

The City of Norwalk Connecticut A SMART Waste Management Plan



**Issued by
Green Waste Solutions
For the Connecticut Department of Environmental Protection**

**The Norwalk Connecticut
Feasibility and Implementation Strategies for Unit Based Pricing**

City of Norwalk SMART' Unit Based Pricing Project

1. Introduction

1.1 Summary of Project

A SMART (Save Money and Reduce Trash) residential waste reduction program means incentivizing residents to reduce and recycle by charging per unit for trash disposal. A community is SMART, if the residents can answer 'YES' to the question - Do residents save money the more trash they recycle? Currently the City of Milford residents are not able to save money by recycling more. The SMART strategy empowers residents to take control of the amount they spend on trash. Generally speaking SMART communities treat waste like a utility. Approximately 7,000 cities and towns in the U.S, along with many more worldwide, have implemented basic economic principles to address solid waste. When citizens have to pay by the unit they become more aware of the waste being produced, which triggers a long term sustainable behavioral change. SMART communities create a proportional unit based pricing structure that includes all costs associated with waste and recycling. For waste residents pay as they go, while unlimited recycling is available to all households with no additional cost.

It is the objective of a SMART waste management program to create a successful, sustainable, user-friendly, cost effective residential recycling program while working within the current collection infrastructure. We define **successful** as a "significant measurable increase in recycling", **sustainable** as a "recycling rate that continues on its own without a great deal of re-education effort", **user-friendly** as "easy to understand and participate", and **cost effective** in that "overall costs are less than alternative recycling programs".

The mission of this study is to:

1. Determine the feasibility of implementing a SMART Unit Based Pricing (UBP) solid waste management program. Compare a SMART UBP program with the current voluntary Town recycling program, as well as with a mandatory curbside Town managed recycling program.
2. Determine a cost effective approach (or series of approaches) which best provide sustainable waste reduction, increased recycling volume, and significant cost reductions.
3. Provide the Town with options for implementing UBP that work within the existing collection framework and MSW infrastructure in order to limit expenditures and changes.
4. Provide rate structure design options that create a steady revenue stream to fund all or part of the solid waste and recycling collection costs

Key characteristics of a SMART waste management strategy:

Environment—a significant positive environmental impact occurs as a direct result of waste reduction, increased recycling and composting, and reusing or repairing items when possible. UBP helps decrease the cities' Carbon Footprint by reducing overall Green House Gas emissions between 3 and 5%. As recycled materials are manufactured into new products, environmental degradation caused by extracting raw materials from the earth is reduced.

Equity — Residents generating smaller amounts of trash because of better waste management or household size do not subsidize the costs of residents that generate larger quantities of trash.

Economics — Similar to a public utility, individual costs are based on each customer's usage of the service. The opportunity for cost control is now available to residents by improved waste management.

Education — UBP also encourages consumers to understand local recycling guidelines by prompting them to read, listen, and learn enough to make changes that provide monetary rewards. Inaction costs them more.

Education about the new program through various media should begin as early as possible to aid in transitioning.

Types of media include public meetings, public service announcements, articles published in the local newspapers, and mailings or flyers to each customer.

Enforcement — An effective plan includes funding and a plan for enforcement of all provisions in the program, including illegal dumping.

1.2 Methodology

The information and suggestions proposed in Milford's SMART Guidebook were determined using the EPA's 6 step planning process:

1. Gather community solid waste and population characteristics.
2. Identify and compile existing municipal solid waste program costs.
3. Identify and compile MSW program revenue sources.
4. Develop alternative rate structures.
5. Project MSW revenues based on alternative rate structures.
6. Evaluate the sustainability of the alternative rate structures based on revenue requirements.

2. Rate Structure and Program Options

2.1 Per Capita Disposal Measurement

The methodology for determining expected disposal reductions from the implementation of a SMART Unit Based Pricing (UBP) waste management program is per capita disposal. Per capita disposal is the total tons disposed divided by the number of individuals participating in the program, then divided by 2000 (pounds per ton). Using per capita residential disposal as the benchmark number allows for an apples to apples comparison, which can be examined state to state or even internationally. The EPA hierarchy for waste minimization prioritizes reduction, reuse, and recycling as the first three options. Measuring only diversion or only recycling can be misleading. Comparing recycling numbers from region to region is like comparing oranges and apples. Per capita disposal is a fair and simple measurement approach. For the purpose of this guidebook, waste disposal for the Town refers to the total residential tonnage brought to the Transfer Station.

The per capita residential disposal information from the Massachusetts Department of the Environment (including 89 communities that have strict unit based pricing for trash) indicates an average of 512 lbs per person per year disposal in UBP communities. A further review of disposal tonnages from a variety of unit based residential programs across the country indicates similar per capita numbers between 400 and 600 pounds per person per year. The Massachusetts case study is commonly used by the EPA as a baseline for expected results in UBP programs.

Proportional Rate - Proportional systems create the most direct relationship between trash volume and price. Residents are charged the same amount of money for each unit of trash they set out for collection. A proportional rate can be achieved either through a special Town trash bag or a container, depending on the desired method of collection.

Trash bags are a very effective unit base. Customers pay a fee by purchasing “official” distinctively marked, standard-sized trash bags. Bags can be purchased from municipal offices or retail stores. Only official bags are collected. Trash services require bags to be purchased for all disposal of trash. Thus a fee is paid at the time of service through the cost of the bag. Fairness is assured. Revenues can be uncertain until the program is established and its history can be used to project future costs and revenues. Funding for the entire program is dependent on bag sales. The cost of the program is reduced because billing and opting out is eliminated. However this program carries the highest financial risk. Success actually reduces revenue and program costs may not be met. It is important to price the bags correctly from the start. Leaving a financial cushion is important, especially during the first year.

Image 3. Proportional Rate Bag System

Benefits/Advantages	Risks/Disadvantages
Easiest system to understand and comply with because the bag causes the volume and weight limits to be more apparent.	Revenue uncertainty and cash flow when program first begins.
The size of the official bag will clarify the volume limit. The strength of the bag will clarify the weight limit by bursting when the weight limit is grossly exceeded.	The more the community decreases the waste the less revenue is generated from bags sales.
Customers purchase only bags, which are needed for disposal anyway.	
Increased flexibility by offering more than one bag size. A smaller size bag could be offered to customers who generate small amounts of rubbish.	
Any future changes to unit weight or volume can be easily implemented by changing the size of the bag(s).	
Fastest and most efficient means of collection. Official bags are easily identified and conform to size and weight limits.	
Official bags are more difficult to counterfeit than stickers or tags.	
Illegal waste containers are more easily identified.	
Details of the entire MSW program could be printed on each bag, or bag packaging for customers to easily reference.	

A proportional program can also be achieved with a container system. Containers would be priced based on the unit cost (per gallon). Each gallon would be priced proportional to the next; therefore, a 64-gallon container would be double the cost of a 32-gallon container. Container systems are billed to the households monthly or quarterly based on chosen container size. A container system requires an accounting and fee collection function and can be difficult to administer in areas of high household turnover. The container system also requires an inventory of multiple container sizes in order to meet changing residential needs. Revenue stream can be risky and difficult to manage because of non-pay households.

Image 4. Proportional Rate Container System

Benefits/Advantages	Risks/Disadvantages
Likely to maximize reduction of waste, so not to purchase additional overflow bag	Potentially higher costs for collection because overflow bags would require manual collection
Automated and semi automated collection	Communities must offer residents a choice of subscription levels, provide them with containers in varying sizes, and bill accordingly. System requires billing and inventory
Potential for decreased labor and workers compensation	These systems might be more expensive to implement and administer
Collection system is clean and organized on the curbside	Revenue Stream can be slightly risky due to non-pay households

Two-Tiered Proportional - Two-tiered systems help communities achieve revenue stability. Residents receive a base level of service, for which they pay a flat fee. The ‘first-tier’ fee can be assessed through the tax base or through a base monthly fee. The base charge can be used to cover specific costs of the solid waste program (e.g. personnel, transportation, executive oversight etc.) Residents then pay a ‘second-tier’ based on the amount of waste they put out for collection. The second-tier is unit based and generally covers disposal costs. The two-tiered program is also widely used through out the United States. The base fee assures funding of all fixed costs.

Image 5. Two-Tiered Proportional

Benefits/Advantages	Risks/Disadvantages
Revenue will cover fixed costs.	The requirement of paying an additional fee for second (or multi) tier may be difficult to understand.
Revenue stability is ensured. Program funding is not entirely dependent on bag sales. Success of program does not under fund program.	Collection of fees may require administration expense.
Waste reduction, reuse and recycling are encouraged. Residents use the goal of reducing trash to one bag to avoid buying additional bags, thus reducing waste.	
Can be implemented more quickly and inexpensively than other types	
Allows for maximum flexibility to implement changes	

Variable Rate. Variable rate pricing means charging different amounts per unit of garbage, in different container sizes. Several container sizes are offered generally from 10 to 96 gallons. The community bills residents based on their container size or subscription level. The program is flexible because the community can charge a higher than subscription level price for additional containers if their goal is to create a strong incentive to decrease waste.

Image 6. Variable Rate System

Benefits/Advantages	Risks/Disadvantages
Automated and semi automated collection	More complicated.
Rate is based on the amount of rubbish generated by each customer.	Too many variables in a program cause it to be more difficult to implement and operate.
Potential for decreased labor and workers compensation	Potentially higher costs because collection is slower
Authorities can charge a price for additional containers that is higher or lower than subscription level depending on the community	Communities must offer residents a choice of subscription levels, provide them with containers in varying sizes, and bill accordingly.
Collection system is clean and organized on the curbside	These systems are be more expensive to implement and administer

3. The Climate and Waste Connection

The Earth's surface temperature has risen by about 1 degree Fahrenheit in the past century, with an accelerated rate of warming during the past two decades. Current evidence strongly suggests that it is likely that human activities have contributed to this warming. Human activities have altered the chemical composition of the atmosphere by increasing emissions of greenhouse gases (GHG) - primarily carbon dioxide, methane, and nitrous oxide.

Every stage of a product's life cycle—extraction, manufacturing, distribution, use, and disposal—indirectly or directly contributes to the concentration of GHGs in the atmosphere and potentially affects the global climate. For instance, product manufacturing releases GHGs both directly, from the manufacturing process, and indirectly, from the energy produced to run the plant. Extraction and distribution require gasoline-powered vehicles that release CO₂. Discarded products typically end up in a landfill, which releases methane as products decompose.

Waste prevention and recycling—jointly referred to as waste reduction—offer significant potential for decreasing GHG emissions. *Source <http://www.epa.gov/wastewise/climate/change.htm>* A formal analysis of a data set including 305 municipalities from the state of Massachusetts indicates that a per capita reduction of (.17) MTCE is expected in SMART UBP residential waste reduction programs. *Source ICF International... June 2008.* This factor represents the latest available methodology for estimating the potential effect of implementing a SMART waste management strategy on climate change. This Guidebook will use this factor to determine potential waste reduction benefits.

City of Norwalk Overview

4.1 Existing Waste Collection System

The City of Norwalk offers municipal service for trash collection. Trash is picked up by 12 City employees in 4 routes daily. There was 44,506 tons of trash collected in 07/08 calendar year. The City is divided into districts. The City only provides curbside collection of trash to residences that are connected to the sewer system. The remainder of the residences contract for waste pick up privately. The city services 24,000 house holds single and multifamily households under 5 units. The commercial businesses also contract for trash separately. This SMART guidebook will only address reducing the residential tonnage number. In fiscal year 07/08 the annual residential per capita disposal for the City of Norwalk was 1073. This number falls in line with peer communities in Connecticut and Long Island with similar income demographics and current recycling rates. This number is based on the 44,506 tons of trash. Because there may be some overlap in commercial and residential material the per capita of 1073 is only used as a benchmark.

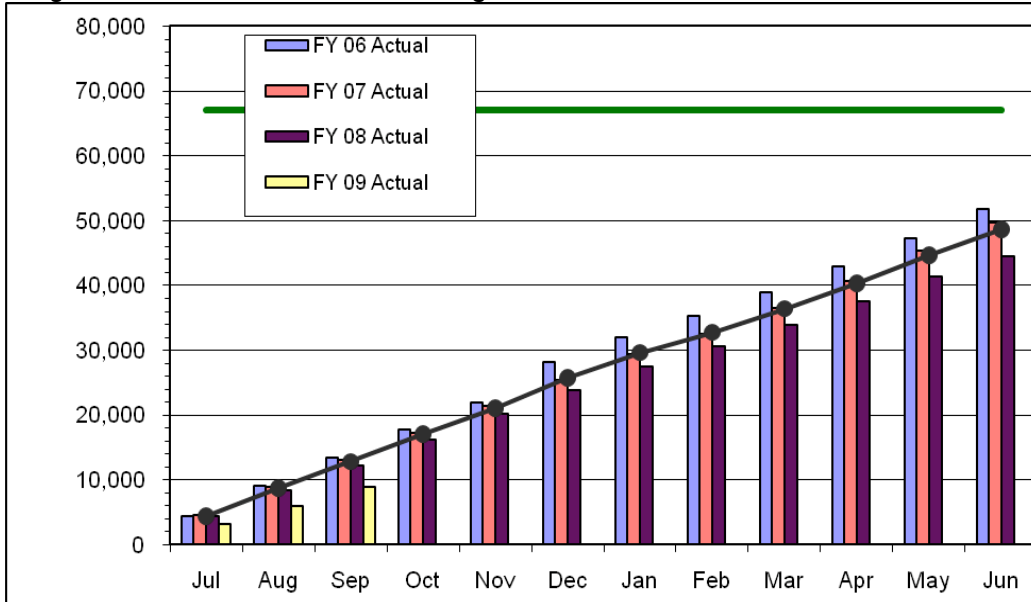
The residents of Norwalk may also use the Transfer Station to drop off trash and bulky items. Bulky items are free to residents. The town also offers free pick up of bulky items. There is no cost for unlimited use of the Transfer Station and there is no sticker required for residential users.

The City is responsible for collection of single family waste (5 households and under) approximately 24,000 households which is brought to the Transfer Station. The cost of the trash tipping is covered in the tax base. The trash that is collected at the Transfer Station is currently brought to the Bridgeport WTE facility where the tip cost

is currently estimated tip at \$98.50 per ton. The haulers that collect from multifamily and commercial pay \$85 per ton. The city is beginning a new waste contract in 2009 the new contract will not be with the Connecticut Resource Recover Authority. The Connecticut Resource Recover Authority also will no longer run the transfer facility. The new tip cost is estimated a \$75-\$85 per ton and includes an annual price escalator. For the purpose of this guidebook a tip fee of \$85.00 per ton is used as an average estimate for the next 5 years.

The average household income is \$60,000 and about 50% of residences are owner occupied. Approximately 3% of residents are at poverty level.

Image 7. Historical Cumulative Tonnage Chart for Residential and Commercial waste



4.2 Existing Recycling Collection System

Recycling in the City is handled by once contracted hauler. The City requires weekly recycling by all residence. The recycling is collected form all single and multifamily households. The total recycling tonnage was 15,658. This equals a 26% overall recycling rate for the City. The recycling tonnages and breakdown are from fiscal year 07/08 DEP report, so this number may vary slightly. The residential breakdown indicates over 7,368 tons of leaves and yard waste which is equal to almost 12%. The town provides pick up of leaves and yard waste.

The City of Norwalk currently recycles 8,290 tons through the residential dual stream curbside program this equals approximately a 14% commodities curbside recycling rate. The City's current recycling contract is through Connecticut Resource Recover Authority, with City Carting providing the hauling services. This Connecticut Resource Recover Authority contract will expire July 1 of 2009. The City will take control of the transfer station at this time. City Carting has plans to increase recyclable materials to plastics 3-7 in July of 2009. The new contract will also pay the City \$17.00 per ton for dual stream materials. The City currently collects commodity recyclable materials, including plastic #1 and #2, paper, newspaper, magazines, chipboard and cardboard, metal, aluminum, and glass.

Image 8. Historical Recycling Tonnage chart

Recycling Rates	
Waste Total / tons	44,506
Commodity Recycling / tons	8,290
Metal / tons	
Yard Waste / tons	7,368
Total Generation	60,164
Recycling Commodity Percent	14%
Yard Waste percent	12%
Total Recycling / tons	15658
Total percent	26%

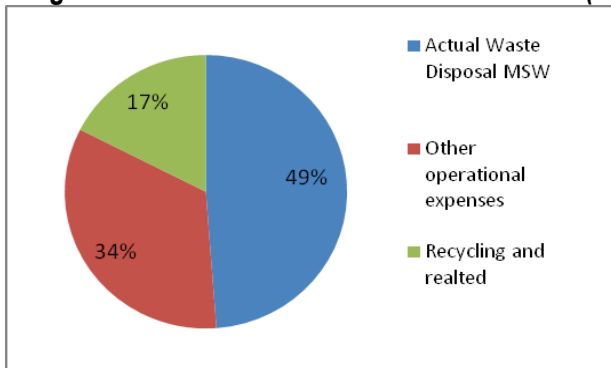
4.3 Overall Solid Waste Budget

There are a total of 24,000 households serviced by curbside collection in the City of Norwalk. Based on the per capita disposal of 1073 and projected tip cost of 85\$ per ton the total of projected disposal cost for 08/09 is \$2,662,000. This total cost only covers the residential waste collected by the city itself (31,320 tons). The approximate cost to the participating HH is \$229 per year total and \$112 for disposal/ tipping. The total projected cost for disposal and collection is 4.5 million dollars. The total budget for recycling is \$950,000. Disposal or tip fees represent about 50% of the average household budget.

In past budgets the tip fee has also included at 'put or pay' penalty, with the new contract there is no municipality or regional specific minimum commitment in the new contract. The estimated tip cost with CPI increases is estimated at \$85.00 per ton over the next 5 years.

Currently the City of Norwalk is not paying a tip fee for recyclable materials nor are they receiving a rebate or profit share for commodity materials from the Connecticut Resource Recover Authority. The Connecticut Resource Recover Authority does give a percentage of recycling profits to the two Garbage Museums located within the state. The new contract will pay the City for commodity material at a rate of 17\$ per ton.

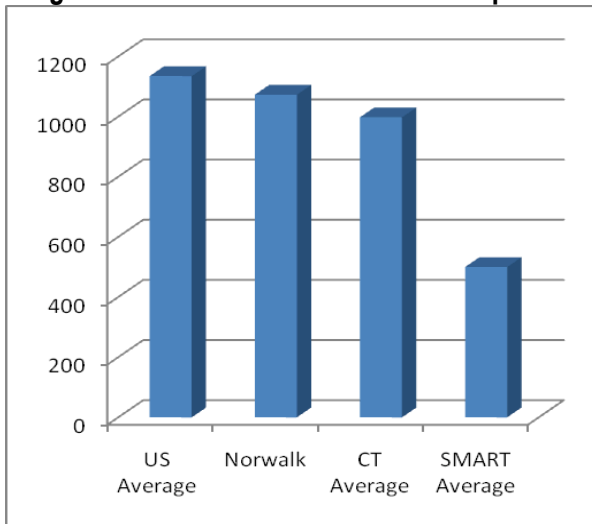
Image 9. Overview of Residential Waste Costs (district 4)



4.4 Waste Minimization Goals for the City of Norwalk and the State of Connecticut

The City of Norwalk has a short-term goal for fiscal year 2008/09 of increasing recycling. The longer-term goal of 58% diversion by the year 2020 was set by the State of Connecticut in the 2006 in the Solid Waste Management Plan. The United States EPA has a recycling goal of 35%. The EPA and the State of CT both include yard waste diversion in the overall recycling rate.

Image 10. State and National rates compared with SMART communities



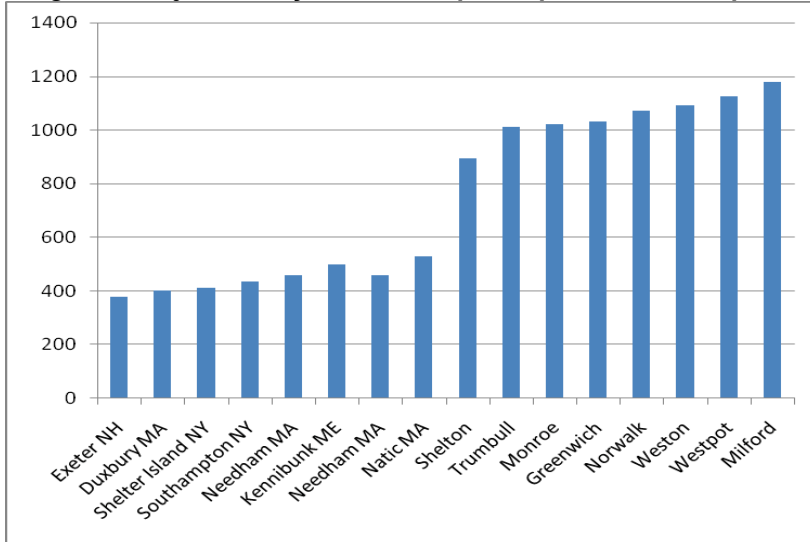
5. SMART Unit Based Pricing (UBP) Program Projections and Design

5.1 Projected per capita disposal change

The City of Norwalk 07/08 residential waste tonnage, including bulk items, is 44,506, the approximate residential tonnage of which equals 1073 pounds of trash per capita. Unit Based Pricing (UBP) could decrease the disposal to approximately 500lbs per person per year. Based on the overall City population a decrease in disposal of 573 lbs per person per year would yield a total reduction of 16726 tons annually for. Creating a SMART program that can work City wide would decrease the residential waste stream approximately 53%. Based on the Cities overall waste stream of 110,000 tons annually this is a decrease of about 22%

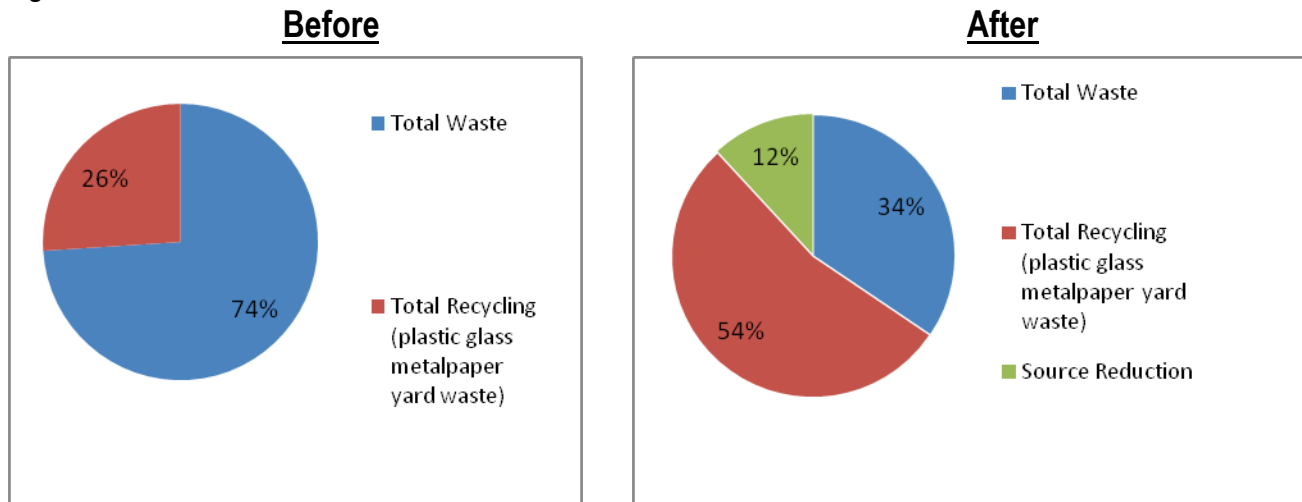
The following chart is a look at other communities with similar populations; all with curbside programs or PAYT programs. This chart also reflects the type of recycling program offered. This comparison demonstrates the waste reduction that Milford may achieve through unit based pricing. The Towns on the left all have (UBP) unit based pricing with weekly recycling. The Towns on the right just offer weekly recycling.

Image 11. Projected City of Norwalk per Capita Waste compared with peer communities



The following before and after charts demonstrate the potential change in the residential waste stream, after the implementation of a SMART UBP waste plan.

Image 12. Waste Stream Before and After SMART



Trash represents 74% of Norwalk’s total 2008 residential stream (before UBP) but reduces to only 34% after the implementation of a SMART program. An estimated decrease of 53% in waste brought to the transfer station would equal approximately \$1,400,000 annually in avoided disposal costs (from city serviced households).

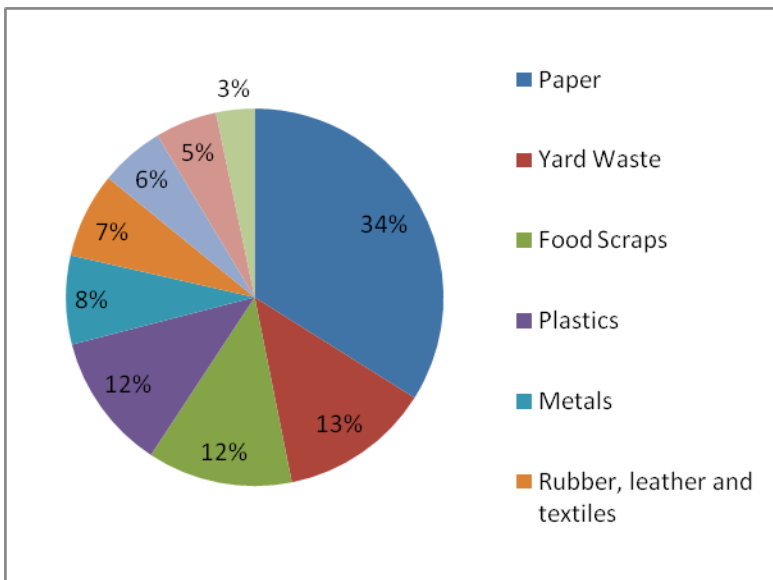
The overall residential recycling rate (including commodities and yard waste) could increase from 26% to 54%; an increase of over 100%. Recycling is considered by the EPA and the state of CT to be both commodities materials and yard waste. EPA studies show that approximately 70 to 75 percent of diversion in PAYT programs is recycled or composted, but 25 to 30 percent can be categorized as source reduction. Approximately 11,000 tons of the diverted material will go toward increased commodity recycling and increased yard waste or back yard

composting. The commodity tonnage has the potential to create significant revenue based on the average price per ton from City Carting.

The remaining diversion comes from waste reduction (i.e., through reducing and reusing). This is an added environmental benefit. When faced with financial incentives, consumers actually make better purchasing decisions at the source or retail level. Therefore, products that are packaged better, smaller or with recyclable materials are chosen over those that do not fit the new environmentally inspired criteria.

The City of Norwalk does not have an official waste characterization study. The EPA uses a *Franklin Associates* waste characterization study from 2005 as a benchmark. There are some differences in regional waste. And the percentages of individual materials can vary from the national average. The SMART guidebook will use the national average to extrapolate an estimate of the Milford residential waste stream. Based on the EPA report *Solid Waste in the United States Facts and Figures*, the following is a look at the estimated per person generation of each material in the City of Milford.

Image 13 Waste Characterizations - US and Milford



Norwalk	Per Capita
Paper	364
Yard Waste	138
Food Scraps	133
Plastics	126
Metals	82
Rubber, leather and textiles	78
Wood	59
Glass	57
other	35
	1072

5.2 SMART Design for Norwalk

The City of Norwalk is currently studying their collection system. It is their goal to create a more uniform and cost effective system. Since the specific system has not been chosen the following design options will be general and will cover three possibilities; municipal City wide collection using city employees; City wide collection service using one contracted hauler; multiple hauler collection allowing residences to contract with the hauler of their choice. This is the perfect time for the City to create a unit based pricing structure in order to incentivize the residents to change behavior.

Program Design

The City of Norwalk residential taxes pay for the hauling and tipping trash in the 4th district. Other districts include a portion of trash costs in the tax base. Taking the cost of collection and tipping out of the tax base in all districts would allow residents the ability to be SMART (save money when they reduce trash). The estimated residential tip cost over the next 5 years is or \$112 per household annually. This cost could vary based on city wide service. Reducing taxes and creating a per unit charge would incentivize residents to recycle more instead of paying for more trash. The following design options could work in all three of the above collection options. The city could create a unit based system either with Official City of Norwalk trash bags or with containers using manual or semi automated containers.

Design Option 1 Manual collection

Manual collection would require Official City bags, which would be purchased by the City and then made available at local retailers (there are companies that handle this for the City so it is virtually hands off). The City may be required to create an ordinance stating that residential trash must be placed in Official City Trash Bags. The bags are purchased by residents in lieu of the portion of property tax that previously covered disposal costs.

This is actually a simple solution to waste reduction within the City. Residents will still place bags at the curbside in cans. The City will most likely have to adjust routes due to the change in waste stream. It is estimated using data from the Massachusetts department of Environmental Protection and the US EPA (Skumatz research) that approximately 30% of material will go to source reduction. This will mean an overall reduction to the City in actual materials transported. This reduction will allow them to make logistical changes that should be favorable to their bottom line. The City will adjust routes and possibly trash and recycling days in order to adapt to the new material streams.

The individuals collecting trash will be asked to monitor compliance. Since it is the employees responsibility to collect trash from the household, it will ultimately fall on their shoulders to make sure residents are following the ordinance. Stickers for non compliance should be provided by the City for the employees to use. If household trash is not in Official City of Norwalk Trash Bags the employees will label it and leave it behind. Employees will be accountable for compliance and there will have to be a penalty / fine set up for non-compliance by residents.

Design Option 2 Semi-Automated containers

1). A container system similar to San Francisco CA could be used by all households under 8 units. The container size would be chosen by the individual households. The container pricing structure would be unit based so each size would proportionally rise in price as it increases in size. The price structure could contain all or part of disposal and collection cost. The City would create a fee (monthly, quarterly, or annually) that reflects the cost of each container. For maximum results each container must be priced proportional.

2). A container system using an overflow bag would also incentivize residents, and is seen in many MA cities. The city could provide a 32 gallon container to each household. The container would be part of the current tax base but all additional trash would be placed in an Official City of Norwalk Trash bag. The bags would be priced to capture all or most of the disposal costs and the collection and container costs would remain in the tax base. It is important to provide only a 32 gallon container in order to get the full estimated diversion.

3). A container system can also work in conjunction with an Official City trash bag as in Middletown Rhode Island. This is a very flexible system and would meet many needs. The city would provide a 64 gallon container to each household and require that all trash be placed in Official City bags. The Semi-automated / automated trucks picking up the trash would be fitted with cameras in order to insure compliance. (Proper bags must be used). This system would comply with the City ordinance requiring closed containers. This could also be achieved through a clear 64 gallon container. There are clear containers available which would allow the employee to identify non compliant households by bag color.

Taking the cost of trash disposal out of the tax base could be achieved in a number of ways:

1). The most well received method is to publically show a reduction on the property tax / fee. For example last year it cost each household an average of approximately \$100 (within the tax payment). This year your taxes will be \$100 less and instead residents will pay as you go for what they use.

2). The state of MA has been very successful with a strategy of 'not' reducing the tax. Instead, municipalities explain to residents that there will be no tax increase this year and the money that was going toward disposal costs will now be used for other public services (additional library hours, police or fire services etc). Disposal will now be paid for as they go to an enterprise fund which then covers the tip costs.

3). Another option is to give a rebate for the overall savings one year after inception. This allows the City to use the current tax budget to cover any start up costs such as bags, additional recycling containers, and educational costs. The buildup of funds (from bag sales or container fees) can also be added to the enterprise fund. This account can be directly rebated back to each residents. There are many rebate options: bi annual checks, coupons, gift cards.

5.3 Rate Structure Options

The following rate structure option use 500 pounds per capita as a benchmark. This equals a 53% reduction in waste for the City of Norwalk. This analysis also makes assumptions on 3 other benchmarks: a waste reduction to 400, 600, and 700 lbs per capita, representing: 65%, 50%, and 40% waste diversion respectively. Several cities throughout the US have achieved per capita disposal of 400 pounds and under. The projected decrease in residential waste due to SMART is of critical importance since an overly optimistic projection will result in underestimating the projection of waste. Conversely an overly conservative waste reduction projection will result in lower revenues than necessary to fund the program costs. All of the design options continue to provide free drop off at the transfer station for recycling or trash. Some communities also use the unit based pricing system for trash at the transfer station.

Image 14. Rate Structure Option 1 (covers all residential solid waste tip costs approximately \$2,600,000 budget)

Projected Per Capita Disposal	2,662,000	2,662,000	2,662,000	2,662,000	2,662,000	2,662,000	2,662,000	2,662,000	2,662,000	2,662,000	2,662,000	2,662,000
Price	1.50	2.00	2.50	1.50	2.00	2.50	1.50	2.00	2.50	1.50	2.00	2.50
Revenue/\$	667,158	1,396,847	2,126,536	564,924	1,148,675	1,732,426	769,392	1,645,018	2,520,645	871,625	1,893,190	2,914,754
Revenue/\$												
Trash Fee / base	-	-	-	-	-	-	-	-	-	-	-	-
Sale of Trash Bags	2,189,067	2,918,756	3,648,444	1,751,253	2,335,004	2,918,756	2,626,880	3,502,507	4,378,133	3,064,693	4,086,258	5,107,822
Increased Recycling Revenue	83,189	83,189	83,189	97,705	97,705	97,705	68,672	68,672	68,672	54,156	54,156	54,156
Total Revenue	2,272,256	3,001,944	3,731,633	1,848,959	2,432,710	3,016,461	2,695,552	3,571,179	4,446,806	3,118,849	4,140,414	5,161,978
Cost Reductions												
Avoided Disposal Cost	1,421,747	1,421,747	1,421,747	1,669,841	1,669,841	1,669,841	1,173,652	1,173,652	1,173,652	925,558	925,558	925,558
Reduction Labor	-	-	-	-	-	-	-	-	-	-	-	-
Total Cost Reductions	1,421,747	1,421,747	1,421,747	1,669,841	1,669,841	1,669,841	1,173,652	1,173,652	1,173,652	925,558	925,558	925,558
Total Source of Funding	3,694,002	4,423,691	5,153,380	3,518,800	4,102,551	4,686,302	3,869,205	4,744,832	5,620,458	4,044,408	5,065,972	6,087,536
Cost of PAYT												
Trash Bag Cost	364,844	364,844	364,844	291,876	291,876	291,876	437,813	437,813	437,813	510,782	510,782	510,782
Cost of additional containers	-	-	-	-	-	-	-	-	-	-	-	-
Cost of additional vehicles	-	-	-	-	-	-	-	-	-	-	-	-
Total cost of program	364,844	364,844	364,844	291,876	291,876	291,876	437,813	437,813	437,813	510,782	510,782	510,782
NET	3,329,158	4,058,847	4,788,536	3,226,924	3,810,675	4,394,426	3,431,392	4,307,018	5,182,645	3,533,625	4,555,190	5,576,754

At a bag cost of \$1.50 Norwalk would save approximately 1,400,000 in disposal fees and have additional revenue from bag sales of approximately \$600,000. At a cost of \$2.00 per bag the City would have additional bag revenue of 1,400,000.

6. Recommendations

The City of Norwalk is a great candidate for a SMART waste management program, especially since they are unifying their collection city wide. SMART can be adapted to any collection system, and meets the City's objective of creating a successful, sustainable, user-friendly, cost effective residential waste reduction program.

1). Begin a SMART Program in conjunction with the implementation of a new collection structure. The timing is perfect because the City will be at the start of a new waste contract with no put or pay penalty for waste reduction. The savings is significant both financially to the City and its residents but, also the environment.

2). Begin an enterprise fund to collect bag or container revenue. Determine how to handle the new revenue stream. The enterprise fund could also be used to capture additional recycling revenue from the increased stream of material. It is up to the administration to decide the best use of the additional funds. Should money be rebated (given back) to residents or used for City services?

3) Convey a clear message to the public. Residents need to know that this is a program saving both money and natural resources. They need to understand that their efforts are worthwhile and are making a difference. If this message is well delivered residents will be very satisfied and happy to participate in a SMART program

4). Create a volunteer advisory committee to carry out the implementation. This committee would be a communications link between the needs and concerns of both residents and the City officials. The members should be comprised of a combination of residents, City officials and employees. Committee members should bring experience in areas like legal, PR, marketing, and education. The committee should monitor and advise on the current implementation and the future phases of the program.

The committee should:

1. Decide on the best Design Option
2. Decide on the public relations and education leading up to implementation. Design a tool kit to be distributed to all residents. Examples of items to include in each kit are:
 - Detailed explanation and instructions of the new program.
 - A small, easy to understand, how-to quick reference guide with graphics and short reminders.
 - Schedule of curbside pick up and drop off items and dates.
 - Other materials for a smooth, simple start up.
3. Create multifamily enforcement suggestions and guidelines.
4. Suggest ways to recycle cardboard for residents
5. Suggest additional items to be added for recycling collection. Investigate other state recycling lists.
6. Create up-stream producer responsibility by educating local restaurants, grocery, and convenience stores about 'one way carry out packaging' which meets recycling regulations.
7. Address the potential of illegal dumping. Penalties should be consistent with those currently in existence, such as litter. The City will need extra staff in the beginning to educate local businesses about the possibility of illegal dumping and encourage them to lock dumpsters and report problems.
8. Address bulky items at transfer station drop off. The City should utilize the current transfer station as a drop off location and consider charging for car loads.

10. Encourage source reduction. Source reduction is a great benefit of unit based pricing. Residents are motivated to think before they act by pulling items out of the waste stream that used to be considered trash but actually have value to someone else.
 - Work with Salvation Army, Goodwill and local charities to create additional drop off locations or a bag system such as NJ.
 - Create a Swap Shop in town. A means for residents to exchange usable items. This can also be achieved through a website a "City EBay.
 - Work with groups like Got Books, and electronics manufacturers to take back additional items that can be reused.
11. Update City Website
12. Deal with renters and create penalties for those not following the ordinance so that home owners or management companies don't bear the burden of noncompliance.

7. Timeline to Implementation

The first step is to say **YES to SMART** waste management and decide on details of program such as: rate structure; cash flow; and how additional bag revenue will be handled.

The next step for the City of Norwalk is to create an advisory committee made up of some City employees, residents, and council members (as suggested above). The advisory committee can guide the City through the implementation process. Generally a 6 month period is ideal.

Phase 1 July 09

1. Create a clear message to sell the SMART program to residents.
2. Create official timeline and outline goals for committee
3. Plan meeting calendar with dates to speak with local groups.
4. Check into recycling containers. Do residents have enough containers to maximize recycling?
5. Create public education and relations strategy target dates and costs. Much of this will be free because this is big news, however some planned adds will be helpful
6. Develop materials for residential tool kit
7. Fine tune details of low income families
8. Determine if ordinances are needed / fines / penalties

Phase 2 Aug / Sept

1. Public relations through local newspaper, advertorials, interviews, PSA, flyer for households etc
2. Address the issues listed in above section (illegal dumping, cardboard recycling, producer responsibility et
3. Determine how to handle bulky items that are picked up at household stickers / design order stickers
4. Determine weight limits on items or bags
5. Create bid specifications for Official City of Norwalk trash bags and related services (if needed).
6. Create bid specifications for containers (if needed)
7. Send specifications out through internet and by mail allow 3 weeks for return of RFP
8. Determine a specific start date by working backwards from container and bag delivery time. Ideally Official City bags should be in stores 4 to 5 weeks before start date.

Phase 3 Oct

1. Work on Website information / links to other programs and EPA
2. Possible school education program / contest for website and bag art

Phase 4 Nov

1. Continue public relations so residents understand where to purchase bags and what items can be recycled etc,
2. Mail information in tax bill / show discount or disclosure of disposal costs.
3. Mail out starter Kit
4. Distribute trash containers and additional recycling containers if necessary
5. Order stickers for bulky items

Phase 5 Implementation and follow up Dec / Jan 2010

1. Continue positive press during first year to reinforce the decision of the council.
2. Appear on morning shows or other local or CT state news shows over the first quarter to boast about the success of participation and compliance.