Evaluation of Bids for Municipal Solid Waste and Recycling Services

A Guide for Selection of Service

10/21/2013

T. Kelley

Index

Municipal Solid Waste and Recycling Contract and Other Services

Pages

Background ……....…… 2

Current Contract …… 2

SHACOG Solid Waste and Recycling Request for Pricing ……..…… 3

Traditional Manual Solid Waste & Recycling Services ……... 3 -5

Automated Solid Waste & Recycling Programs ……...……..… 5 - 7

Pay As You Throw …….....…. 7 - 9

Alternative 1 – True PAYT Bag Program ……....… 9 - 11

Appendix A, Base Calculations for Service Offerings …….. 12 - 21

Appendix B, Pay As You Throw Alternatives and Pricing Systems …….…… 22 - 27

Appendix C, Pay As You Throw and Rewards Programs …….…… 28 - 31

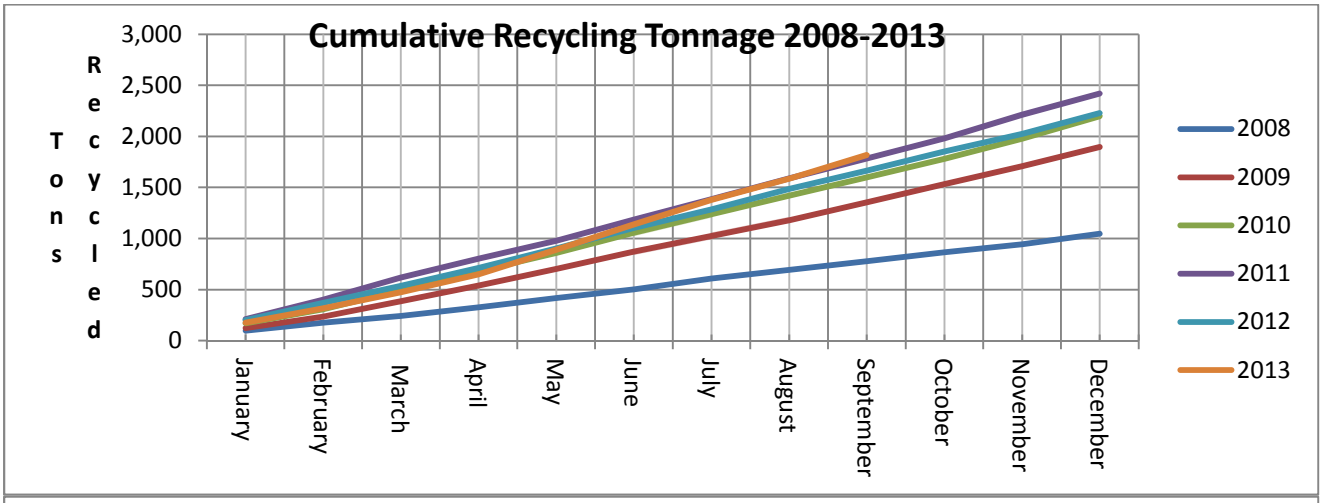
Municipal Solid Waste and Recycling Contract and Other Services

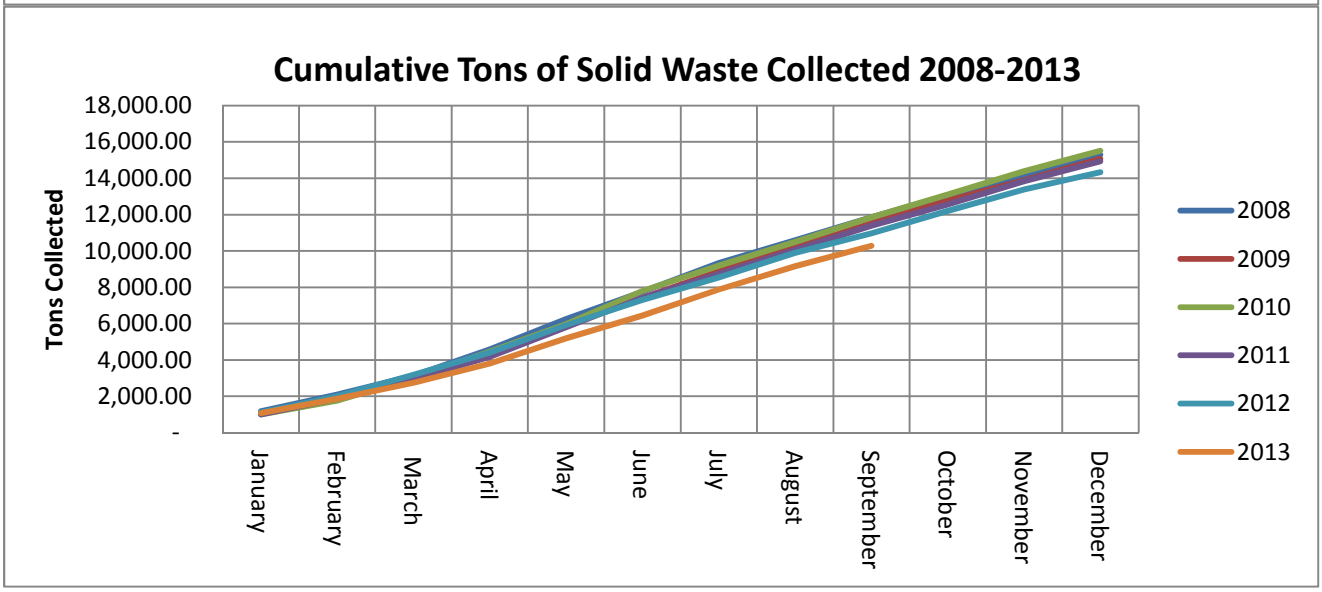
Background:

On December 31, 2013 the current contract with Waste Management of Pittsburgh for municipal solid waste and recycling services will terminate. The contract has been in place for the past five years and both municipal solid waste (MSW) and recycling services are provided on a unit cost basis. In 2013 the annual cost of recycling and municipal solid waste services will reach $2,031,000. The contract is based on providing service to 12,500 residential properties at a cost of $162.48 per property per year or $13.54 per month. Municipal solid waste accounts for $11.29 per month while recycling total $2.25 per month per property. Contract payments are paid through the General fund.

Current Contract:

Over the five year period of the current contract (2009-2013), recycling has increased from 1,048 tons in 2008 to over 2,429 tons in 2011 and 2013 cumulative tonnage is heading for a record breaking year. While municipal solid waste has decreased, from 15,300 tons in 2008 to 14,300 tons in 2012. The current program is described as an unlimited recycling and municipal solid waste program, placing no tonnage restrictions or penalties on either recycling or solid waste disposal. Budgeting for the current contract is very easy because the residential units have remained at 12,500 and the cost per unit for both recycling and municipal solid waste are clearly delineated in the contract.





In addition to contracted municipal solid waste and recycling services the municipality also provides opportunities for residents to recycle wood waste materials. Six drop-off events are held at the municipal golf course, and the public works department provides four curbside wood waste pick-ups throughout the year. Electronic recycling is offered on a monthly basis at the public works facility, and during the spring and summer months Saturday paper shredding events are held at the public works facility. Also the municipality conducts a curbside leaf pick-up program, from October through November, and over 4,000 tons of leaf waste material is collected, shredded and sent out of the community for composting.

SHACOG Solid Waste and Recycling Request for Pricing:

On October 2, 2013 the South Hills Area Council of Government opened bids for solid waste collection and disposal, as well as recycling. Nineteen communities expressed an interest in participating in the bid solicitation program. Bids were received from Republic Allied Services and from Waste Management. Bid options for municipal solid waste and recycling included weekly, bi-weekly and monthly, traditional and automated services. The Municipality must enter into a five year contract with one of the providers before December 1, 2013. The contract term will commence on January 1, 2013 and run through December 31, 2018.

Currently Mt. Lebanon participates in traditional services where the garbage person manually lifts bags or cans of municipal solid waste or recycling onto the back or front end of a garbage or recycling truck. Under an automated program, as defined in the SHACOG specification, each resident would be required to have a cart or totter which would either be provided by the municipality or the contractor and the cart or totter would be lifted either by a mechanical arm on the side of the truck or a hook on the back of the truck. Many municipalities expressed an interest in automated services, especially for automated recycling services. Numerous communities in the Allegheny County area have purchased large recycling carts and have dramatically improved upon collection of recyclable material while reporting substantial reductions in the tonnage of municipal solid waste being collected within the community. Communities have reported that there rates of recycling have increased between 50 and 100% since implementing cart programs.

Traditional Manual Solid Waste & Recycling Services:

The first set of charts below provide firm, fixed pricing for both municipal solid waste and recycling for 2014-2018. This is the same type of service (traditional, manual by unit) that we currently have. However the 2014 through 2016 annual pricing offered by Republic Allied Services is less than the $162.48 / unit/ year that we are currently paying and the per unit average over the five years of the contract is only $.48 more that our current annual per unit cost.

Republic Allied

Weekly Traditional MSW & EOW Recycling By Units

Year	MSW Units	Recycling Units	Annual Totals	Unit Index
2014	1,618,500	$ 322,500	$ 1,941,000	$ 155.28
2015	1,650,000	$ 328,500	$ 1,978,500	$ 158.28
2016	1,692,000	$ 337,500	$ 2,029,500	$ 162.36
2017	1,740,000	$ 346,500	$ 2,086,500	$ 166.92
2018	1,792,500	$ 357,000	$ 2,149,500	$ 171.96
Totals	**8,493,000**	**$ 1,692,000**	**$ 10,185,000**	**$ 162.96**

Waste Management

Weekly Traditional MSW & EOW Recycling By Units

Year	MSW Units	Recycling Units	Annual Totals	Unit Index
2014	$ 1,693,500	$ 337,500	$ 2,031,000	$ 162.48
2015	$ 1,693,500	$ 337,500	$ 2,031,000	$ 162.48
2016	$ 1,723,500	$ 343,500	$ 2,067,000	$ 165.36
2017	$ 1,767,000	$ 352,500	$ 2,119,500	$ 169.56
2018	$ 1,810,500	$ 361,500	$ 2,172,000	$ 173.76
Totals	**$ 8,688,000**	**$ 1,732,500**	**$ 10,420,500**	**$ 166.73**

Unit pricing for weekly traditional, manual municipal solid waste and recycling unit prices are listed below. The lower of the two prices was submitted by Republic Allied. Since these prices provide for weekly recycling service both are substantially higher than the weekly prices listed above. Weekly recycling service will increase the amount of recycling collected but may not increase the number of residents who recycle. Those who already recycle will recycle more. An effective program will increase the number of residents who recycle on a regular basis.

Republic Allied

Weekly Traditional MSW & Weekly Recycling By Units

Year	MSW Units	Recycling Units	Annual Totals	Unit Index
2014	$ 1,618,500	$ 628,500	$ 2,247,000	$ 179.76
2015	$ 1,650,000	$ 640,500	$ 2,290,500	$ 183.24
2016	$ 1,692,000	$ 655,500	$ 2,347,500	$ 187.80
2017	$ 1,740,000	$ 673,500	$ 2,413,500	$ 193.08
2018	$ 1,792,500	$ 696,000	$ 2,488,500	$ 199.08
Totals	**$ 8,493,000**	**$ 3,294,000**	**$ 11,787,000**	**$ 188.59**

Waste Management

Weekly Traditional MSW & Weekly Recycling By Units

Year	MSW Units	Recycling Units	Annual Totals	Unit Index
2014	$ 1,693,500	$ 648,000	$ 2,341,500	$ 187.32
2015	$ 1,693,500	$ 648,000	$ 2,341,500	$ 187.32
2016	$ 1,723,500	$ 660,000	$ 2,383,500	$ 190.68
2017	$ 1,767,000	$ 676,500	$ 2,443,500	$ 195.48
2018	$ 1,810,500	$ 693,000	$ 2,503,500	$ 200.28
Totals	**$ 8,688,000**	**$ 3,325,500**	**$ 12,013,500**	**$ 192.22**

Republic and Waste Management also provided pricing for traditional, manual municipal solid waste and recycling on a cost per ton basis. Both the every other week and the weekly recycling pricing is much higher than the cost per unit offerings listed above and both provide higher levels of risk and budget uncertainty. The cost per ton models would actually penalize increases in recycling tonnage. An effective recycling program will allow residents to recycle as much as they want without being penalized. As recycling increases then there should be a reduction in the tonnage of municipal solid waste. The ideal model will incorporate a per ton basis for solid waste and a unit fixed unit cost for recycling. Neither of the prices listed below accomplish that end.

Republic Allied

Weekly Traditional MSW & EOW Recycling By Ton

Year	MSW Tons	Recycling Tons	Annual Totals	Unit Index
2014	$ 1,895,856	$ 565,708	2,461,564	$ 196.93
2015	$ 1,933,176	$ 577,113	2,510,289	$ 200.82
2016	$ 1,981,692	$ 593,081	2,574,773	$ 205.98
2017	$ 2,037,672	$ 606,767	2,644,439	$ 211.56
2018	$ 2,097,384	$ 625,016	2,722,400	$ 217.79
Totals	**$ 9,945,780**	**$ 2,967,685**	**12,913,465**	**$ 206.62**

Waste Management

Weekly Traditional MSW & EOW Recycling By Ton

Year	MSW Tons	Recycling Tons	Annual Totals	Unit Index
2014	$ 2,028,566	$ 419,742	$ 2,448,307	$ 195.86
2015	$ 2,070,066	$ 419,742	$ 2,489,807	$ 199.18
2016	$ 2,112,312	$ 427,201	$ 2,539,513	$ 203.16
2017	$ 2,193,520	$ 438,401	$ 2,631,921	$ 210.55
2018	$ 2,294,732	$ 449,578	$ 2,744,310	$ 219.54
Totals	**$ 10,699,196**	**$ 2,154,663**	**$ 12,853,859**	**$ 205.66**

Republic Allied

Weekly Traditional MSW & Weekly Recycling By Ton

Year	MSW Tons	Recycling Tons	Annual Totals	Unit Index
2014	$ 1,895,856	$ 1,104,043	$ 2,999,899	$ 239.99
2015	$ 1,933,176	$ 1,126,854	$ 3,060,030	$ 244.80
2016	$ 1,981,692	$ 1,151,945	$ 3,133,637	$ 250.69
2017	$ 2,037,672	$ 1,186,162	$ 3,223,834	$ 257.91
2018	$ 2,097,384	$ 1,218,097	$ 3,315,481	$ 265.24
Totals	**$ 9,945,780**	**$ 5,787,100**	**$ 15,732,880**	**$ 251.73**

Waste Management

Weekly Traditional MSW & Weekly Recycling By Ton

Year	MSW Tons	Recycling Tons	Annual Totals	Unit Index
2014	$ 2,028,566	$ 626,909	$ 2,655,475	$ 212.44
2015	$ 2,070,066	$ 626,909	$ 2,696,975	$ 215.76
2016	$ 2,112,312	$ 638,520	$ 2,750,832	$ 220.07
2017	$ 2,193,520	$ 654,487	$ 2,848,008	$ 227.84
2018	$ 2,294,732	$ 375,945	$ 2,670,677	$ 213.65
Totals	**$ 10,699,196**	**$ 2,922,771**	**$ 13,621,967**	**$ 217.95**

There is less budget certainty in this type of arrangement and also the submissions by both Republic and Waste Management are substantially higher than the traditional unit costs listed above. All of the per ton calculations are based on the last three years average monthly tonnage for recycling (190.09 tons per month) and municipal solid waste (1,244 tons per month). These tonnages drive all of the calculations in the charts listed as "by ton." Unit costs calculation are driven by the 12,500 residential units times the quoted cost per unit per month. See Appendix A for calculations.

Automated Solid Waste & Recycling Programs:

Both contractors provided pricing for automated cart programs for both municipal solid waste and recycling services. Because of on street parking, tree lined streets and hilly terrain it might be difficult for the contractors to provide automated service by cart. However both contractors indicated that they would be able to provide recycling service using carts. Solid waste is typically heavier, and there might not be enough space curbside for both solid waste and recycling carts. Many communities have indicated that providing large carts for recycling has increased their recycling participation rates and tonnages. The large carts dedicated for recycling provide every resident with a place to collect and store recyclables and are easy to wheel to the curb and do not require lifting. Between 12,500 and 13,000 carts will be required to provide for recycling. Cart sizes range from 32-99 gallon capacities. Carts could be purchased, distributed, inventoried and maintained by the contractor, or the Municipality, however the pricing provided by the contractors is much less than what the Municipality would pay. The Municipality would pay between $45 and $55 per cart plus distribution, tracking and maintenance costs. Waste Management will provide 12,500 recycling carts through their automated recycling program at a total cost of $363,000, or $29.05 per cart. Republic Allied's cost is close to $91.00 per cart and maintenance.

Providing large capacity carts to residents for recycling will increase the tonnage of recyclables collected as has been demonstrated by other municipalities in the Pittsburgh area who are now using carts and automated recycling services. An effective cart based recycling program could reduce the amount of solid waste disposal by 30% per year, an increase of recycling tonnages by 50-75% per year, and also by providing each resident with a recycling container, the rate of recycling participation should substantially increase. Most properties in Mt. Lebanon have sufficient space at the curbside for a large recycling container but not for a second container for municipal solid waste. If the goal is to increase recycling by diverting recycling materials from the municipal solid waste stream then providing a large cart for MSW might be counterproductive.

The pricing listed below is based on 12,500 residential weekly MSW pickups and 12,500 bi-weekly recycling pickups. MSW is traditional unit based service throughout the entire five year term of the contract, and

traditional unit recycling for the first fifteen months. From April of 2015 through December 31, 2018 the contractors will be providing carts and automated recycling service. It will take the contractor until April of 2014 to purchase and distribute carts and purchase new automated trucks. Waste Management's cost over the five years of the contract is $550,000 less than Republic's offering. This service model provides budget certainty and will result in lower MSW tonnage and higher Recycling tonnage and participation.

Republic Allied

Weekly Traditional MSW & Contractor Carts EOW Recycling By Units

Year	MSW Units	Recycling Units	Annual Cart Fee	Annual Totals	Unit Index
2014	1,618,500	$ 322,500		1,941,000	155.28
1/1/15 to 3/31/15	412,500	$ 82,125		494,625	39.57
4/1/15 to 12/31/15	1,237,500	$ 424,125	$ 45,000	1,706,625	136.53
2016	1,692,000	$ 579,000	$ 60,000	2,331,000	186.48
2017	1,740,000	$ 595,500	$ 60,000	2,395,500	191.64
2018	1,792,500	$ 613,500	$ 60,000	2,466,000	197.28
Totals	**8,493,000**	**$ 2,616,750**	**$ 225,000**	**11,334,750**	**181.356**

Waste Management

Weekly Traditional MSW & Contractor Carts EOW Recycling By Units

Year	MSW Units	Recycling Units	Annual Cart Fee	Annual Totals	Unit Index
2014	$ 1,693,500	$ 337,500		$ 2,031,000	$ 162.48
1/1/15 to 3/31/15	$ 423,375	$ 84,375		$ 507,750	$ 40.62
4/1/15 to 12/31/15	$ 1,270,125	$ 293,625	$ 30,375	$ 1,594,125	$ 127.53
2016	$ 1,723,500	$ 399,000	$ 40,500	$ 2,163,000	$ 173.04
2017	$ 1,767,000	$ 409,500	$ 40,500	$ 2,217,000	$ 177.36
2018	$ 1,810,500	$ 420,000	$ 40,500	$ 2,271,000	$ 181.68
Totals	**$ 8,688,000**	**$ 1,944,000**	**151,875**	**$ 10,783,875**	**$ 172.54**

The chart below provides fixed unit pricing and increases recycling to weekly pickup.

Republic Allied

Weekly Traditional MSW & Contractor Carts Weekly Recycling By Units

Year	MSW Units	Recycling Units	Annual Cart Fee	Annual Totals	Unit Index
2014	$ 1,618,500	$ 628,500		$ 2,247,000	$ 179.76
1/1/15 to 3/31/15	$ 412,500	$ 160,125		$ 572,625	$ 45.81
4/1/15 to 12/31/15	$ 1,237,500	$ 580,500	$ 45,000	$ 1,863,000	$ 149.04
2016	$ 1,692,000	$ 792,000	$ 60,000	$ 2,544,000	$ 203.52
2017	$ 1,740,000	$ 816,000	$ 60,000	$ 2,616,000	$ 209.28
2018	$ 1,792,500	$ 840,000	$ 60,000	$ 2,692,500	$ 215.40
Totals	**$ 8,493,000**	**$ 3,817,125**	**$ 225,000**	**$ 12,535,125**	**$ 200.56**

Waste Management

Weekly Traditional MSW & Contractor Carts Weekly Recycling By Units

Year	MSW Units	Recycling Units	Annual Cart Fee	Annual Totals	Unit Index
2014	$ 1,693,500	$ 648,000		$ 2,341,500	$ 187.32
1/1/15 to 3/31/15	$ 423,375	$ 162,000		$ 585,375	$ 46.83
4/1/15 to 12/31/15	$ 1,270,500	$ 473,625	$ 30,375	$ 1,774,500	$ 141.96
2016	$ 1,723,500	$ 642,000	$ 40,500	$ 2,406,000	$ 192.48
2017	$ 1,767,000	$ 658,500	$ 40,500	$ 2,466,000	$ 197.28
2018	$ 1,810,500	$ 675,000	$ 40,500	$ 2,526,000	$ 202.08
Totals	**$ 8,688,375**	**$ 3,259,125**	**151,875**	**$ 12,099,375**	**$ 193.59**

The next set of charts provides pricing based on average monthly tonnages for MSW and Recycling. The first two charts are computed for bi-weekly recycling and the other two provide pricing for weekly recycling. We should avoid any pricing model that would increase costs as recycling tonnages increase. Recycling should be as firm or fixed as the contractor is willing to offer. As MSW tonnages decrease Recycling costs will increase.

Republic Allied

Weekly Traditional MSW & Contractor Carts EOW Recycling By Tons

Year	MSW Tons	Recycling Tons	Annual Cart Fee	Annual Totals	Unit Index
2014	$ 1,895,856	$ 565,708		$2,461,564	$196.93
1/1/15 to 3/31/15	$ 483,294	$ 144,278		$ 627,572	$ 50.21
4/1/15 to 12/31/15	$ 1,449,882	$ 470,473	$ 45,000	$ 1,965,355	$157.23
2016	$ 1,981,692	$ 643,265	$ 60,000	$ 2,684,957	$214.80
2017	$ 2,037,672	$ 659,232	$ 60,000	$ 2,756,904	$220.55
2018	$ 2,097,384	$ 682,043	$ 60,000	$ 2,839,427	$227.15
Totals	**$ 9,945,780**	**$ 3,164,999**	**$ 225,000**	**$ 13,335,779**	**$213.37**

Waste Management

Weekly Traditional MSW & Contractor Carts EOW Recycling By Tons

Year	MSW Tons	Recycling Tons	Annual Cart Fee	Annual Totals	Unit Index
2014	$ 2,028,566	$ 419,742		$ 2,448,308	$ 195.86
1/1/15 to 3/31/15	$ 517,517	$ 104,935		$ 622,452	$ 49.80
4/1/15 to 12/31/15	$ 1,552,549	$ 198,933	$30,375	$ 1,781,857	$ 142.55
2016	$ 2,112,312	$ 270,331	$40,500	$ 2,423,143	$ 193.85
2017	$ 2,193,520	$ 277,448	$40,500	$ 2,511,468	$ 200.92
2018	$ 2,294,732	$ 284,542	$40,500	$ 2,619,774	$ 209.58
Totals	**$ 10,699,196**	**$1,555,931**	**151,875**	**$ 12,407,002**	**$ 198.51**

Republic Allied

Weekly Traditional MSW & Contractor Carts Weekly Recycling By Tons

Year	MSW Tons	Recycling Tons	Annual Cart Fee	Annual Totals	Unit Index
2014	$ 1,895,856	$ 1,104,043		$ 2,999,899	$ 239.99
1/1/15 to 3/31/15	$ 483,294	$ 281,713		$ 765,007	$ 61.20
4/1/15 to 12/31/15	$ 1,449,882	$ 916,994	$ 45,000	$ 2,411,876	$ 192.95
2016	$ 1,981,692	$ 1,254,594	$ 60,000	$ 3,296,286	$ 263.70
2017	$ 2,037,672	$ 1,286,529	$ 60,000	$ 3,384,201	$ 270.74
2018	$ 2,097,384	$ 1,325,307	$ 60,000	$ 3,482,691	$ 278.62
Totals	**$ 9,945,780**	**$ 6,169,180**	**$ 225,000**	**$16,339,960**	**$ 261.44**

Waste Management

Weekly Traditional MSW & Contractor Carts Weekly Recycling By Tons

Year	MSW Tons	Recycling Tons	Annual Cart Fee	Annual Totals	Unit Index
2014	$ 2,028,566	$ 626,909		$2,655,475	$212.44
1/1/15 to 3/31/15	$ 517,517	$ 156,727		$ 674,244	$ 53.94
4/1/15 to 12/31/15	$ 1,552,549	$ 322,796	$ 30,375	$1,905,720	$152.46
2016	$ 2,112,312	$ 438,310	$ 40,500	$2,591,122	$207.29
2017	$ 2,193,520	$ 448,848	$ 40,500	$2,682,868	$214.63
2018	$ 2,294,732	$ 460,276	$ 40,500	$2,795,508	$223.64
Totals	**$ 10,699,196**	**$2,453,866**	**151,875**	**$ 13,304,937**	**$212.88**

Pay As You Throw:

Pay As You Throw is listed as one of the primary service options in the SHACOG Bid and both contractors must provide service to any municipality interested in developing and implementing a PAYT Program. It is up to the municipality to design and implement the PAYT Program that meets its own particular set of objectives. Any of the service models listed above can be used for MSW or recycling services. The contractors want to know the municipality's intent at the time the contract is signed and the PAYT Program must be implemented before January 1, 2016. If Mt. Lebanon is interested then we must select what we believe is the most advantageous service arrangement offered by the contractors. MSW should be selected from one of the per ton models and Recycling should be selected from one of the fixed, known cost offerings, either traditional or automated cart models. Municipalities interested in Pay As You Throw service must announce their intent to the contractor at the time of contract award. The Pay As You Throw program must be implemented before January 1, 2016. Through PAYT residents will either be billed directly for the amount of service that they use, or will pay when they purchase bags or tags that will be required to have their MWS picked up.

Communities across the U.S. are radically changing their approach to garbage collection and disposal. Over 3,000 local governments have adopted pay-as-you-throw systems-also known as variable rate, volume-based or unit pricing systems. Traditionally, the costs of garbage collection and disposal have been covered by residents' property taxes or through annual or monthly fixed fees charged to each household. With pay-as-you-throw systems, the fee charged for collection and disposal increases with the amount of garbage thrown away. This provides a financial incentive for residents to reduce waste, which can in turn lead to lower transportation and disposal costs for the local government.

Properly structured PAYT programs have been proven to significantly increase recycling participation and have resulted in increased waste diversion rates for some municipalities in Pennsylvania and in other states. Members of the Environmental Sustainability Advisory Board are interested in evaluating PAYT recycling program alternatives that use plastic bags for trash collection. It is noted that some PAYT programs do not use bags. PAYT programs may use hard containers that are either weighed by the collection vehicle to determine customer cost, or are priced based on the size of the container (e.g. 32 gal., 64 gal., 96 gal.)

In PAYT programs, residents are charged for the collection of trash based on the amount they throw away. It can be a more equitable rate structure for households, as PAYT programs create a direct economic incentive to recycle more and to generate less waste. PAYT programs vary considerably from one program to the next. The Municipality will need to consider the different types and structures of PAYT programs and then customize a PAYT model that is suited for the Municipality and its residents. The following are two of the more popular and successful PAYT program types:

1) “True PAYT” – In a “True PAYT” waste collection and recycling system, residents pay for EVERY bag, or pay based on the quantity of waste that is set-out at the curbside. If containers are used, they may be weighed by the collection vehicle to determine customer cost, or are priced based on the size/capacity or number of the container used by the customer. Typical curbside containers may be 32 gallons, 60 gallons, or 90 gallons.

2) “Hybrid PAYT” - In a “Hybrid PAYT” program there are two tiers. In the first tier, residents pay a monthly or quarterly fee for “base” or standard trash and recycling services. The base services can include up to three bags of trash per week plus other services including recycling, leaf waste pick up, and bulky item pickup. As a second tier, residents purchase additional bags, stickers, or additional container capacity to dispose of waste that exceeds the service set-out limit included under the standard waste services.

The Environmental Protection Agency (EPA) categorizes PAYT pricing structures as follows:

Proportional: Residents are charged the same amount of money for each unit of waste they set out for collection. These are usually bag or tag systems.

Variable: Residents are charged different amounts per unit of garbage. Residents are billed based on their “level” of subscription service, which typically increases cost for households requiring disposal of higher quantities (i.e. additional containers or bags) of waste. Residents in a variable program may also be charged for each additional bag or container that is set out that exceeds their subscription service. The charge for the additional set-outs may be set at a higher rate than the subscription cost to place greater incentive on residents to reduce waste.

Two-Tiered or Multi-Tiered: Residents pay a flat fee for a base level of service, and then pay a "second tier" fee based on how much additional waste they set out. Second tier fees can be either proportional or variable rate.

Alternative 1 – True PAYT Bag Program

In a "True PAYT" program, Municipality residents will be required to purchase EVERY bag that is used for curbside set-out of residential waste. True PAYT programs offer a direct financial incentive to residents to reduce their waste bill by decreasing the volume of waste disposed (via increased recycling). Billing and Administration: Since residents will be responsible for purchasing bags, this reduces or eliminates billing administration (and associated costs) by the Municipality. There will still be administration and coordination needed for procuring bags and for implementing a distribution system for PAYT bags Residents should be able to buy bags at a number of local stores and at the Municipal Building. It is critical that Residents have recycling containers with adequate capacity to conveniently collect and store recyclables between pick-ups.

The Municipality should work with local stores prior to implementing the program so that the stores will carry a supply of bags at the outset of the program. The amount paid to the stores for each bag sold varies widely among the PAYT programs. Setting the Bag Rate: The Municipality must be VERY careful in setting the per-bag rate. In a True PAYT program, bag purchases may be the Municipality's ONLY source of revenue generated by the waste collection program. It will be tough to accurately calculate how many bags will be sold, especially in the first year of the program. It is recommended that PAYT bag prices are set so that revenues from bag sales cover all program costs.

Illegal Dumping and Enforcement: Implementing a True PAYT program may increase illegal waste disposal activities in the Municipality. This occurs because some residents will choose to illegally dump waste for free, rather than pay for the bags under the new program. This will require vigilant oversight and enforcement.

Below are charts developed to estimate PAYT savings and costs for traditional and automated cart programs. These are only estimates. First two charts are for traditional service MSW by the ton and Recycling with a fixed unit cost. Assumptions: Bag program for MSW; MSW tonnage will decrease by 20%; administrative and operating costs will be 17% of Total Service Cost. Program will start in April of 2015.

Republic

Weekly Traditional MSW Tons & EOW Recycling By Units

Year	MSW Tons	20% Reduction	Recycling Units	Total Service Cost	Estimated ADMIN. Cost	Total Program Cost	Unit Index
2014	$ 1,895,856		$ 322,500	2,218,356	$ 75,000	$ 2,293,356	183.47
2015	$ 1,933,176	$ (386,635)	$ 328,500	1,875,041	$ 318,757	$ 2,193,798	175.50
2016	$ 1,981,692	$ (396,338)	$ 337,500	1,922,854	$ 326,885	$ 2,249,739	179.98
2017	$ 2,037,672	$ (407,534)	$ 346,500	1,976,638	$ 336,028	$ 2,312,666	185.01
2018	$ 2,097,384	$ (419,477)	$ 357,000	2,034,907	$ 345,934	$ 2,380,841	190.47
Totals	**$ 9,945,780**	**$ (1,609,985)**	**$ 1,692,000**	**10,027,795**	**$ 1,402,604.7**	**$ 11,430,400**	**182.89**

Waste Management

Weekly Traditional MSW by Ton & EOW Recycling By Unit

Year	MSW Tons	20% Reduction	Recycling Units	Annual Totals Service Contracts	Estimated ADMIN. Cost	Total Program Cost	Unit Index
2014	$ 2,028,566		$ 337,500	$ 2,366,066	$ 75,000	$ 2,441,066	195.29
2015	$ 2,070,066	$ (414,013)	$ 337,500	$ 1,993,553	$ 338,904	$ 2,332,457	186.60
2016	$ 2,112,312	$ (422,462)	$ 343,500	$ 2,033,350	$ 345,669	$ 2,379,019	190.32
2017	$ 2,193,520	$ (438,704)	$ 352,500	$ 2,107,316	$ 358,244	$ 2,465,560	197.24
2018	$ 2,294,732	$ (458,946)	$ 361,500	$ 2,197,286	$ 373,539	$ 2,570,824	205.67
Totals	**$ 10,699,196**	**$ (1,734,126)**	**$ 1,732,500**	**$ 10,697,570**	**$ 1,491,356**	**$ 12,188,926**	**195.02**

Charts below are for traditional MSW service by the ton and fixed cost for automated cart service. Assumptions: Bag program for MSW; MSW tonnage will decrease by 30%; administrative and operating costs will be 17% of Total Service Cost. Program will start in April of 2015.

Republic

Weekly Traditional MSW by Ton & Automated Contractor Carts EOW Recycling By Unit

Year	MSW Tons	Estimated 30% Reduction	Recycling Units	Total Service Cost	Estimated ADMIN. Cost	Total Program Cost	Unit Index
2014	$ 1,895,856	$ -	**$ 322,500**	$ 2,218,356	$ 75,000	$ 2,293,356	183.47
1/1/15 to 3/31/15	$ 483,294	$ -	**$ 82,125**	$ 565,419	$ 40,000	$ 605,419	48.43
4/1/15 to 12/31/15	$ 1,449,882	$ (434,965)	**$ 469,125**	$ 1,484,042	$ 252,287	$ 1,736,330	138.91
2016	$ 1,981,692	$ (594,508)	**$ 639,000**	$ 2,026,184	$ 344,451	$ 2,370,636	189.65
2017	$ 2,037,672	$ (611,302)	**$ 655,500**	$ 2,081,870	$ 353,918	$ 2,435,788	194.86
2018	$ 2,097,384	$ (629,215)	**$ 673,500**	$ 2,141,669	$ 364,084	$ 2,505,752	200.46
Totals	**$ 9,945,780**	**$ (2,269,989)**	**$ 2,841,750**	**$ 10,517,541**	**$ 1,429,740**	**$ 11,947,281**	**191.16**

Waste Management

Weekly Traditional MSW by Ton & Automated Contractor Carts EOW Recycling By Unit

Year	MSW Tons	Estimated 30% Reduction	Recycling Units	Total Service Cost	Estimated ADMIN. Cost	Total Program Cost	Unit Index
2014	$ 2,028,566	$ -	$ 419,742	2,448,308	$ 75,000	2,523,308	201.86
1/1/15 to 3/31/15	$ 517,517	$ -	$ 104,935	622,452	$ 40,000	662,452	53.00
4/1/15 to 12/31/15	$ 1,552,549	$ (465,765)	$ 229,308	1,316,092	$ 223,736	1,539,828	123.19
2016	$ 2,112,312	$ (633,694)	$ 310,831	1,789,449	$ 304,206	2,093,656	167.49
2017	$ 2,193,520	$ (658,056)	$ 317,948	1,853,412	$ 315,080	2,168,492	173.48
2018	$ 2,294,732	$ (688,420)	$ 325,042	1,931,355	$ 328,330	2,259,685	180.77
Totals	**$ 10,699,196**	**(2,445,934)**	**$ 1,707,806**	**9,961,068**	**$ 1,286,352**	**11,247,421**	**179.96**

APPENDIX A

BASE CALCULATIONS FOR SERVICE OFFERINGS

Part I: Garbage, Rubbish and Residential Refuse Collection, Removal and Disposal

Weekly Curbside Collection-All items collected at one time on the same day

Traditional Manual - Jan.1, 2014-Dec. 31, 2018

Republic Services

Price Per Unit Per Month

Year	Collection and Removal	Disposal	Total	Residential Units	Annual Cost
2014	$ 8.00	$ 2.79	$ 10.79	12,500	1,618,500
2015	$ 8.15	$ 2.85	$ 11.00	12,500	1,650,000
2016	$ 8.36	$ 2.92	$ 11.28	12,500	1,692,000
2017	$ 8.60	$ 3.00	$ 11.60	12,500	1,740,000
2018	$ 8.86	$ 3.09	$ 11.95	12,500	1,792,500
					8,493,000

Waste Management

Price Per Unit Per Month

Year	Collection and Removal	Disposal	Total	Residential Units	Annual Cost
2014	$ 11.29	$ -	$ 11.29	12,500	1,693,500
2015	$ 11.29	$ -	$ 11.29	12,500	1,693,500
2016	$ 11.49	$ -	$ 11.49	12,500	1,723,500
2017	$ 11.78	$ -	$ 11.78	12,500	1,767,000
2018	$ 12.07	$ -	$ 12.07	12,500	1,810,500
					8,688,000

Republic Services

Price Per Ton Per Month

Year	Collection and Removal	Disposal	Total	Average Monthly Tons	Annual Cost
2014	$ 100.00	$ 27.00	$ 127.00	1,244	1,895,856
2015	$ 102.00	$ 27.50	$ 129.50	1,244	1,933,176
2016	$ 105.00	$ 27.75	$ 132.75	1,244	1,981,692
2017	$ 107.50	$ 29.00	$ 136.50	1,244	2,037,672
2018	$ 110.00	$ 30.50	$ 140.50	1,244	2,097,384
					9,945,780

Waste Management

Price Per Ton Per Month

Year	Collection and Removal	Disposal	Total	Average Monthly Tons	Annual Cost
2014	$ 135.89	$ -	$ 135.89	1,244	2,028,566
2015	$ 138.67	$ -	$ 138.67	1,244	2,070,066
2016	$ 141.50	$ -	$ 141.50	1,244	2,112,312
2017	$ 146.94	$ -	$ 146.94	1,244	2,193,520
2018	$ 153.72	$ -	$ 153.72	1,244	2,294,732
					10,699,196

Part II: Recycling Collection

Alternate A: Traditional Manual Collection, Removal and Marketing from January 1, 2014 through December 21, 2018

Republic Services
Bi-Weekly Collection
Per Unit/Mo

Year	Cost/Unit	Residential Units	Annual Cost
2014	$ 2.15	12,500	$ 322,500
2015	$ 2.19	12,500	$ 328,500
2016	$ 2.25	12,500	$ 337,500
2017	$ 2.31	12,500	$ 346,500
2018	$ 2.38	12,500	$ 357,000
			$ 1,692,000

Waste Management
Bi-Weekly Collection
Per Unit/Mo

Year	Cost/Unit	Residential Units	Annual Cost
2014	$ 2.25	12,500	$ 337,500
2015	$ 2.25	12,500	$ 337,500
2016	$ 2.29	12,500	$ 343,500
2017	$ 2.35	12,500	$ 352,500
2018	$ 2.41	12,500	$ 361,500
			$ 1,732,500

Republic Services
Bi-Weekly Collection
Per Ton/Mo

Year	Cost/Ton	Average Ton/Month	Annual Cost
2014	$ 248.00	190.09	$ 565,708
2015	$ 253.00	190.09	$ 577,113
2016	$ 260.00	190.09	$ 593,081
2017	$ 266.00	190.09	$ 606,767
2018	$ 274.00	190.09	$ 625,016
			$ 2,967,685

Waste Management
Bi-Weekly Collection
Per Ton/Mo

Year	Cost/Ton	Average Ton/Month	Annual Cost
2014	$ 184.01	190.09	$ 419,742
2015	$ 184.01	190.09	$ 419,742
2016	$ 187.28	190.09	$ 427,201
2017	$ 192.19	190.09	$ 438,401
2018	$ 197.09	190.09	$ 449,578
			$ 2,154,663

Republic Services
Weekly Collection
Per Unit/Mo

Year	Cost/Unit	Residential Units	Annual Cost
2014	$ 4.19	12,500	$ 628,500
2015	$ 4.27	12,500	$ 640,500
2016	$ 4.37	12,500	$ 655,500
2017	$ 4.49	12,500	$ 673,500
2018	$ 4.64	12,500	$ 696,000
			$ 3,294,000

Waste Management
Weekly Collection
Per Unit/Mo

Year	Cost/Unit	Residential Units	Annual Cost
2014	$ 4.32	12,500	$ 648,000
2015	$ 4.32	12,500	$ 648,000
2016	$ 4.40	12,500	$ 660,000
2017	$ 4.51	12,500	$ 676,500
2018	$ 4.62	12,500	$ 693,000
			$ 3,325,500

Part II: Recycling Collection

Alternate A: Traditional Manual Collection, Removal and Marketing from January 1, 2014 through December 21, 2018

Republic Services

Weekly Collection

Per Ton/Mo

Year	Cost/Ton	Average Ton/Month	Annual Cost
2014	$ 484.00	190.09	$ 1,104,043
2015	$ 494.00	190.09	$ 1,126,854
2016	$ 505.00	190.09	$ 1,151,945
2017	$ 520.00	190.09	$ 1,186,162
2018	$ 534.00	190.09	$ 1,218,097
			$ 5,787,100

Waste Management

Weekly Collection

Per Ton/Mo

Year	Cost/Ton	Average Ton/Month	Annual Cost
2014	$ 274.83	190.09	$ 626,909
2015	$ 274.83	190.09	$ 626,909
2016	$ 279.92	190.09	$ 638,520
2017	$ 286.92	190.09	$ 654,487
2018	$ 164.81	190.09	$ 375,945
			$ 2,922,771

Part 1: Garbage, rubbish, and residential refuse collection, removal and disposal
Weekly curbside collection-all items to be collected at one time on the same day
Alternate B: traditional manual collection, removal and disposal from January 1, 2014 through March 31, 2015 and automated collection, removal and disposal from April 1, 2015 through and including December 31, 2018-By Units.
Add Cart Management System- Republic Allied $60,000 per year; Waste Management $40,500 per year.

Republic Services

Price Per Unit Per Month

Traditional	Collection & Removal	Disposal	Total	Residential Units	Total	Traditional	Collection & Removal	Disposal	Total	Residential Units	Total
2014	$ 8.00	$ 2.79	$ 10.79	12,500	$ 1,618,500.00	2014	$ 8.00	$ 2.79	$ 10.79	12,500	$ 1,618,500.00
1/1/15-3/31/15	$ 8.15	$ 2.85	$ 11.00	12,500	$ 412,500.00	1/1/15-3/31/15	$ 8.15	$ 2.85	$ 11.00	12,500	$ 412,500.00
Automated	Municipal Cart					Automated	Contractor Cart				
	Collection & Removal	Disposal	Total	Residential Units	Total		Collection & Removal	Disposal	Total	Residential Units	Total
4/1/15-12/31/15	$ 8.55	$ 2.85	$ 11.40	12,500	$ 1,282,500.00	4/1/15-12/31/15	$ 9.60	$ 2.85	$ 12.45	12,500	$ 1,400,625.00
2016	$ 8.76	$ 2.93	$ 11.69	12,500	$ 1,753,500.00	2016	$ 9.89	$ 2.93	$ 12.82	12,500	$ 1,923,000.00
2017	$ 9.00	$ 3.01	$ 12.01	12,500	$ 1,801,500.00	2017	$ 10.16	$ 3.01	$ 13.17	12,500	$ 1,975,500.00
2018	$ 9.27	$ 3.10	$ 12.37	12,500	$ 1,855,500.00	2018	$ 10.47	$ 3.10	$ 13.57	12,500	$ 2,035,500.00
					$ 8,724,000.00						**$ 9,365,625.00**

Waste Management

Price Per Unit Per Month

Traditional	Collection & Removal	Disposal	Total	Residential Units	Total	Traditional	Collection & Removal	Disposal	Total	Residential Units	Total
2014	$ 11.29	$ -	$ 11.29	12,500	$ 1,693,500.00	2014	$ 11.29	$ -	$ 11.29	12,500	$ 1,693,500.00
1/1/15-3/31/15	$ 11.29	$ -	$ 11.29	12,500	$ 423,375.00	1/1/15-3/31/15	$ 11.29	$ -	$ 11.29	12,500	$ 423,375.00
Automated	Municipal Cart					Automated	Contractor Cart				
	Collection & Removal	Disposal	Total	Residential Units	Total		Collection & Removal	Disposal	Total	Residential Units	Total
4/1/15-12/31/15	$ 10.63	$ -	$ 10.63	12,500	$ 1,195,875.00	4/1/15-12/31/15	$ 13.11	$ -	$ 13.11	12,500	$ 1,474,875.00
2016	$ 10.82	$ -	$ 10.82	12,500	$ 1,623,000.00	2016	$ 13.34	$ -	$ 13.34	12,500	$ 2,001,000.00
2017	$ 11.09	$ -	$ 11.09	12,500	$ 1,663,500.00	2017	$ 13.67	$ -	$ 13.67	12,500	$ 2,050,500.00
2018	$ 11.37	$ -	$ 11.37	12,500	$ 1,705,500.00	2018	$ 14.01	$ -	$ 14.01	12,500	$ 2,101,500.00
					$ 8,304,750.00						**$ 9,744,750.00**

Part 1: Garbage, rubbish, and residential refuse collection, removal and disposal
Weekly curbside collection-all items to be collected at one time on the same day
Alternate B: traditional manual collection, removal and disposal from January 1, 2014 through March 31, 2015 and automated collection, removal and disposal from April 1, 2015 through and including December 31, 2018-By Tons
Add Cart Management System- Republic Allied $60,000 per year; Waste Management $40,500 per year.

Republic Services

Price Per Ton Per Month

Traditional	Collection & Removal	Disposal	Total	Average Monthly Tons	Total	Traditional	Collection & Removal	Disposal	Total	Average Monthly Tons	Total
2014	$ 100.00	$ 27.00	$ 127.00	1,244	$ 1,895,856.00	2014	$ 100.00	$ 27.00	$ 127.00	1,244	$ 1,895,856.00
1/1/15-3/31/15	$ 102.00	$ 27.50	$ 129.50	1,244	$ 483,294.00	1/1/15-3/31/15	$ 102.00	$ 27.50	$ 129.50	1,244	$ 483,294.00
Automated	Municipal Cart					Automated	Contractor Cart				
	Collection & Removal	Disposal	Total	Residential Units	Total		Collection & Removal	Disposal	Total	Residential Units	Total
4/1/15-12/31/15	$ 104.50	$ 27.50	$ 132.00	1,244	$ 1,477,872.00	4/1/15-12/31/15	$ 142.50	$ 27.50	$ 170.00	1,244	$ 1,903,320.00
2016	$ 107.25	$ 27.50	$ 134.75	1,244	$ 2,011,548.00	2016	$ 146.25	$ 27.75	$ 174.00	1,244	$ 2,597,472.00
2017	$ 110.00	$ 29.00	$ 139.00	1,244	$ 2,074,992.00	2017	$ 150.00	$ 29.00	$ 179.00	1,244	$ 2,672,112.00
2018	$ 112.50	$ 30.50	$ 143.00	1,244	$ 2,134,704.00	2018	$ 153.50	$ 30.50	$ 184.00	1,244	$ 2,746,752.00
					$ 10,078,266.00						**$ 12,298,806.00**

Waste Management

Price Per Ton Per Month

Traditional	Collection & Removal	Disposal	Total	Average Monthly Tons	Total	Traditional	Collection & Removal	Disposal	Total	Average Monthly Tons	Total
2014	$ 135.89	$ -	$ 135.89	1,244	$ 2,028,565.92	2014	$ 135.89	$ -	$ 135.89	1,244	$ 2,028,565.92
1/1/15-3/31/15	$ 138.67	$ -	$ 138.67	1,244	$ 517,516.44	1/1/15-3/31/15	$ 138.67	$ -	$ 138.67	1,244	$ 517,516.44
Automated	Municipal Cart					Automated	Contractor Cart				
	Collection & Removal	Disposal	Total	Residential Units	Total		Collection & Removal	Disposal	Total	Residential Units	Total
4/1/15-12/31/15	$ 146.42	$ -	$ 146.42	1,244	$ 1,639,318.32	4/1/15-12/31/15	$ 160.23	$ -	$ 160.23	1,244	$ 1,793,935.08
2016	$ 152.08	$ -	$ 152.08	1,244	$ 2,270,250.24	2016	$ 166.39	$ -	$ 166.39	1,244	$ 2,483,869.92
2017	$ 159.05	$ -	$ 159.05	1,244	$ 2,374,298.40	2017	$ 174.00	$ -	$ 174.00	1,244	$ 2,597,472.00
2018	$ 166.40	$ -	$ 166.40	1,244	$ 2,484,019.20	2018	$ 182.00	$ -	$ 182.00	1,244	$ 2,716,896.00
					$ 11,313,968.52						**$ 12,138,255.36**

Part II: Recycling Collection
Alternate B: Traditional manual collection, removal and marketing from January 1, 2014 through March 31, 2015
Automated Collection, removal and marketing from April 1, 2015 through and including December 31, 2018 per Ton.

Add Cart Management -System Republic Allied $60,000 per year; Waste Management $40,500 per year.

Republic Services

Per Unit-Bi-Weekly Recycling

Traditional	Per Unit Per Month Cost	Residential Units	Total Annual Cost	Per Unit Per Month Cost	Residential Units	Total Annual Cost
2014	$ 2.15	12,500	$ 322,500	$ 2.15	12,500	$ 322,500
1/1/15-3/31/15	$ 2.19	12,500	$ 82,125	$ 2.19	12,500	$ 82,125
Automated						
	Municipal Cart			**Contractor Cart**		
4/1/15-12/31/15	$ 2.65	12,500	$ 298,125	$ 3.77	12,500	$ 424,125
2016	$ 2.71	12,500	$ 406,500	$ 3.86	12,500	$ 579,000
2017	$ 2.79	12,500	$ 418,500	$ 3.97	12,500	$ 595,500
2018	$ 2.87	12,500	$ 430,500	$ 4.09	12,500	$ 613,500
			$ 1,958,250			**$ 2,616,750**

Waste Management

Per Unit-Bi-Weekly Recycling

Traditional	Per Unit Per Month Cost	Residential Units	Total Annual Cost	Per Unit Per Month Cost	Residential Units	Total Annual Cost
2014	$ 2.25	12,500	$ 337,500	$ 2.25	12,500	$ 337,500
1/1/15-3/31/15	$ 2.25	12,500	$ 84,375	$ 2.25	12,500	$ 84,375
Automated						
	Municipal Cart			**Contractor Cart**		
4/1/15-12/31/15	$ 2.16	12,500	$ 243,000	$ 2.61	12,500	$ 293,625
2016	$ 2.20	12,500	$ 330,000	$ 2.66	12,500	$ 399,000
2017	$ 2.26	12,500	$ 339,000	$ 2.73	12,500	$ 409,500
2018	$ 2.32	12,500	$ 348,000	$ 2.80	12,500	$ 420,000
			$ 1,681,875			**$ 1,944,000**

Part II: Recycling Collection
Alternate B: Traditional manual collection, removal and marketing from January 1, 2014 through March 31, 2015
Automated Collection, removal and marketing from April 1, 2015 through and including December 31, 2018 per Ton.

Add Cart Management System- Republic Allied $60,000 per year; Waste Management $40,500 per year.

Republic Services

Per Ton-Bi-Weekly Recycling

Traditional	Cost Per Ton	Average Monthly Tonnage	Total Annual Cost	Cost Per Ton	Average Monthly Tonnage	Total Annual Cost
2014	$ 248.00	190.09	$ 565,708	$ 248.00	190.09	$ 565,708
1/1/15-3/31/15	$ 253.00	190.09	$ 144,278	$ 253.00	190.09	$ 144,278
Automated						
	Municipal Cart			**Contractor Cart**		
4/1/15-12/31/15	$ 175.00	190.09	$ 299,392	$ 275.00	190.09	$ 470,473
2016	$ 179.00	190.09	$ 408,313	$ 282.00	190.09	$ 643,265
2017	$ 184.00	190.09	$ 419,719	$ 289.00	190.09	$ 659,232
2018	$ 189.00	190.09	$ 431,124	$ 299.00	190.09	$ 682,043
			$ 2,268,534			**$ 3,164,999**

Waste Management

Per Ton-Bi-Weekly Recycling

Traditional	Cost Per Ton	Average Monthly Tonnage	Total Annual Cost	Cost Per Ton	Average Monthly Tonnage	Total Annual Cost
2014	$ 184.01	190.09	$ 419,742	$ 184.01	190.09	$ 419,742
1/1/15-3/31/15	$ 184.01	190.09	$ 104,935	$ 184.01	190.09	$ 104,935
Automated						
	Municipal Cart			**Contractor Cart**		
4/1/15-12/31/15	$ 96.23	190.09	$ 164,631	$ 116.28	190.09	$ 198,933
2016	$ 98.01	190.09	$ 223,569	$ 118.51	190.09	$ 270,331
2017	$ 100.69	190.09	$ 229,682	$ 121.63	190.09	$ 277,448
2018	$ 103.36	190.09	$ 235,772	$ 124.74	190.09	$ 284,542
			$ 1,378,331			**$ 1,555,930**

Part II: Recycling Collection

Alternate B: Traditional manual collection, removal and marketing from January 1, 2014 through March 31, 2015

Aitomated Collection, removal and marketing from April 1, 2015 through and including December 31, 2018

Republic Services

Per Unit-Weekly Recycling

Traditional	Per Unit Per Month Cost	Residential Units	Total Annual Cost	Per Unit Per Month Cost	Residential Units	Total Annual Cost
2014	$ 4.19	12,500	$ 628,500	$ 4.19	12,500	$ 628,500
1/1/15-3/31/15	$ 4.27	12,500	$ 160,125	$ 4.27	12,500	$ 160,125
Automated						
	Municipal Cart			**Contractor Cart**		
4/1/15-12/31/15	$ 5.16	12,500	$ 580,500	$ 7.35	12,500	$ 826,875
2016	$ 5.28	12,500	$ 792,000	$ 7.52	12,500	$ 1,128,000
2017	$ 5.44	12,500	$ 816,000	$ 7.74	12,500	$ 1,161,000
2018	$ 5.60	12,500	$ 840,000	$ 7.98	12,500	$ 1,197,000
			$ 3,817,125			**$ 5,101,500**

Waste Management

Per Unit-Weekly Recycling

Traditional	Per Unit Per Month Cost	Residential Units	Total Annual Cost	Per Unit Per Month Cost	Residential Units	Total Annual Cost
2014	$ 4.32	12,500	$ 648,000	$ 4.32	12,500	$ 648,000
1/1/15-3/31/15	$ 4.32	12,500	$ 162,000	$ 4.32	12,500	$ 162,000
Automated						
	Municipal Cart			**Contractor Cart**		
4/1/15-12/31/15	$ 4.21	12,500	$ 473,625	$ 4.90	12,500	$ 551,250
2016	$ 4.28	12,500	$ 642,000	$ 4.99	12,500	$ 748,500
2017	$ 4.39	12,500	$ 658,500	$ 5.11	12,500	$ 766,500
2018	$ 4.50	12,500	$ 675,000	$ 5.24	12,500	$ 786,000
			$ 3,259,125			**$ 3,662,250**

Republic Services

Per Ton-Weekly Recycling

Traditional	Cost Per Ton	Average Monthly Tonnage	Total Annual Cost	Cost Per Ton	Average Monthly Tonnage	Total Annual Cost
2014	$ 484.00	190.09	$ 1,104,043	$ 484.00	190.09	$ 1,104,043
1/1/15-3/31/15	$ 494.00	190.09	$ 281,713	$ 494.00	190.09	$ 281,713
Automated						
	Municipal Cart			**Contractor Cart**		
4/1/15-12/31/15	$ 341.00	190.09	$ 583,386	$ 536.00	190.09	$ 916,994
2016	$ 347.00	190.09	$ 791,535	$ 550.00	190.09	$ 1,254,594
2017	$ 359.00	190.09	$ 818,908	$ 564.00	190.09	$ 1,286,529
2018	$ 368.00	190.09	$ 839,437	$ 581.00	190.09	$ 1,325,307
			$ 4,419,022			**$ 6,169,181**

Waste Management

Per Ton-Weekly Recycling

Traditional	Cost Per Ton	Average Monthly Tonnage	Total Annual Cost	Cost Per Ton	Average Monthly Tonnage	Total Annual Cost
2014	$ 274.83	190.09	$ 626,909	$ 274.83	190.09	$ 626,909
1/1/15-3/31/15	$ 274.83	190.09	$ 156,727	$ 274.83	190.09	$ 156,727
Automated						
	Municipal Cart			**Contractor Cart**		
4/1/15-12/31/15	$ 162.11	190.09	$ 277,339	$ 188.68	190.09	$ 322,796
2016	$ 164.81	190.09	$ 375,945	$ 192.15	190.09	$ 438,310
2017	$ 169.05	190.09	$ 385,617	$ 196.77	190.09	$ 448,848
2018	$ 173.28	190.09	$ 395,266	$ 201.78	190.09	$ 460,276
			$ 2,217,803			**$ 2,453,866**

APPENDIX B

PAY AS YOU THROW ALTERNATIVES AND PRICING SYSTEMS

Collection Unit	Advantages[1]	Disadvantages[1]
Bag Programs	- Easy for residents to understand. - Lower distribution, storage, and inventory costs. - Inexpensive to implement.	- Uncertain revenues as citizens purchase on an as-needed basis. - Potential for bag to rip or may be incompatible with automated collection systems. - Bags are not reused and, unless recycled, contribute to the waste stream. - Bags can be torn by animals.
Sticker/Tag Programs	- The cost of producing stickers/tags for sale to residents is cheaper than bags. - Easy for residents to understand. - Inexpensive to implement.	- Potential for poor sticker adhesion in bad weather and possible counterfeiting. - Uncertain revenues.
Variable Can or toter System	- Constant revenue stream.	- Little flexibility between container sizes. Citizen must lower collections needs to a reduced can size. - Need method to deal with waste beyond subscription level like bulky items or extra waste such as on holidays. - Higher start-up costs for can purchase. - May require specialized equipment. - Higher administrative costs for storage of cans, distribution, and billing.
Weight-Based Program	- Citizen realizes immediate savings from reduction.	- High equipment demands for trucks outfitted with certified weighing devices and equipment to record weights and addresses. - At staffed drop-off centers, requires more staff time to weigh garbage. - Specialized curbside or drop-off equipment. - Higher start-up costs.
Pricing Systems	**Advantages**	**Disadvantages**
Variable Pricing (True PAYT)	- A substantial waste reduction incentive. - Minimal administration	- More difficult to set rates. - Some risk associated with not recovering all program costs.
Hybrid or Two-Tiered or Multi-tiered Pricing	- Guaranteed recovery of fixed costs. - Rates setting is not as complicated as fully-variable. - Can reduce incentive to dump illegally - Requires little or no financing changes to implement.	- If the additional unit charge is low it may decreases the waste reduction incentive. - Billing may complicate administration and setting up convenient bag distribution will still be needed

(1) The advantages and disadvantages shown are often relative comparisons with the various types of PAYT programs that are presented in the table.

Pay-As-You-Throw Collection Systems

Introduction

With pay-as-you-throw systems, the fee charged for collection and disposal increases with the amount of garbage thrown away. This provides a financial incentive for residents to reduce waste, which can in turn lead to lower transportation and disposal costs for the local government. In addition to reduced waste and waste related costs, some of the potential benefits of pay-as-you-throw systems include:

• Equitable fee structures. Communities with traditional waste fees essentially require residents who set out small amounts of trash to foot part of the bill for residents who generate larger amounts. This is eliminated under pay-as-you-throw systems as customers are charged only for the level of service they use.

• Successful recycling and composting programs. Rather than paying to dispose of recyclable materials and yard trimmings, residents under a pay-as-you-throw system have an incentive to participate in recycling and composting programs. According to a recent study by Duke University, communities experience 20% to 35% increases in the weight of materials going through their recycling and composting programs after implementing a pay-as-you-throw system.

• Increased awareness of waste management issues. Pay-as-you-throw systems help local governments bring to light the actual economic and environmental costs associated with waste generation and disposal. Once these costs are understood, residents generally become more interested in a variety of waste management issues, including reduction, collection, disposal and illegal dumping. There also are potential obstacles to overcome when implementing pay-as-you-throw systems. For example, there have been instances of such systems leading to increased burning and illegal dumping of waste, although most communities with pay-as-you-throw systems have found these problems to be isolated, short-lived and easy to overcome. Another difficulty is that some residents might perceive, at least initially, the switch to pay-as-you-throw pricing as simply an attempt to raise garbage rates. Key to overcoming these and other obstacles is informing residents well in advance about the costs of existing waste management practices and carefully designing a pay-as-you-throw system that addresses specific needs and concerns of the community.

Types of Systems

There are several variations of pay-as-you-throw collection systems.

Under a **prepaid bag system**, residents purchase specially colored or marked trash bags either at government offices or area grocery and hardware stores. Only garbage placed in these bags is collected by sanitation workers or accepted at the landfill, transfer station or convenience center. Typically, bags are no bigger than 20 or 30 gallons in capacity to ensure that residents who generate less waste pay less. The price of the bag covers a portion or all of the hauling and tipping costs involved in the disposal of that garbage.

A variation of the prepaid bag system is the **prepaid tag or sticker system**. This system requires participating residents to purchase tags or stickers to place on their own bags, with the tag/sticker identifying the size of bag it covers. Both the prepaid bag and prepaid tag/sticker systems are used in many small to medium size communities. The chief advantage of these systems is that they involve no billing and thus generate a minimal amount of administrative problems and expenses. A major drawback is the fluctuation in revenue that can occur when residents purchase several months' worth of bags or stickers on one occasion and then few or none for a long time thereafter. Larger communities often choose a single can or variable can subscription service. Under a **single can system**, residents are provided with one type of container, usually a 50- to 60-gallon can, and charged for the number of containers they use. With a **variable can system**, residents subscribe to a particular

level of service-one 20-gallon container per week, one 20- and one 30-gallon container per week, two 30-gallon containers per week, etc…with rates increasing as the number and size of cans increase. Revenues are generally more stable with can systems than bag or tag systems, but billing and container distribution schemes are more complex and expensive. When subscribers notice reductions in waste generation, it is their responsibility to ask the local government (or private hauler) to change the number of cans for which they are being billed. Some cities and counties have adopted **hybrid systems** that provide and charge residents for a base level of service (say, for example, a single 30-gallon can per week), then offer a prepaid bag, prepaid sticker or variable can service for waste in excess of the base level. The base level fee ensures a continuous and predictable flow of revenue while the pay-as you-throw pricing for the excess waste provides an incentive for residents to keep that excess to a minimum.

Implementation

One of the first tasks to be performed when implementing a pay-as-you-throw system is preparing and adopting an ordinance that requires residents to use the system and makes any other form of disposal illegal. Many communities will also need to pass an ordinance setting forth the rates to be charged for collection services. In some cases, a great deal of effort may need to go into educating elected officials on the need to adopt a pay-as-you throw system and related ordinances. Other implementation tasks include:

Educating the public. For a pay-as-you-throw system to be successful, customers of the system must be made aware of collection schedules, rates, billing cycles, penalties for noncompliance and, if applicable, locations for purchasing bags or tags/stickers. There are numerous methods for conveying such information, including press releases, public service announcements on radio and TV, newsletters, direct mailings, flyers, utility bill inserts and public speaking engagements.

Buying and distributing containers. After deciding upon the type, size and design of containers to be used, vendors of cans, bags or tags/stickers should be contacted for price quotes and other pertinent information. If bags or tags/stickers are selected, arrangements probably will need to be made with local retailers for distribution, although in some cases, government offices can serve as convenient, acceptable outlets for the sale of bags or tags/stickers. If cans are selected, a place for storing excess cans and a system for either delivering the cans or having residents pick them up will be needed.

Starting or expanding recycling programs. For most people to take advantage of a pay as you-throw system, they must have access to recycling programs. In some communities, implementing pay-as-you-throw has generated so much demand for recycling that additional recycling coordinators have had to be hired, new equipment purchased and new recycling markets identified. New or enhanced programs for composting and bulky waste collection are also common in pay-as-you-throw communities.

Making the necessary administrative changes. Training existing staff, hiring new employees, setting up a new billing system, developing a process for handling customer questions and complaints-these are all examples of administrative changes that may be required by the switch to a pay-as-you-throw system. Making these changes should begin several months prior to the start of the new system. During the change-making process, EPA recommends identifying all administrative functions to be performed once the pay-as-you-throw system is fully operational and, where necessary, hiring employees skilled in economics, public relations, financial management and enforcement.

Monitoring and evaluating the pay-as-you-throw system. Monitoring the pay-as-you throw system should begin immediately. Participation and waste reduction rates along with cost and revenue data should be analyzed as soon as such data is available and on a monthly, quarterly or yearly basis thereafter. When evaluating the performance of the new system, communities should consider using customer surveys and analyzing the problems and issues raised in customers' phone calls and letters. Local governments may have to undertake

numerous other implementation activities, depending on the type of collection system currently in place, the existing administrative arrangement of the solid waste department and the current level of residents' education about waste management issues. Examples of other activities frequently carried out by communities with pay-as-you-throw systems include:

• establishing full cost accounting and enterprise funds;
• developing complementary programs such as special recycling events
(e.g., Christmas tree, phone book recycling) and household hazardous waste programs;
• employing qualified personnel to enforce anti-litter and illegal dumping laws;
• Implementing special procedures for residents of multi-family, low income, elderly and large households.

Selecting a System

Before choosing one of the systems identified in the previous section, local governments should establish goals for the system based on the solid waste management needs of the community. Some common goals of communities that have pay-as-you-throw systems include encouraging waste minimization and recycling, raising sufficient revenue to cover solid waste costs, and subsidizing other waste related activities (e.g., anti-littering campaigns).

The Environmental Protection Agency (EPA) recommends communities use a six-step process when developing a pay-as-you-throw system and designing an associated rate structure. The six steps are as follows:

Step 1

Estimate the total amount of waste that will be generated once the pay-as-you-throw system is fully established.

This first step is important in light of the need to ensure that revenues received under the Pay-as-you-throw system will cover the system's costs. To obtain this estimate:

a) Examine current waste hauling records to determine the amount of waste collected from residents during the most recently completed fiscal year.

b) Develop projections of total population and other important demographic patterns (e.g., low-income, elderly and multi-family households) to determine the demand for waste services over the coming one- to two-year period. Assistance in developing such projections can be obtained from private planning consultants, regional development centers or DEP.

c) Estimate the likely reduction in waste generation rates that will result from implementing the pay-as-you-throw system. In forming this estimate, it is important to take into consideration such factors as the availability of recycling and composting programs, the scope and intensity of public education efforts planned, and the reductions in rates achieved in similar communities with pay-as-you-throw systems in place.

Step 2

Determine the waste collection methods and other services to be offered under the Pay-as-you-throw system.

Decide on the type and size of the containers (bags, cans, tags/stickers, combination) to be used as well as the ideal frequency of garbage collection for the community. Identify additional collection services that might need to be offered, such as picking up furniture, white goods and other bulky items. Consider whether or not recycling, composting and other waste reduction programs should be started or enhanced, and determine how the community can extend pay-as-you-throw pricing to residents of multi-family dwellings.

Step 3

Estimate both the start-up and ongoing costs of the proposed pay-as-you-throw system. Some of the one-time costs that communities typically run into when establishing pay-as you-throw systems include developing and

carrying out intensive media/public education campaigns, educating and training collection and administrative personnel, and purchasing new collection vehicles, containers and billing software. Ongoing costs are the salaries and benefits of sanitation workers, landfill tipping fees, replacement containers, fuel, vehicle maintenance, utilities and numerous other items. All of these costs should be estimated before proceeding with the remaining steps.

Step 4

Develop a preliminary pay-as-you-throw pricing rate structure.

Develop rough estimates of rates to be charged to cover the costs associated with each of the components identified in Step Two. Identify the rate discounts, if any, to be given to elderly and low-income residents. For simplicity, EPA suggests starting with rate structures already being used in communities with a similar mix of services. The preliminary rates can be adjusted as needed in the remaining steps.

Step 5

Estimate the revenues that the pay-as-you-throw system will generate once it is fully operational.

This step can be performed using the equation:

$R = (W \div V) \times P$ where, R = revenues the pay-as-you-throw program will generate;

W = waste generated when fully operational (estimated in Step One);

V = volume of bags or cans to be used (as determined in Step Two); and

P = price per bag or can (as established in Step Four).

It is relatively easy to estimate revenues for a pay-as-you-throw system offering a minimal number of services or container types and an uncomplicated rate structure. Estimating revenues for more complex systems, however, can be considerably more difficult.

Step 6

Establish a more realistic pay-as-you-throw pricing rate structure.

Modify, if necessary, the preliminary pricing rate structure set in Step Four, based on a comparison of the cost data generated in Step Three and the revenue figures calculated in Step Five. If the estimated costs and revenues are significantly different, a review and rearrangement of the program components identified in Step Two may need to occur.

APPENDIX C

PAY AS YOU THROW AND REWARDS

PROGRAMS

Pay As You Throw

What is Pay as You Throw (PAYT)? - PAYT is a usage-pricing model for disposing of municipal solid waste. Users are charged a rate based on how much waste they place at the curbside for collection. A variety of models exist depending on the region and municipality. Waste is measured by weight or size while units are identified using different types of bags, tags, containers or even RFID. Services for waste diversion, like recycling and composting, are often provided free of charge where PAYT systems are implemented. Under a true PAYT program residents pay for all costs. The design and continued operation of the program is the responsibility of the Municipality.

Benefits:

Recycling is the Right Thing to Do-landfill space continues to shrink and will become more expensive. Recycled materials represent usable manufactured materials that require less energy and manufacturing to reuse, resulting in a cleaner environment and a move efficient use of resources.

Operating Budget impact and Rate Equity-Will take the expenses of MSW and recycling out of the Operating Budget, and provide for a fair and equitable utility like system where residents pay for the amount of amount of MSW that they put at the curbside for pickup.

Increase Recycling and Reduce Municipal Solid Waste Disposal-Will increase the rate recycling and amount of materials recycled by using economic disincentives to encourage residents to evaluate their waste stream and consider the recyclability of items before they are placed at the curb. Some single stream communities have experienced 50% or greater increase in recycling and 20 to 30 percent decreases in MSW.

Cost Savings-Reductions in waste disposal costs and reduction in the Operating Budget.

Cons:

Opposition to Change-Moving from a Tax funded to a User Fee based service will require an extensive outreach and education of residents. PAYT programs are often complicated and require residents to be aware of guidelines regulating disposing of waste. For the system to be successful residents will need to have a full and complete understanding of how the system works and their responsibilities.

Administration Costs-the new system will require adequate ongoing funding for supervision, billing, enforcement, outreach, and education. These costs may offset gains from savings.

Dumping and Collection of Unmarked MSW-if some residents choose not to pay for excess MSW bags, or tags, the MSW will still have to be collected and disposed-this will be a direct cost to the municipality. In some rental area this will be a constant problem.

Recycle Rewards Programs

What are Recycle Rewards Programs? - Both Waste Management and Allied Republic are offering programs that provide rewards or coupons to residents who have increased the amount of recycled materials that are collected. The implementation and operation of the program is the responsibility of the hauler. The municipality pays a fee for program outreach and operations and the provider uses direct mail and the internet to provide feedback to the residents. These programs have been successful in reducing MSW and increases in recycling.

Benefits:

Increase in Recycling and Decrease in MSW- Participating municipalities have reported 20% increases in recyclables and 10-15% reductions in MSW.

Program is easy to implement-Services are provided by a trained full-time staff using proven and innovative marketing techniques. Little input is needed from municipal staff.

High level of participation-because the program provides rewards for increases in recycling residents tend to respond well to the goal to increase recycling.

Uses a carrot, not a stick-good behavior (increased recycling) is rewarded without using a stick (fees) to penalize residents for MSW levels.

Cons:

Cost-Participating municipalities must pay a fee to have their residents enrolled in the rewards programs. Costs are as follows:

Allied Republic					Waste Management			
Year	**Residential Properties**	**Monthly Cost per Property**	**Annual Cost**		**Year**	**Residential Properties**	**Monthly Cost per Property**	**Annual Cost**
2014	12,500	$ 0.57	$ 85,500.00		2014	12,500	$ 0.50	$ 75,000.00
2015	12,500	$ 0.58	$ 87,000.00		2015	12,500	$ 0.50	$ 75,000.00
2016	12,500	$ 0.60	$ 90,000.00		2016	12,500	$ 0.51	$ 76,500.00
2017	12,500	$ 0.63	$ 94,500.00		2017	12,500	$ 0.52	$ 78,000.00
2018	12,500	$ 0.67	$ 100,500.00		2018	12,500	$ 0.53	$ 79,500.00
	Total		**$ 457,500.00**			**Total**		**$ 384,000.00**

Pay as you throw –Vs.- Recycle Rewards

Approach-one program uses a carrot to reward changes in behavior while the other program uses a stick.

Implementation, Administration and Operation-The implementation, marketing, outreach and operating elements of the Rewards program are handled by a professional staff who are able to hit the ground running without a long period of outreach and education.

Cost-Although there are defined costs for Rewards Programs the administrative costs for PAYT are much higher than Rewards.

Effectiveness-More study information is available on PAYT, and it shows PAYT to be very effective in increasing recycling and reducing MSW.