastic tubs and jugs and mixed paper were added.
  - In 2000, empty paint cans, empty aerosol cans , aseptic packages and polycoat was added.
- A study showed the average set out per household is 8.8 kg and the average bag weight is 6.6 kg.



### Leaf and Yard Waste

Year	HHs	Tonnes	% Change from base year (1993)
1993 (base year)	27,950	910	
1994	28,100	1516	+66%
1995	28,250	1873	+104%
1996	28,400	2700	+192%
1997	28,550	2504	+169%
1998	28,700	2552	+173%
1999	28,850	2950	+214%
2000	29,000	3021	+220%

- Weekly collection between April and November.
- Mandatory leaf and yard waste composting by-law.
- Curbside collection of leaf and yard waste introduced in 1993. Loose collection of leaves since 1990.
- Since 1990, over 13,000 composters have been purchased by residents through the City's subsidy program.
- Since September 1998, the City has provided a 50% subsidy on the cost of a mulching blade, that can be installed on most lawn mowers.
- Yard waste tonnages (above) exclude estimated loose curbside leaf collection. Between 1994 to 1997, an estimated 965 tonnes per year of loose leaves were collected. With the promotion of mulching, the City estimates the following: 465 tonnes in 1998; 431 tonnes in 1999 and 456 tonnes in 2000.



### Bulky Wastes

- Since 1992, four large article collections are scheduled each year. Tickets must be purchased the week before collection at City Hall or Public Works for \$15 for the first item and \$5 for each additional item.
- Bulky items are defined as items over 23 kg (50 lbs).

### **Exchange Day**

- Since 1991, the City has sponsored 2-3 "Reusables Exchange" weekends per year. Participants place reusable items to curb on the Friday and pick up remaining items on the Sunday evening.

### **Textiles Collection**

- Since 1996, in partnership with Peterborough Green-Up, two curbside textiles drives are held each year.

### **Promotion and Education:**

- The program is promoted on the website,

### **Lessons Learned:**

- The City always introduced alternatives for reducing waste when new bag limits were introduced.
- Staging program changes over time will help get a higher level of support (e.g., material ban and reduced bag limit).

### **Future Goals:**

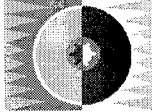
- Collection of food wastes being investigated in 2001.

## Bag Limit Case Study Burnaby, British Columbia

### Demographics:

Population: 180,000

Households: 36,000 households served



### Program Description

- The "Think Three" bag/container limit introduced in January 1997. This was the first time the City imposed a bag limit.
- The maximum allowable weight is 33 kg (50 lb). Cans up to 77 litres and 19" x 22" and bags up to 24" x 36" are acceptable.
- If residents place out more than 3 bags on for weekly pickup, one bag will be left behind with a sticker that reminds the household to "Think Three."



### Impacts on Waste to Landfill

- Data for households participating in the "Think Three" program was unavailable.
- An April 2000 survey determined that the average household places out 2.16 bags/cans per week.
- The City was unable to provide data with a breakout of waste to landfill, recycling or leaf & yard waste for the households participating in the "Think Three" program.



### Impacts on Recycling

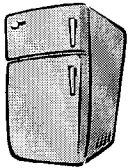
- Blue box program was introduced in 1990.
- Weekly pick-up with garbage collection.
- The municipality currently collects: aluminum and steel cans, glass bottles and jars, plastic bottles #1 & #2 in the Blue Box, ONP in the Blue Bag and OCC and mixed paper in the Yellow Bag.
- Since October 1998, the deposit-return system has included all ready-to-serve beverages (except milk/milk products and infant formulas/meal supplements).

- The Greater Vancouver Regional District (GVRD) has banned the disposal of OCC (since 1997) and newspaper and office paper (since April 1998) at all disposal facilities. GVRD inspectors at local transfer and disposal facilities randomly inspect loads of garbage to determine the presence of banned paper products in the load. Loads containing more than 10% corrugated cardboard, newspaper and office paper (by volume) will be assessed a 50% surcharge. Loads with less than 10% will not be surcharged.<sup>1</sup>
- British Columbia mandated a goal of at least 50% reduction in per capita garbage disposal by the year 2000.



### ***Impacts on Leaf and Yard Waste***

- Curbside leaf and yard waste implemented Spring 1997 and became city-wide in 1998. Unlimited pickup is available on the same day as weekly garbage and recycling collection from March to November.
- Residents may also use the year round drop off Yard Waste Centre, whereby residents (with proof of residency) can drop off up to 50 kg of yard waste free of charge each day. Additional yard waste is accepted at a charge of \$48/tonne and a minimum \$10 charge is applied during the growing season.
- The City sells composting bins for \$30 with a \$5 delivery option. Between 1998 and 2000, 623 composters were sold.



### ***Bulky Wastes***

- Residents can call to arrange for pickup of one bulky item per week during regular garbage collection. Old appliances may also be dropped off at the Recycling Depot.

### **Changes in Participation over time:**

- The City reported no significant changes in participation since the program was introduced in 1997. No issues with illegal dumping have been observed.

### **Administration Support:**

- Initial promotion of the "Think Three" program included: distributing door hangers to all households, publishing advertisements in local papers, news releases and truck advertising with the "Think Three" slogan.

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<sup>1</sup> FAQ (Frequently Asked Questions) about recycling and garbage.  
[www.gvrd.bc.ca/services/garbage/faq/Old\\_in%20progress/swfaq.html](http://www.gvrd.bc.ca/services/garbage/faq/Old_in%20progress/swfaq.html). Accessed 2001 February 7.

## Bag Limit and User Pay Case Study City of Barrie, Ontario

**Relevance to Toronto:** Large, urban community closest to Toronto that imposed a 2-bag limit with a mature recycling program.

**Demographics:**

Population: 100,000 (1999)

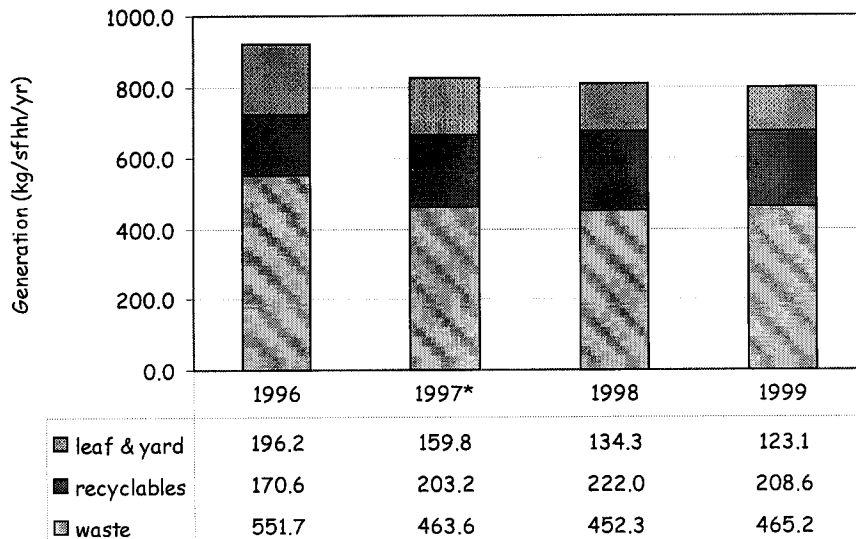
Households: 37,164

- The City of Barrie is currently one of the fastest growing municipalities in Canada.
- Annual growth rate of approximately 4 per cent. (Between 1996-2021, Barrie and the surrounding area are expected to grow 63 per cent to a total population of 185,000.)

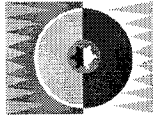
### City of Barrie, Waste Diversion at a Glance

Type of System	Date Started	Years with Data	% change in waste landfilled (kg/sfhh)	% change in recycling (kg/sfhh)	% change in leaf & yard collection (kg/sfhh)	% diversion (with BYC)
			<b>Compared with baseline year 1996</b>			
Partial/Ma 2 bag/tag system	y 1997	1996				+40%
		1997	-16%	+19%	-19%	+44%
		1998	-18%	+30%	-32%	+50%
		1999	-16%	+22%	-37%	+48%

**Barrie - Impacts of User Pay**



\* User pay introduced in 1997



### Program Description:

- Partial user pay system introduced May 1997.
- Two bags can be set out at no charge each week.
- Tags for additional bags cost \$1.00 each. Although the revenue from tag sales is redirected against collection and disposal costs, it does not meet costs.
- The original intent of the bag limit and bag tags was not as a financing mechanism, but to promote waste diversion.
- There are no time restrictions on tag usage.
- Bags set out without tags are left at curbside.
- Maximum weight per bag is 60 lbs (27 kg.). Enforcement is left to the discretion of the haulers who monitor the weight of the bags "by feel". Bags exceeding the restriction are left at curbside.
- Tags are available at participating retail outlets. Participating retailers do not receive a commission for selling the bag tags. Retailers are noted in the waste reduction calendar and lists of store locations are distributed to residents on request. The City has basic signage available for retailer to use to advertise bag tags.
- Annual tags sales have steadily increased; however, a comparable number of bags have not been observed curbside.
- User pay program has not been incorporated into the waste management by-law; instead, a Council motion governs it.



### Impacts on Waste to Landfill

Year	SFHs <sup>1</sup>	Tonnes	% Change from base year (1996) in kg/sfhh
1996 (base year)	32,682	18,032	
1997	33,569	15,564	-16%
1998	34,593	15,647	-18%
1999	37,164	17,289	-16%

- Prior to the introduction of the partial user pay program, there was no bag limit for garbage setout in Barrie.

<sup>1</sup> Note: Units of collection supplied by Barrie include businesses that receive curbside collection. Businesses are limited to setting out a maximum of 10 bags. It is roughly estimated that 6-8% of the waste collected curbside is from the business sector. (Pers. Comm. Mark Collins)

- Actual setout rates have not been formally recorded, however it is generally observed that 2 bags per household are set out.



### Impacts on Recycling

Year	SFHs	Tonnes	% Change from base year (1996) in kg/sfhh
1996 (base year)	32,682	5,574	
1997	33,569	6,820	+19%
1998	34,593	7,680	+30%
1999	37,164	7,751	+22%

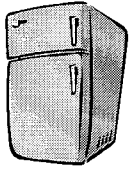
- Recyclables are collected through a weekly municipal curbside service.
- The municipality currently collects: ONP, OCC, OMG, OBB, mixed paper, plastic bottles #1 and #2, aluminum and steel cans, glass, aluminum foil trays and Tetra Pak boxes.
- Financed through municipal taxes.
- The materials collected curbside have remained the same since partial user pay was implemented, except Tetra Pak has been added to the program and diapers have been eliminated. However, diapers can be dropped off at the landfill at no charge.
- OCC is banned from landfill.



### Impacts on Leaf and Yard Waste

Year	SFHs	Tonnes	% Change from base year (1996) in kg/sfhh
1996 (base year)	32,682	6,413	
1997	33,569	5,364	-19%
1998	34,593	4,645	-32%
1999	37,164	4,574	-37%

- Leaf and yard waste is collected bi-weekly through municipal curbside collection. In October and November the service is increased to weekly collection.
- Prior to user pay there was always a weekly service.
- It is estimated that 3,200 tonnes of organic material was diverted in 1998 (3,500 in 1999) through backyard composting.
- The number of composters sold prior to and since partial user pay is unavailable.



### **Bulky Waste**

- Bulky Waste collection was eliminated in 1997.
- Prior to 1997, furniture, appliances, fencing, C & D waste and scrap tires were collected at curbside.
- Scrap tires are banned from landfill.

### **Food Wastes**

- Considering implementing food waste collection in the future. The plan is temporarily on hold due to changes in senior management

### **Changes in Participation over time:**

- Participation has not changed to any great extent.
- Increase in sales of tags is considered partly due to population growth.
- Upon implementation of the user pay system, illegal dumping increased for the first 3 - 4 months. City staff would sort through bags to identify the owner of the waste. Upon identification, the individual would be sent a "threatening" letter with a photo of the evidence. Also included would be an invoice that included the cost to collect and landfill the waste, and the associated administrative (person hours) associated. The media discouraged illegal dumping by covering the tactics the City would employ, if required.
- Illegal dumping has virtually disappeared. However, there are 1-2 calls per month involving incidents where residents have dumped garbage on other residents' property. Under the City by-law, city staff can sort through the bags and charge the residents up to a \$5,000 fine. No fines have been issued to date.
- City conducted a waste composition study in October 1997 and another in February 2001.

### **Administration Support:**

- Initially, staff went door-to-door distributing informational packages to promote the program. Now the "calendar" is the primary promotional product.
- Upon implementation, the contractor would leave a general information booklet behind with the untagged waste, for residents that did not comply with the bag limit and bag tags.
- In the first year only, the City experienced approximately 10-15% increase in administration costs
- Grocery and hardware stores sell the tags. Administrative staff drop tags off to retailers every three weeks. There is no mark-up on the price of the tags.

**Lessons Learned:**

- A problem arose relating to the number of "legal units" per stop (such as at multi-residential buildings and houses with basement apartments). To remedy this problem, a database was generated using information from property assessment. Using this information, the number of bags allowed per stop per collection day was determined. Advice: Municipalities considering user pay should determine this information before implementing a program.

**Future Goals:**

- Looking into a full user pay system and curbside food waste collection.
- For Spring 2001, the City is designing stickers for the contractor to leave on bags that have not been tagged or exceed maximum allowable weight.

## User Pay Case Study City of Orillia

**Relevance to Toronto:** Municipality with advanced distribution of 40 tags per year, close to Toronto.

**Demographics:**

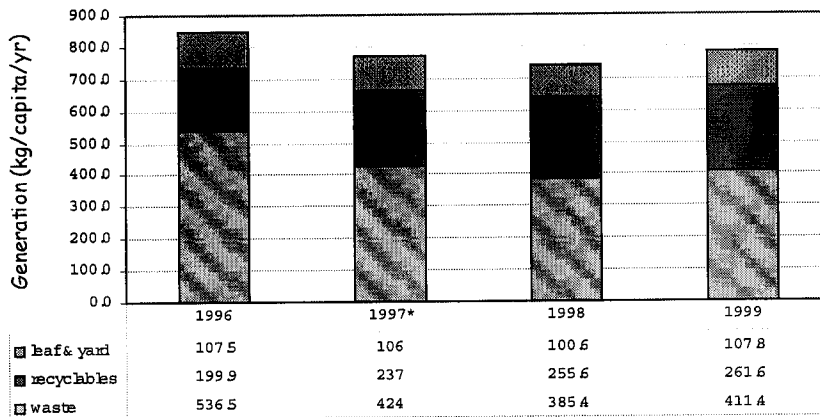
**Population:** 27,882

**Households:** 11,742 (estimated)

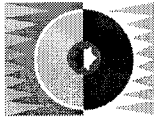
### City of Orillia, Waste Diversion at a Glance

Type of System	Date Started	Years with Data	% change in waste landfilled (kg/sfhh/yr)	% change in recycling (kg/sfhh/yr)	% change in leaf & yard collection (kg/sfhh/yr)	% diversion (without BYC)
Compared with baseline year 1996						
Partial 40 "free" tag system	July 1997	1996				+36%
		1997	-21%	+18%	+1%	+45%
		1998	-28%	+28%	-6%	+48%
		1999	-23%	+31%	-0%	+47%

**Orillia - Impacts of User Pay**



\*Userpay introduced in July 1997



**Program Description:**

- The City of Orillia introduced a partial user pay program in July 1997.
- Forty free tags are distributed to each household each year (was originally 50 tags/year).
- Additional tags may be purchased in packages of five for \$7.50 (or \$1.50 each).
- Tags can be purchased at participating retail outlets, City Hall and the Waste Diversion Site.
- In 1997, when the City of Orillia launched the partial user pay program each household initially received 50 tags for 50 weeks (or one tag per week). When a waste composition study (1997) revealed that organics & recyclables were being placed in the waste stream, the number of tags distributed to each household was reduced to 40 tags per year in July 1999.
- Prior to the launch of the program, there was no limit on the amount of garbage that could be set out at the curb on any given week.
- By 1995, the City was dipping into its reserve fund to finance its solid waste programs.
- The Garbage Tag Program was introduced primarily as a waste diversion and cost containment initiative and not as a source of revenue generation.



**Impacts on Waste to Landfill**

Year	SFH*	Tonnes**	% Change from base year (1996) in kg/sfhh
1996	11000	5,901	
1997	11371	4,819	-21%
1998	11742	4,525	-28%
1999	11742	4,831	-23%

\*Household numbers estimated using Statistics Canada 1996 data and the 1998 Ontario Municipal Directory.

\*\* Solid waste tonnage includes approximately 10% commercial waste.

- In 1999 a waste composition study determined the average set out rate for households placing garbage curbside was 1.4 bag/bundle/cans. However, the overall set out rate was 1.04.
- Prior to the implementation of the user pay program, there was no limit on the number of bags of garbage that could be placed at the curb every week.
- Bags placed at curb without a tag are stickered and left behind. Residents can call the City for more information and if this remains a problem, a City employee visits the resident.

- Bags that exceed the weight restriction of 20 kg (44 lbs) are tagged and left behind.



### Impacts on Recycling

Year	SFH*	tonnes	% Change from base year (1996) in kg/sfhh
1996	11000	2,199	
1997	11371	2,692	+18%
1998	11742	3,001	+28%
1999	11742	3,072	+31%

\*Household numbers estimated using Statistics Canada 1996 data and the 1998 Ontario Municipal Directory.

- The current curbside recycling program collects ONP, OCC, OBB, mixed household paper, paperback books, molded pulp, aluminum trays and foil, glass containers, aluminum and steel cans and plastics (#1, #2, #4, #5, #7 and expanded polystyrene).
- In early 2000, the recycling program was expanded to include plastics #4, #5 and #7.



### Impacts on Leaf and Yard Waste

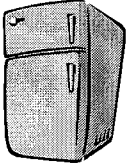
Year	SFH*	Tonnes	% Change from base year (1996) in kg/sfhh
1996	11000	1183	
1997	11371	1211	+1%
1998	11742	1181	+6%
1999	11742	1266	0%

\*Household numbers estimated using Statistics Canada 1996 data and the 1998 Ontario Municipal Directory.

- Leaf and yard waste material is collected at the curb on a weekly basis from April to November.
- There are no bans in place (i.e. no grass bans).
- Between 1996-1999 a total of 2183 composters were sold, with the following breakdown: 535 in 1996; 1102 in 1997, 314 in 1998; and, 232 in 1999.
- Although the City of Orillia received permission to compost produce waste (i.e. kitchen scraps) in 1996, implementation of the program was delayed to allow maximum saturation of backyard composters among property owners. Subsequently, produce waste is being collected in a pilot study comprising of 450 homes. Since April 2000,

produce waste collection has been available city-wide (program receives little promotion).

- The quantity of leaf and yard waste collected from year to year is highly weather dependent.



### **Bulky Wastes**

- The City does not collect bulky waste.

### **Changes in Participation over time:**

- The City has not reported any discernable change in illegal dumping after the introduction of user pay. Any illegally dumped material is sorted and the owner is charged the clean-up costs.

### **Education and Promotion:**

- The program was given good press coverage (i.e. weekly newspaper column, signs at transit stops, etc.) and residents were sent promotion materials including brochures.

### **Administration Support:**

- No change in administrative support since the tags are mailed to each household once a year

### **Lessons Learned:**

- City of Orillia reported that distributing tags in advance reduced protest to the change.
- Staff feel that distribution of tags may ease transition to the user pay program.
- Staff mention that one free bag at the curb is different than giving away the tags, as residents are encouraged to put garbage out weekly with the former. The tag system allow residents to save tags for the future. Residents become accustomed to using the tags and drivers do not have to worry about duplexes.
- Prior to the implementation of the program, Council proposed to distribute 26 tags (one tag for every two weeks) but after a few months pressure from residents Council was forced to change the policy and distribute 50 tags for 50 weeks or one per week.

## User Pay Case Study St. Catherines, Ontario

**Relevance to Toronto:** Largest community in Ontario to implement a user pay program and only Region in Ontario to implement user pay in all area municipalities.

**Demographics:**

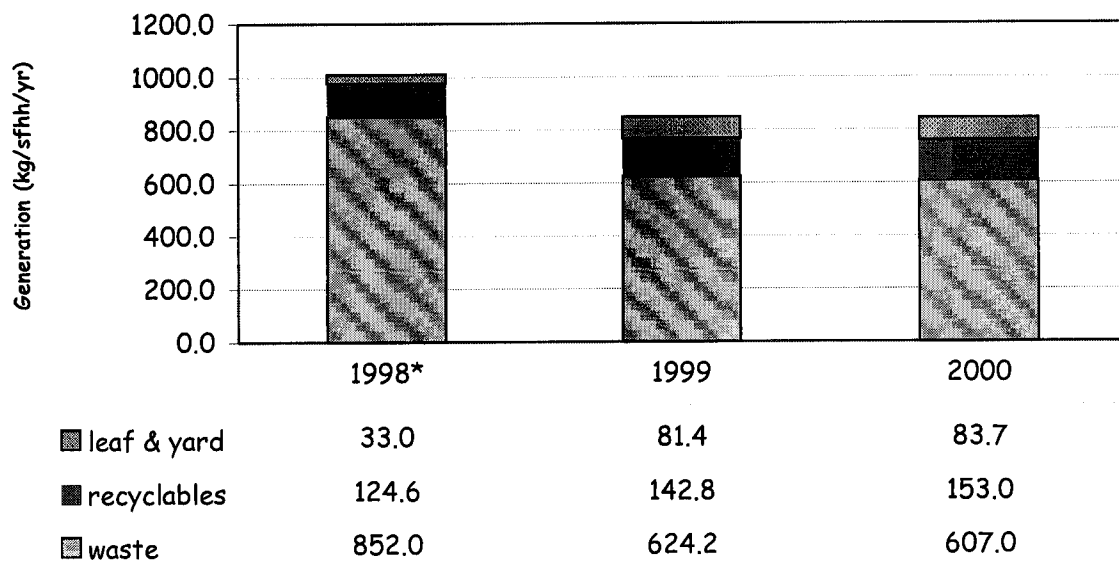
Population: 131,000 (2000)

Households: 55,741 (2000)

### St. Catherines, Waste Diversion at a Glance

System	Date Started	Years with Data	% change of waste landfilled	% change in recycling	% change in leaf & yard collection	% diversion (without BYC)
			<i>Compared with baseline year 1998</i>			
Tag/Bag	April 1999	1998				+16%
		1999	-27%	+15%	+147%	+26%
		2000	-29%	+23%	+154%	+28%

### St Catherines - Impacts of User Pay



\* User pay introduced in 1998



**Program Description:**

- The Region has introduced a 3 part phased-in approach to bring all municipalities into a partial user pay program by April 2001.
- The phased-in approach is in response to the Region assuming responsibility for all waste management services in 1996. Municipalities are phased-in as their existing collection contracts expire and the Region takes over the services (the Region only administered the contracts up to then).
- Under the partial user pay program, residents are permitted to place 3 "free" bags of garbage at the curb per unit without requiring a tag. Tags cost \$1 each.
- Currently 7 out of 12 communities are on line. The communities of St. Catherines, Thorold and Niagara-on-the-Lake came on-line in April 1999. Other communities (four) came on-line March of 1998 (Lincoln, Wainfleet, Pelham and West Lincoln) and the remaining five communities (Fort Erie, Grimsby, Niagara Falls, Port Colborne, and Wellend) will come on-line April 2001.
- Tags cost \$1 each and the sales of garbage tags are used to reduce collection costs included in taxes. Tags can be purchased at local convenience stores.
- Revenues to go toward reducing collection costs included in taxes.
- The partial user pay program is written in the Regional Waste Management By-law.
- In 2002, the Region is planning to reduce the single-family limit per unit to two containers, multi-unit residential buildings with 6 or more units to 12 containers and IC&I and mixed-use buildings to 7 containers per property.<sup>1</sup>



**Impacts on Waste to Landfill**

Year	SFHs	tonnes	& Change from base year (1998)
1998	54,763	46,658	
1999	55,252	34,486	-27%
2000	55,741	33,835	-29%

- While there has been no setout study in the City of St. Catherines, the Region conducted a setout study in Niagara Falls in 1996 and determined that the average household placed 2.7 bags/containers of waste to the curb per week.
- Bags of garbage that are not tagged are left behind with a "non-compliance sticker" explaining the problem and providing a number to call for further information.

<sup>1</sup> Region of Niagara. 2001. Regional Niagara Solid Waste Collection Harmonization Plan Level of Waste Collection Service.



**Impacts on Recycling**

Year	SFHs	tonnes	& Change from base year (1998)
1998	54,763	6,823	
1999	55,252	7,891	+15%
2000	55,741	8,526	+23%

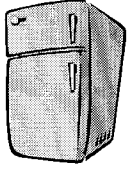
- The municipality currently collects: ONP, OBB, OCC, OMG, household paper, glass containers, aluminum and steel containers, plastics #1, #2, #4, #5, #6 (including plastic bags), aluminum foil and plates.
- Recyclables are banned from landfill.



**Impacts on Leaf and Yard Waste**

Year	SFHs	tonnes	& Change from base year (1998)
1998	54,763	1,807	
1999	55,252	4,496	+147%
2000	55,741	4,667	+154%

- Leaf and yard waste is banned from the waste stream.



## **Bulky Wastes**

- Bulky goods (e.g., furniture) are collected free of charge on regular waste collection day. Residents must call three days in advance regular pick-up day.
- White goods are collected year round on call-in basis

### **Changes in Participation over time:**

- Owners of illegally dumped waste are sent letters explaining the situation. There have been no repeat offenders.
- The Region of Niagara staff reported that it was too soon to report on changes in participation that had been observed. It appears compliance is good to date.

### **Promotion and Education:**

- Full intensive marketing plan developed for the introduction of the user pay program
- Residents receive "The Waste Watcher" newsletter, which is also posted on the web site.

### **Administration Support:**

- New staff were not hired but staff responsibilities were shuffled.
- The Regional finance department handles tag distribution.

### **Lessons Learned:**

- Staff consider illegal dumping a touchy matter, especially in developing wording for the by-law.

## User Pay Case Study Town of Georgina, Ontario

**Relevance to Toronto:** First full user pay program in GTA. One of few examples where recycling programs before and after user pay stayed the same and direct comparisons can be made.

### Demographics:

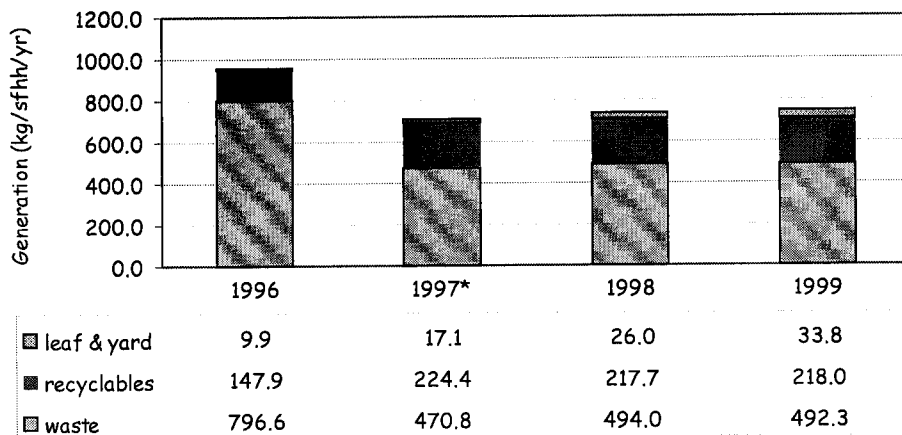
**Population:** 38,335 permanent residents

- SHF: 12,775 permanent residential households, urban and rural mix. In addition, approximately 2,035 households are treated as seasonal.

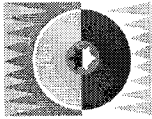
### Town of Georgina, Waste Diversion at a Glance

Type of System	Date Started	Years with Data	% change in waste landfilled (kg/sfhh/yr)	% change in recycling (kg/sfhh/yr)	% change in leaf & yard collection (kg/sfhh/yr)	% diversion (with BYC)
Compared with baseline year 1996						
Full Bag/Tag system	January 1997	1996				+19%
		1997	-41%	+52%	+72%	+37%
		1998	-38%	+47%	+162%	+36%
		1999	-38%	+47%	+241%	+37%

### Georgina - Impacts of User Pay



\* User pay introduced in 1997.



**Program Description:**

- Full user pay system implemented in January 1997. Bag tags are \$1 each.
- Maximum weight per bag or container is 50 lb. (22 kg.). Collection crew monitor bag weight "by feel" during collection. Orange stickers are placed on bags that exceed maximum weight and are left at the curb.
- Maximum size of any bag is 76 cm by 122 cm. Maximum size of can is 50 cm by 90 cm.
- Tags may be purchased at over 60 retailers. Participating merchants do not receive a commission for selling the bag tags. Town staff distributes the bag tags on a weekly or biweekly schedule, and upon request. Upon delivery of the bag tags, the merchants receive an invoice and payment is due within 30 days. Participating retailers are identified in promotional advertising and are provided a window sign to identify the store as a bag tag distributor.
- Amnesty Days are held in May and September, whereby residents can set out a maximum of 5 bags without tags.
- Tags help to offset collection and disposal costs, which were further supplemented by approximately 1.4% of the tax levy in 1999.
- Without introducing user pay, Georgina faced a 9% increase in taxes to offset increases in waste management costs.



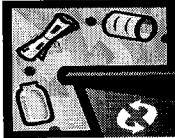
**Impacts on Waste to Landfill**

Year	SFHs	Tonnes	% Change from base year (1996)
1996 (base year)	11,995	9,555	
1997	11,225	5,285	-41%
1998	12,369	6,110	-38%
1999	12,778	6,291	-38%

Note: Weigh scale data is not available prior to January 1997. 1996 information is based on the average waste generation in other York Region municipalities as recorded at the Keele Valley Landfill site.

- Random 'Curbside Bag Counts' are performed monthly to estimate the average set out rate for bags/household/week the setout rate has changed as follows:
  - In 1996, the average number of bags/household/week was 1.8.
  - In 1997, this number decreased to an average of 0.76 bags/household/week, showing a 58% reduction.
  - In 1998, the average set out rate was further reduced by 16% to an average of 0.64 bags/household/week/.
  - In 1999, the average setout rate increased marginally from the year previous, averaging 0.71 bags/household/week (reduction of 61% from 1996).

- Before user pay, a maximum of 10 bags was allowed per residence per collection. This maximum was eliminated upon introduction of user pay.



**Impacts on Recycling**

Year	SFHs	Tonnes	% Change from base year (1996)
1996 (base year)	11,995	1,174	
1997	11,225	2,519	+52%
1998	12,369	2,693	+47%
1999	12,778	2,786	+47%

- The municipality provides a weekly curbside collection.
- The municipality currently collects: ONP, OMG, OCC, household paper, glass containers, aluminum and steel cans, plastics #1 and #2 with screw top lids. There has been no significant expansion of materials collected since user pay system implemented.

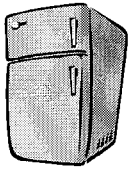


**Impacts on Leaf and Yard Waste**

Year	SFHs	Tonnes	% Change from base year (1996)
1996 (base year)	11,995	119	
1997	11,225	192	+72%
1998*	12,369	322	+162%
1999	12,778	432	+241%

Note: Service expanded.

- Prior to user pay, leaf & yard waste was collected in the fall only. In 1998, service was expanded to a spring and fall collection. Service was expanded due to public pressure. Currently, there are three spring and two fall collections.
- Leaf and yard waste does not require a tag.
- The Town has had a backyard composter program since 1991/1992. Since 1998, composters have been available year round for a cost of \$25 per unit.
- The Town cites that 45-50% of households have backyard composters, and a 90% participation rate.
- The Town has distributed an estimated 5,000 composters since 1994. Information is not available on whether the rate of composter sales increased after user pay was implemented.



### **Bulky Waste**

- Bulky wastes are collected year round, once a month. A maximum of five bulky items can be set out per property. Each item must have a \$1 sticker.
- Prior to user pay, bulky waste was collected monthly from May and October, with a maximum of five items.

#### **Changes in Participation over time:**

- The Town of Georgina recorded 167 incidents of illegal dumping in 1997 (or 0.01% of households not complying with program). The number of recorded illegal dumping incidents has risen (which is attributed to an increase in inspections) in 1998 and 1999, with 356 and 342 recorded incidents, respectively (an average of one incident of illegally dumped garbage per day).
- The Town established a by-law prohibiting illegal dumping. Fines are set at \$100 if the owner of the garbage is identified.
- There was a 6% decrease in tag sales from 1997 to 1999. Town staff assumed that residents diverted more wastes and set bags at curb that were totally full .

#### **Promotion and Education:**

- Public meetings were held in summer 1996. Educational campaign began 6 months prior to program implementation. The user pay program was advertised in newspaper through Q & As. Flyers and the waste management newsletters were inserted into local newspaper.
- Mayor participated in a call-in show on the local cable television station.
- Currently education and promotion involves posting general advertisements in the local paper. Each year the user pay program is described in an annual report.

#### **Administration Support:**

- One additional staff member (inspector) was hired to deal with illegal dumping at \$30,000 per year.
- User pay has proven to be 14.3 % less costly to total system cost compared with no user pay. Net municipal cost savings = 51% less costly than with no user pay.
- "The reduction in the waste management budget resulted from: bag tag revenues, a decrease in the garbage collection contract due to the decreased amount of garbage to be collected; avoided tipping fees from the 40% reduction in waste to landfill; and, an increase in recycling revenues. Balanced by: increased yard waste costs; increased administration fees; printing and advertising costs to promote the program; an increase in the recycling contract due to the increased amount of recyclables to be collected."  
(Source: Town of Georgina: Report No. PPW-98-22)

- Participating retailers are identified in promotional advertising and are provided a window sign to identify the store as a bag tag distributor.

**Future Goals:**

- Intend to focus on continued public education. For example, it is important for new residents to understand that waste management costs cannot be absorbed through the tax base in the Town of Georgina.
- Considering promoting curbside exchange programs.
- Continue to promote diversion through composting.
- No plans to increase the price of bag tags or expand the recycling program.

## User Pay Case Study City of Stratford

**Relevance to Toronto:** One of very few user pay programs in Ontario.

**Demographics:**

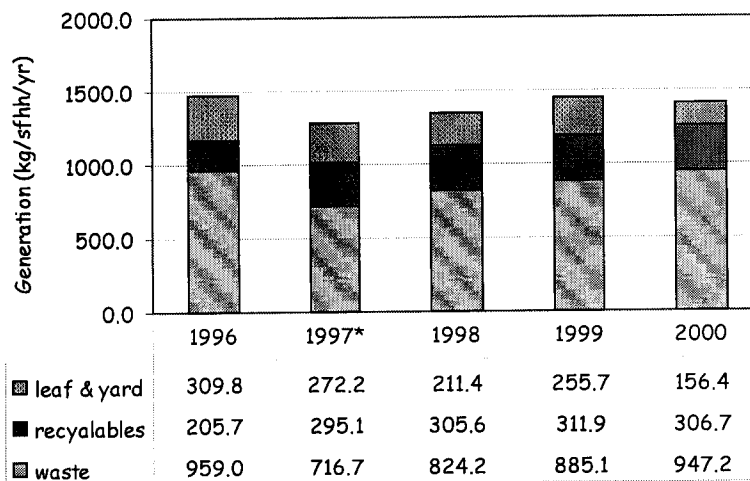
Population: 30,000

SFH: 6,990

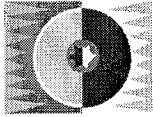
### City of Stratford, Waste Diversion at a Glance

Type of System	Date Started	Years with Data	% change in waste landfilled (kg/sfhh/yr)	% change in recycling (kg/sfhh/yr)	% change in leaf & yard collection (kg/sfhh/yr)	% Diversion (without BYC)
			Compared with baseline year 1996			
Partial 2 bag/tag system	January 1997	1996				+35%
		1997	-25%	+43%	-12%	+44%
		1998	-14%	+49%	-32%	+39%
		1999	-8%	+52%	-17%	+39%
		2000	-1%	+49%	-50%	+33%

### Stratford - Impacts of User Pay



\* Full user pay program introduced in January 1997



### Program Description:

- Full user pay program introduced in January 1997. Tags cost \$1.20 each.
- The program is called "Pay as you Waste Program" (PAWP).
- Containers < 128 litres and standard garbage bags require one tag. Small grocery bags require a half tag. Containers between 129 - 240 litres require two tags and containers between 241 - 360 litres require three tags.
- Bulky wastes require special tags ranging from \$10 to \$27, which can be purchased at City Hall.
- Residents can drop waste off at landfill for \$0.50 /bag, to a maximum of 5 bags per week.
- User pay is written into the City of Stratford's waste management and collection by-law, which also includes enforcement procedures and sets fines for illegal dumping.
- Tags are available at the City Hall, some select retail stores and the Kiwanis Centre.
- Weight restrictions apply. Bags and cans must not exceed 22 kg (50 lb).
- The City of Stratford placed no limits on the amount of garbage placed at the curb, prior to the implementation of the full user pay program.
- The user pay program is supported by a grass clipping ban.
- The City has introduced twice yearly curb swaps of items called the "Treasure Hunt".
- Waste management (collection and disposal) costs removed from the tax bill.



### Impacts on Waste to Landfill

Year	SFHs	Tonnes (Curbside)	Tonnes (Self-Haul)	Total Tonnes	% Change from base year (1996) in kg/sfhh
1996	6,778	6500	0	6,500	
1997	6,792	3368	1500	4,868	-25%
1998	6,816	2928	2690	5,618	-14%
1999	6,875	2536	3549	6,085	-8%
2000	6,990	2733	3888	6,621	-1%

- Due to the lower cost to dispose waste at the landfill (\$0.50 per bag at landfill compared with \$1.20 per bag at curbside), Stratford staff have experienced a significant increase in residential self-hauled waste going to landfill (160% increase since the introduction of user pay). Up to 800 vehicles arrive weekly to the landfill to discard their residential waste, which averages 2.1 bags per vehicle.
- Staff would like to see the cost at landfill increase to reduce the amount of waste taken by residential self-haulers.
- The number of setouts has decreased from an average of 2.2 bags per setout (prior to user pay) to 1.0 bag per setout (after user pay).
- The weight of the average setout has increased from 12 lb. per bag (prior to user pay) to 18 lb. per bag (after user pay).
- Prior to the user pay program, residential garbage collection required two garbage trucks (3-4 crew). Currently, the contractor requires only one garbage truck (2 crew) to complete the same collection schedule. This is likely a result of less waste being collected curbside and increasing amount self-hauled to landfill.



**Impacts on Recycling**

Year	SFHs	Tonnes	% Change from base year (1996) in kg/sfhh
1996	6,778	1,394	
1997	6,792	2,004	+43%
1998	6,816	2,083	+49%
1999	6,875	2,144	+52%
2000	6,990	2,144	+49%

- City staff have reported that participation in the recycling program has increased from 80% participation to 100% participation since the introduction of user pay.
- Prior to user pay, curbside collection of recyclables required 2-3 side-loader trucks. Currently, the collection of recyclables requires the use of 4 side-loader trucks.
- Boxboard was the only new material introduced into the recycling program during the introduction of user pay.
- The recycling program collects ONP, OCC, OBB, household paper, glass containers, aluminum and steel cans, plastics #1 and #2 and #6, plastic bags/film.
- Curbside recyclables are collected bi-weekly.