

Memorandum

To: Tom G. Kelly, Director of Public Works

CC: PAYT Panel

From: Steven Deasy

Date: 9/5/2014

Re: Municipality of Mt. Lebanon Pay-As-You-Throw (PAYT) Evaluation
Gannett Fleming, Inc. Memorandum

Tom,

In accordance with our executed letter Agreement dated May 23, 2014 Gannett Fleming, Inc. (Gannett Fleming) has provided consultation services to Mt. Lebanon regarding Pay-As-You-Throw (PAYT) feasibility and implementation. Consultation included background and case study information review, financial analysis of PAYT alternatives, meeting attendance, interviews with solid waste experts, and curbside program evaluation. It is important to clarify that PAYT implementation is a complex issue and Mt. Lebanon's circumstances are unique. During background investigations we did not find any municipal case studies that serve as ideal comparisons to Mt. Lebanon and its proposed transition to PAYT. We did not find a municipality that has implemented PAYT starting with the same conditions and program structure: Under contract for solid waste collection services with every other week recycling; residents pay for solid waste services via property taxes (unit-based pricing); the transition to PAYT occurs within a current solid waste contract period; there is a low \$27.00 per ton disposal fee and generally poor recyclables market conditions, etc.

Mt. Lebanon is considering a move from a per housing unit fee to a tonnage based fee for contracted municipal solid waste (MSW) collection service while implementing a bag PAYT program. The target is for the proposed bag PAYT program to reduce disposed tons sufficiently to offset costs of program expenses plus the move to the tonnage based contract fees. The deadline to make this decision regarding a switch to tonnage based MSW pricing is July 1, 2015, as a condition of the current 5-year MSW collection and disposal contract. The PAYT Panel envisions that a fraction of the MSW contract costs would be funded through proceeds from the sale of trash bags. The PAYT Panel is considering recovering 50% of the MSW contract costs through bag sales. This 50% represents all of the quoted disposal fees and a portion of the quoted MSW collection fees. The remaining costs would continue to be funded through the property tax revenues.

This memorandum includes Gannett Fleming's findings and recommendations regarding PAYT implementation within Mt. Lebanon. It is intended that this memo be considered by the PAYT Panel in its development of the PAYT Report to the Mt. Lebanon Commission so the Commission can make an informed decision regarding whether or not PAYT is a good fit for the Mt. Lebanon community

PAYT Findings

Gannett Fleming evaluated PAYT implementation in Mt. Lebanon and performed a preliminary PAYT alternatives analysis using historical tonnage data along with guidance and data on diversion percentages from published literature. It is not possible to accurately forecast PAYT waste diversion rates for Mt. Lebanon because the performance of PAYT and solid waste system is contingent on many factors. Key findings from our evaluation and analysis include:

1. Gannett Fleming agrees with many industry experts that bag PAYT programs can increase solid waste diversion from slightly to substantially more than other standard curbside collection programs. The additional diversion achieved by bag PAYT programs is primarily attributed to the financial incentive that allows customers to lower their trash bill as they reduce waste disposal. For a portion of households, this financial incentive changes behavior and motivates customers to increase waste reduction, reuse, and recycling efforts which reduces the total amount of waste generated and increases the amount of this total that is diverted from landfilling.
2. Mt. Lebanon's baseline material quantities for MSW disposed, curbside recycling (non-organics), and organics recovery is broken down as follows:

| Baseline Materials Quantities (Average of 2012 and 2013) | | |
|---|---------------|-------------------------|
| Material | Tons | Percent of Total |
| MSW Disposed | 13,751 | 67 % |
| Curbside Recycling | 2,421 | 12 % |
| Organics Recovery (Leaf waste, Christmas Trees, Drop-Off) | <u>4,253</u> | <u>21 %</u> |
| Total Materials | 20,425 | 100% |

3. Implementing a bag PAYT program in Mt. Lebanon will result in increased diversion of solid waste away from landfill disposal. Actual diversion rates will be impacted by curbside collection frequency, recyclables container capacity, and many other "core components" (See attached List of Core Components) of the solid waste program. Using Mt. Lebanon's baseline solid waste data and diversion percentage statistics from Skumatz Environmental Research Associates (refer to attached Table at the end of this memo), the potential MSW diversion after bag PAYT implementation in Mt. Lebanon with weekly curbside recycling might be represented as shown in the table

below. This waste diversion performance is modest compared to the results reported for some bag programs. GF's estimates are supported by research results, and are intended to present a realistic result for a community like Mt. Lebanon with limited core components in place to serve as outlets for diverted materials (e.g. weekly recycling and organics recovery). Our estimates are judiciously conservative for use in estimating tonnage based contract costs.

| Municipality of Mt. Lebanon Potential Materials Quantities with PAYT | | | |
|---|---|-------------------|-------------------------|
| Material | Pounds per HH/week¹ | Total Tons | Percent of Total |
| MSW | 31.4 | 10,212 | 50% |
| Recycling | 11.3 | 3,676 | 18% |
| Yard Waste | 16.3 | 5,310 | 26% |
| Source Reduction and Reuse | | <u>1,225</u> | <u>6%</u> |
| Total | | 20,425 | 100% |

¹Bag PAYT communities in Massachusetts report MSW rates of 20, 21, 21, 22, and 23. Four of these five communities have weekly curbside recycling. Cranberry Township (subscription) MSW rate is approximately 37 pound/hh/week. Cumberland County communities with weekly single stream recycling and no PAYT average 8.6 pound/hh/week recyclables, with a range from 7.1 – 11.2.

4. Bag PAYT implementation may potentially increase undesirable disposal activities because residents and property owners have a financial incentive to reduce the amount of trash placed at the curbside. Improper disposal can be managed effectively if the solid waste system provides convenient and viable outlets for materials that serve as an alternative to landfilling. If recycling and reuse opportunities and capacity are not adequate, a portion of customers may use any of the following methods to reduce the amount of curbside trash:

- Placing waste in front of a neighbor's house
- Accumulating waste on their own property
- Backyard burning, particularly of woody yard wastes
- Placing waste on other abandoned or unoccupied properties
- Taking waste to work, including placing waste in commercial dumpsters
- Taking waste to friend or relative's outside the PAYT program
- Illegal dumping in streams, rivers, and over embankments inside and outside of the municipal boundary
- Improper management of organics including disposal of grass clippings in ditches, or improper backyard composting practices.

5. The quoted solid waste disposal fee in the SHACOG contract is \$27.00 per ton. Gate rate tip fees in western PA are typically \$35 - \$40, which is still low compared to central and eastern PA where disposal fees range from \$55 to \$75 per ton. Because the MSW collection contractor (Republic Services) owns Imperial Landfill, its internal costs for disposal are very competitive as represented by the quoted \$27 tip fee. Recyclables processing fees range widely and are largely dependent on the negotiated price for a

committed quantity of recyclables. The primary recyclables processor is Waste Management Greenstar in Pittsburgh. Based on discussions with Greenstar in June 2014, Mt. Lebanon would be expected to pay \$0 per ton for single stream recyclables delivered to the facility under a dedicated processing agreement. Compared to other areas in PA where recycling markets compete aggressively for materials, are located close to generation, and offer revenue or rebates through sale of recyclables, the cost for recycling services in Mt. Lebanon is high. Low disposal fees combined with zero to negative recyclables revenue makes it challenging for western PA recycling programs to “pay for themselves” or to appear economically attractive through reduced MSW disposal costs. A new recycling facility opened in Hazelwood in 2014 that could result in more competitive pricing for recyclables commodities unless this facility is also owned by Waste Management. After the SHACOG contract expires, Mt. Lebanon may be in a position to leverage recycling markets to lower contract costs for curbside solid waste services by bidding independently for solid waste services.

6. Within the current solid waste collection contract term, if Mt. Lebanon changes from a unit-based fee to a per ton fee structure for MSW, the waste hauler would not have a financial incentive to reduce waste disposal or increase recycling. The incentive of Mt. Lebanon to reduce MSW disposal to decrease costs will be at odds with the waste hauler’s interest in maximizing waste tonnage and revenues. The contractor would handle nearly the same amount of material overall but would receive less contract fees as the quantity of waste disposed decreases. This conflict of interests raises concerns about curbside collection performance, implementation, and the quality of waste and recycling services that will be delivered under tonnage based contract pricing. It is the waste hauler that has the most direct impact on curbside program delivery and implementation including education, collection operations, procedures, and enforcement. Education and enforcement for successful curbside programs require cooperation by the waste hauler to provide curbside feedback to inform residents regarding proper recycling and MSW handling on collection days (e.g. issue stickers, checklists, or notes about non-compliance or leaving unacceptable items in the container).

7. Under historic disposal conditions (reported tonnages), a tonnage based fee structure would be more expensive than a unit fee structure based on the number of units. For example, using the average MSW tons from 2012-2013, the MSW collection and disposal cost would be \$1,780,742 on a tonnage basis at the 2015 contract pricing. This cost is over 8% (\$130,742) higher than it would be on a per unit basis (\$1,650,000). The price structure reflects the contractor’s expectation of a reduction in tonnage disposed if contract terms were shifted to the tonnage basis; the majority of the contractor’s costs would not be reduced with a reduction in tonnage, so the contractor needs to account for the loss in tonnage to yield the required revenue. Additionally, the waste hauler controls MSW data collection and reporting. This data is the basis for calculating the proposed per ton fee structure. The accuracy of MSW data is unknown, but is a key component of the financial sustainability of the proposed bag PAYT program.

8. Based on our financial analysis, a bag PAYT program with a unit-based fee structure more effectively aligns the incentives of Mt. Lebanon and the waste hauler to increase waste diversion. However, a bag PAYT program with a unit-based fee structure will increase the cost of the solid waste program. The cost is higher because the contract MSW would not decrease, but there would be additional program costs including bag expense, program administration, education, and enforcement. Additionally, there may be costs associated with implementing any recommended core components to enhance diversion programs to accommodate diverted materials expected to double in quantity at the curbside. It is Gannett Fleming's opinion that these core components are necessary to ensure effective PAYT implementation. Weekly recyclables collection, 35 gallon recycling containers, and additional yard waste collections will enhance diversion, facilitate participation, and streamline implementation by offering service that aligns with diversion rates. It is probable that adding some of these core components will cost more to add piecemeal to the existing contract pricing structure, than for example, if these services were bundled together as part of a comprehensive bid and MSW collection and disposal contract.

9. Based on our analysis of the current solid waste system performance and structure, Mt. Lebanon is not in a preferred position to implement bag PAYT and optimize waste diversion through waste reduction, reuse, and recycling, and effectively manage illegal or undesirable disposal activities. A few of the current service features that do not reinforce maximum diversion include: every other week recycling, allowance of unlimited trash disposal, non-standard recycling containers provided by residents, and limited frequency of curbside yard waste collections and limited yard waste drop-off opportunities (e.g. limited hours of operation).

10. Without capacity, services, and incentives properly aligned to address a substantial peak in solid waste diversion there are real implications for PAYT implementation and public perception of PAYT in Mt. Lebanon. These implications relate to ease of implementation, residential participation, program acceptance, system performance or actual waste diversion, compliance, education, and enforcement. These implications raise the following practical questions that Mt. Lebanon leaders should ask themselves as they consider bag PAYT and curbside program implementation:

- If larger recycling containers are not provided and the volume of curbside recyclables doubles (as expected), where will curbside recyclables be placed?
- How many different recyclables containers will be needed and used inside households and then placed at the curbside in front of each residential unit?
- What will collection day look like from the street with one to six or more different recycling containers set in front of each household?
- Will residents have the space or mind making the space for several recycling containers?
- How many recyclables will fall out of recycling containers onto sidewalks and streets and become litter and/or be disposed as trash?

- Will the waste hauler pick up the recyclables on the ground and place them in recycling trucks?
- How much additional time will the hauler spend on recycling routes?
- If residents don't place organics (e.g. grass, shrubs, etc.) in purchased bags, where will they put these materials?
- If residents want to donate clothes, toys, bikes or similar items to benefit the community and lower their trash bill, are reuse or swap programs readily available and widely known?
- If residents want to dispose household hazardous wastes (e.g. paints, batteries, cleaners, etc.) are convenient outlets available?
- If residents illegally or improperly dispose of materials, is a curbside solid waste enforcement program in place by the municipality and will the hauler cooperate to enforce and encourage proper disposal and recycling in the community?
- When trash is in recyclables containers, will the hauler or municipality notify the customer?
- How will Mt. Lebanon assure the waste hauler is committed to effective PAYT implementation, including participation in education and enforcement?
- How much will waste diversion hurt hauler profits?
- If we are adding the burden of buying bags and paying a trash bill to residents, should there be added value to the customer? What should the added value include (new or more services, new recycling bins, cleaner streets, etc.)?

11. WasteZero, a company offering turnkey implementation of bag PAYT programs, has made a proposal to Mt. Lebanon to administer a "Trash Metering Program". In brief, WasteZero proposes to take on payment of the contract fees to Republic and to administer a pay per bag MSW program, while guaranteeing Mt. Lebanon a minimum annual payment of \$200,000. In exchange, Mt. Lebanon takes on the responsibility of passing a PAYT ordinance and making monthly payments to WasteZero in the amount of the contract price as it would have been with per unit based fees. Language from the proposal is as follows:

- WasteZero proposes to design a Program for Mt. Lebanon in which WasteZero pays the Municipality the fixed annual fee of \$200,000, in equal monthly installments. WasteZero also proposes to assume Mt. Lebanon's obligations to pay its current solid waste and recycling hauling and disposal contractor for all costs of Mt. Lebanon residents' regular municipal solid waste and recycling services (exclusive of bulky waste and special collections). In this way, WasteZero will guarantee that the Municipality receives at least \$200,000 in financial benefit by implementing a Trash Metering™ Program. WasteZero also proposes to pay the Municipality a savings share based on fifty percent (50%) of all disposal savings after the Program reduces tipping costs by greater than \$380,000 per year.

- In exchange, Mt. Lebanon must legislatively approve an ordinance to “meter its trash” by requiring residents to dispose of their municipal solid waste in official municipal trash bags as part of a WasteZero Trash Metering™ Program. Effective January 1, 2015, WasteZero will implement and manage a bag-based Program in which it prices 30-gallon equivalent bags at \$10.00 for a retail pack of five (5) bags and 15-gallon equivalent bags at \$10.00 for retail pack of eight (8) bags. WasteZero may also provide recycling bags to residents free of charge, subject to continued discussions with the Municipality, in order to increase recycling, reduce costs for the Municipality’s trash and recycling hauler, and to make enforcement easier. The Parties will work together to design an enforcement protocol with adequate safeguards to insure a normalized level of Program compliance. Mt. Lebanon will make a monthly payment to WasteZero in the amount of the sum it is projected to spend each month under its current solid waste and recycling hauling and disposal contract per the SHACOG bid – an amount estimated to be approximately \$137,500 per month during the current fiscal year.

Based on Gannett Fleming’s review of the WasteZero proposal, there is not sufficient information provided by WasteZero to clearly understand the basis of its claims and proposed financial arrangements. WasteZero focuses primarily on comparing the results of PAYT diversion in other municipalities, mostly in other states, and applies this data to estimate waste diversion rates for Mt. Lebanon. Generally, the WasteZero proposal lacks sufficient analysis and company financial background information to provide a sound basis and to entrust this third party to make large and important contractual payments on behalf of Mt. Lebanon. While the terms are attractive, there are substantial financial risks for Mt. Lebanon.

PAYT Options

There are three possible options for PAYT implementation in Mt. Lebanon described below. Options 1 and Option 2 can be implemented during the current contract. Option 3 can be implemented following the current contract. Gannett Fleming recommends Options 2 and Option 3 as the preferred approaches moving forward to implement bag PAYT in Mt. Lebanon.

Option 1 – Implement Bag PAYT Under the Existing Contract Using a tonnage-based Pricing Structure

Under Option 1 Mt. Lebanon would move from a per-housing unit fee to a tonnage based fee and bag PAYT program as described in the introduction section of this Memo. Option 1 is the primary option under consideration by the PAYT Panel. Under this option it is intended that 50% of the MSW contract costs would be recovered through bag sales, representing all of the quoted disposal fees and a portion of the quoted MSW

collection fees. Remaining costs would continue to be funded through the property tax revenues. As stated in our findings (No. 6 and No. 7) and in the first paragraphs of our Conclusions and Recommendations, Gannett Fleming does not recommend Option 1 due to financial risks and curbside program implementation and performance risks.

Option 2 - Implement Bag PAYT Under the Existing Contract Using a Unit-based Pricing Structure

During the current solid waste collection and disposal contract that expires December 31, 2018, implement bag PAYT using a per unit pricing structure. Under the per unit pricing structure, the incentives for waste diversion are better aligned between the waste hauler and Mt. Lebanon when compared with tonnage based pricing. Aligned incentives lower risks and contribute to improved program implementation and service by the waste hauler. Although unit based pricing can improve hauler cooperation, effective delivery of bag PAYT in Mt. Lebanon is still at risk without adding at least some of the core components of a sustainable solid waste program (noted above). It is Gannett Fleming's understanding that Mt. Lebanon does not have a fast approaching deadline to implement unit based PAYT. There is some time available to evaluate the cost and value for one or more core components, and consider ways to pay for these services and program features. It is Gannett Fleming's opinion that weekly recyclables collection and municipal-wide distribution of 35 gallon (minimum) recycling containers or semi-automated containers with attached lids (perhaps with Mt. Lebanon's logo) will benefit implementation from public perception, to cleanliness of streets, and increased recovery of curbside recyclables.

Implementing bag PAYT under the current contract period allows Mt. Lebanon to gather accurate data on the PAYT solid waste program performance (e.g. bags sold, recyclables and solid waste tonnages, etc.). PAYT data and other solid waste system data would become valuable in the development and release of a custom bid near the end of the current SHACOG contract for a comprehensive PAYT program for Mt. Lebanon. This bid and contract would be administered by Mt. Lebanon without SHACOG unless the SHACOG PAYT options in the next 5-year bid documents are improved, meet Mt. Lebanon's requirements for solid waste service components and sustainability, and effectively leverage competition to assure the lowest price for Mt. Lebanon's PAYT program.

Option 3 - Mt. Lebanon Administers Bid Process to Secure a Contract for Curbside Solid Waste Services following the Current SHACOG Contract Period

Option 3 includes using the municipal bidding process to compare contract pricing for bag PAYT with the contract pricing of a non-PAYT MSW collection and disposal program, each with the same core components of same "base bid" for comprehensive solid waste services. In the last 12-18 months of the current solid waste collection and

disposal contract period that expires December 31, 2018, Mt. Lebanon could develop, release, and administer an MSW collection and disposal contract without SHACOG. By administering the bidding and contract process for curbside waste and recycling services, Mt. Lebanon would retain the flexibility to customize the bid documents and resulting contracted services to fit the Mt. Lebanon community. A single bid solicitation can include bag PAYT and/or non-PAYT MSW collection and disposal services. Directly administering the bid process will allow Mt. Lebanon to manage its solid waste program and avoid limitations and piecemeal services and menu-type costs like those that exist in the current SHACOG contract. Gannett Fleming believes that Mt. Lebanon can leverage market forces and secure competitive pricing for comprehensive solid waste services that enhance service quality, program performance, and sustainability. Managing competitive pricing includes bundling most or all of the desired core components and services.

Other factors beyond bundling services that may benefit Mt. Lebanon' leverage to secure competitive pricing include: scale (12,500 households), regional competition for disposal, emerging recycling markets, accurate information on MSW and recycling, and effective bid language that minimizes risks for prospective waste hauling companies. Bid documents with limited information and incorrect bid language can increase risks that must be assumed by the hauler, resulting in contingency costs and a higher cost per unit. Another common weakness of bid documents to avoid is to include excessive and/or poorly structured service options; these can allow haulers to strategically structure pricing to their advantage and may discourage the municipality from including desirable services. It is beyond the scope of this project to analyze the SHACOG contract in detail, but it does not appear that the SHACOG's menu-plan approach to the bidding process effectively leverages competition to secure the lowest possible price for MSW services for Mt. Lebanon.

The bid documents should be prepared so that the base bid identifies the desired core components of a sustainable solid waste system for Mt. Lebanon. The bid could be structured to compare bag PAYT with non-PAYT MSW collection and disposal. The Base Bid might request residential curbside collection and disposal services and prices (on a per unit basis) without PAYT. A Base Bid Option might request residential curbside collection and disposal with a bag PAYT program (also on a per unit basis). It is advised that the waste hauler have an administrative role in the delivery of the bag PAYT program, for example, the periodic delivery of bags to households.

Conclusions and Recommendations

Gannett Fleming agrees that bag PAYT programs have the potential to significantly increase waste diversion in Mt. Lebanon. However, Gannett Fleming does not recommend Mt. Lebanon implement a bag PAYT program while converting to tonnage based pricing (Option 1) within the current SHACOG contract that expires December 31, 2018. This recommendation is based not only on cost risks but also on curbside

collection performance risks. On the cost side, Gannett Fleming's alternatives analysis, along with the consideration of contractor incentives, indicate that there is a distinct risk that converting to tonnage based MSW pricing with bag PAYT will be more costly than the current per unit contract cost. The cost analysis in the attachment to this memorandum is based on waste diversion results that we regard as ambitious and not at all assured without adding the core components we recommend to support PAYT. Adding core components to capture diverted materials would assure and possibly even increase these diversion rates, but come with their own costs. The cost scenario for the base PAYT alternative (with every other week recycling) shows a contract cost savings of \$336,000 in year 2016. These potential cost savings should be viewed against the cost of additional bag purchases by residents and the cost to add core components to properly support a PAYT program. For example, adding weekly recycling would add on net (after savings in tonnage based MSW costs from the increased diversion) nearly \$264,000 to the contract costs, leaving a contract cost savings of \$72,500 compared to baseline conditions. This \$72,500 would be the amount of contract cost savings to compare against other incremental MSW program costs including public education and enforcement of PAYT and the addition of other supporting core components.

On the curbside collection performance side, Gannett Fleming strongly cautions against implementing bag PAYT without expanding the current solid waste program's core components. These services and program features address the impacts expected from a rapid increase in waste diversion. Core components like weekly recycling, larger recycling containers, and waste reduction and reuse programs assure that adequate service and capacity is available to enable residents to conveniently and effectively increase waste diversion. These services and capacity improve the opportunities and convenience for residents to realize the PAYT financial incentives, and to do so sustainably without resorting to undesirable disposal practices. As an example, our analysis shows weekly recycling can increase diversion during the SHACOG contract term, but it adds cost.

Although negative public feedback regarding any community change is normal, PAYT implementation without adequate service and capacity can lead to serious challenges for Mt. Lebanon, particularly in the first year of the program. There is a potential for disgruntled residents, undesirable disposal practices, and unwanted problems with curbside collection program implementation. Potentially, negative feedback can be elevated during initial bag PAYT program implementation when compared with other solid waste programs. This occurs because residents have the added responsibility of buying bags, and diverting waste in a variety of ways to manage their trash bill. However, Mt. Lebanon's unique solid waste circumstances are different than typical communities converting to PAYT where buying bags only replaces paying a monthly or quarterly trash bill. In Mt. Lebanon, the act of buying bags and the act of paying for trash are both new activities because solid waste is included in property taxes. Arguably, the unique circumstances of Mt. Lebanon elevate the importance of having the core components in place to streamline implementation. Visible impacts like multiple ad-hoc

September 5, 2014

recycling containers at each residential unit, recyclables spilled on curbsides and in streets, and similar impacts affect public perception, participation, and diversion. A negative PAYT implementation experience in Mt. Lebanon now could deter the broader adoption of PAYT programs in western Pennsylvania communities in the future.

MEMO ATTACHMENTS

Mt. Lebanon Pay as You Throw Evaluation
Gannett Fleming Estimation of Materials Volumes

| | No Fee | | | | | | Pay as You Throw | | | | | |
|---|----------------------------|-----------|-------------------------------|-------------------------------|---------------|--|----------------------------|---------------|--|-------------------------------|---------------|--|
| | EOW Recycling (Status Quo) | | | Weekly Recycling ¹ | | | EOW Recycling | | | Weekly Recycling ¹ | | |
| | % of Total | Tons/Year | Pounds/ Household /Week | % of Total | Tons/ Year | Pounds/ Household /Week ² | % of Total ³ | Tons/ Year | Pounds/ Household /Week ³ | % of Total | Tons/ Year | Pounds/ Household /Week ⁴ |
| Baseline Total Material | 100% | 20,425 | 62.8 | 100% | 20,425 | 62.8 | 100% | 20,425 | 62.8 | 100% | 20,425 | 62.8 |
| Recycling | 12% | 2,421 | 7.5 | 15% | 3,064 | 9.4 | 18% | 3,676 | 11.3 | 20% | 4,085 | 12.6 |
| Yard Waste Diversion | 21% | 4,253 | 13.1 | 21% | 4,289 | 13.2 | 26% | 5,310 | 16.3 | 26% | 5,310 | 16.3 |
| Source Reduction | | NA | | | NA | | 6% | 1,225 | 3.8 | 6% | 1,225 | 3.8 |
| MSW Disposed ⁵ | 67% | 13,751 | 42.3 | 64% | 13,072 | 40.2 | 50% | 10,212 | 31.4 | 48% | 9,804 | 30.2 |
| Recyclables Volume (gallons/hh/wk) ⁶ | | | 14.90 | | | 18.85 | | | 22.62 | | | 25.14 |
| Average Bags/HH/Wk (at 30#) | | | 1.41 | | | 1.34 | | | 1.05 | | | 1.01 |
| Total Bags/Year | | | | | | | | | 680,825 | | | 653,600 |

1 SERA (Skumatz Economic Research Associates) study found 2-4 additional percentage points of MSW diversion in weekly vs. every other week Curbside Recycling

2 "Benchmark" for Weekly Recycling without variable rates: 7.1 - 9.9 pounds/hh/wk in Cumberland County PA in 2012. 11.2 in a Township with large toter program.

3 SERA studies found Variable Rates added 5-6 percentage points to diversion to recycling, 4-5 points to yard waste, and 5-7 percentage points to source reduction. Caveat for Mt. Lebanon: Many, if not most, of these communities had weekly curbside recycling.

4 "Benchmark" for recycling under variable rates (all with weekly recycling): 8.6 (Carlisle, PA), 8.7 (Malden, MA), 9.2 (Dubuque, IA), 13.5 (Ashland, MA), 14.9 (Wrentham, MA)

5 "Benchmark for MSW disposal per household under PAYT from three Massachusetts Case Studies: 22, 23, 31. Cranberry Twp., PA: 37 pounds/hh/wk.

6 Calculation is included to demonstrate the volume that could be set out under Every Other Week Recycling if recycling targets are met: 45 gallons per average household.

Mt. Lebanon Pay As You Throw Evaluation
Gannett Fleming Estimation of Alternatives Expenses, 2016 Contract Prices

| | No Fee | | | | Pay as You Throw | | | |
|--|----------------------------|--------------|------------------|--------------|----------------------------|--------------|------------------|--------------|
| | Every Other Week Recycling | | Weekly Recycling | | Every Other Week Recycling | | Weekly Recycling | |
| | Per Unit | Per Ton | Per Unit | Per Ton | Per Unit | Per Ton | Per Unit | Per Ton |
| Billing Units | 12,500 | 13,750.9 | 12,500 | 13,072 | 12,500 | 10,212 | 12,500 | 9,804 |
| Recycling | \$ 337,500 | \$ 337,500 | \$ 655,500 | \$ 655,500 | \$ 337,500 | \$ 337,500 | \$ 655,500 | \$ 655,500 |
| MSW Collection | 1,254,000 | 1,443,845 | 1,254,000 | 1,372,544 | 1,254,000 | 1,072,300 | 1,254,000 | 1,029,420 |
| MSW Disposal | 438,000 | 381,587 | 438,000 | 362,744 | 438,000 | 283,393 | 438,000 | 272,061 |
| Total MSW | 1,692,000 | 1,825,432 | 1,692,000 | 1,735,287 | 1,692,000 | 1,355,693 | 1,692,000 | 1,301,481 |
| Subtotal Republic Contract | 2,029,500 | 2,162,932 | 2,347,500 | 2,390,787 | 2,029,500 | 1,693,193 | 2,347,500 | 1,956,981 |
| Bags @ \$.30 ¹ | 0 | 0 | 0 | 0 | 204,248 | 204,248 | 196,080 | 196,080 |
| Other Additional Expenses ² | 0 | 0 | 0 | 0 | 35,000 | 35,000 | 35,000 | 35,000 |
| Subtotal Additional Expenses | 0 | 0 | 0 | 0 | 239,248 | 239,248 | 231,080 | 231,080 |
| Total Expenses ³ | \$ 2,029,500 | \$ 2,162,932 | \$ 2,347,500 | \$ 2,390,787 | \$ 2,268,748 | \$ 1,932,441 | \$ 2,578,580 | \$ 2,188,061 |
| Difference from Baseline, Contract Expenses | | \$ 133,432 | \$ 318,000 | \$ 361,287 | \$ - | \$ (336,307) | \$ 318,000 | \$ (72,519) |
| Difference from Baseline, Total Expenses | | \$ 133,432 | \$ 318,000 | \$ 361,287 | \$ 239,248 | \$ (97,059) | \$ 549,080 | \$ 158,561 |
| Cost/Bag | | | | | | | | |
| MSW Contract Cost + Bag Expense | | | | | \$ 2.89 | \$ 2.38 | \$ 3.00 | \$ 2.38 |
| Half of MSW Contract Cost + Bag Expense | | | | | \$ 1.45 | \$ 1.19 | \$ 1.50 | \$ 1.19 |
| MSW Disposal Cost+ Bag Expense | | | | | \$ 0.98 | \$ 0.74 | \$ 1.01 | \$ 0.74 |
| Hybrid Fee Structure Alternative⁴: | | | | | | | | |
| Bag Expense, Hybrid Fee Structure | | | | | 41,854 | 41,854 | 40,180 | 40,180 |
| Total Expenses, Hybrid Fee Structure | | | | | \$ 2,106,354 | \$ 1,770,047 | \$ 2,422,680 | \$ 2,032,161 |

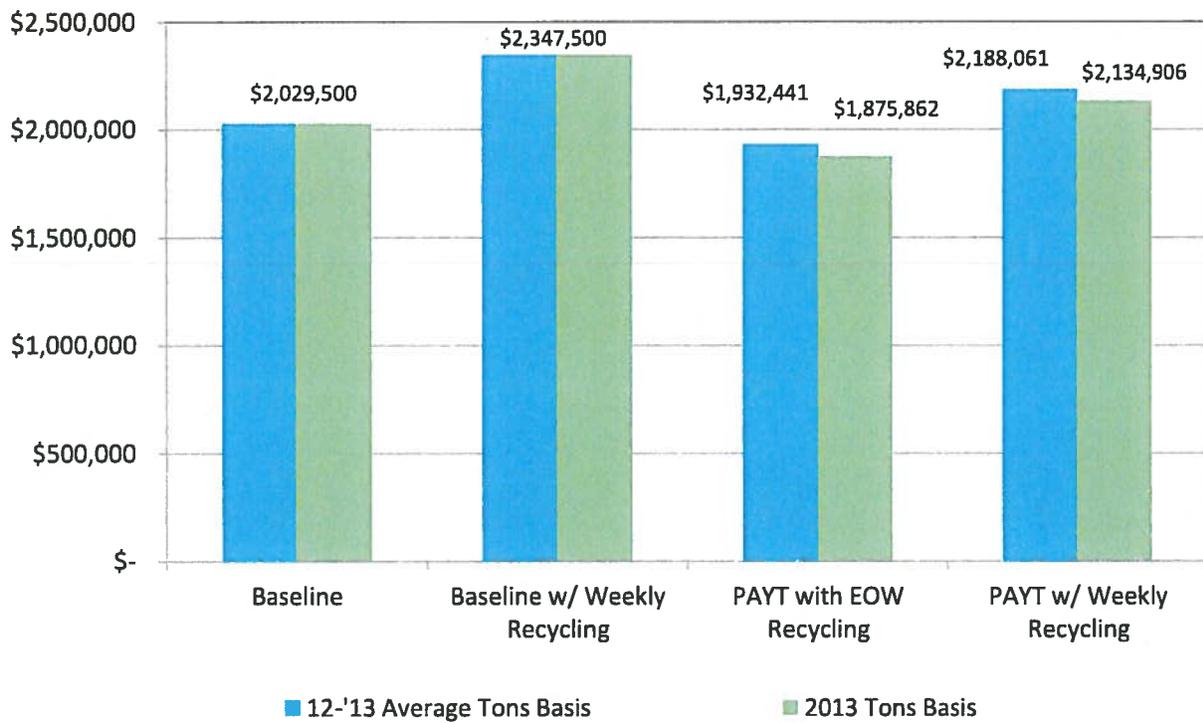
¹ The additional bag expense would be borne by residents as part of the bag charge. Some of the purchased bags would replace bags that are being purchased under the current program.

² Public Education printing and mailings and Part Time Education and Enforcement Staffing. Does not include expanded yard waste collection/drop-off expense, which is highly recommended with the PAYT.

³ Using the baseline materials and assumed changes in diversion rates, a per bag PAYT program could cost less than the status quo. It should be noted that the diversion estimates are ambitious for a scenario in which Mt. Lebanon does not expand its recycling and yard waste programs.

⁴ In the Hybrid System (one bag or can a week is free), the 1.22 bags per household is reduced to .25 bags per household.

**Mt. Lebanon Pay as You Throw Evaluation
Gannett Fleming Estimation of Alternatives Expenses**



Baseline expenses use unit basis costing, PAYT use tonnage basis for MSW contract costs.

List of Core Components of a Comprehensive Solid Waste Management Program

To fulfill its stated aim to be a leader in sustainability, Mt. Lebanon should address the core components of its solid waste program listed below. To an extent, it appears the SHACOG contract limits Mt. Lebanon's ability to cost effectively implement the comprehensive solid waste management services that fit community needs and values. These core components can be addressed with a bag PAYT program or without a bag PAYT program in place. If one or more of these core components are addressed during the current SHACOG contract, it will add cost.

Core Components

- Adequate curbside recyclables collection capacity in the form of larger, uniform curbside containers. Providing high capacity recycling containers promotes the recycling program, minimizes recyclables spillage, and is aesthetically pleasing when compared to the wide variety of containers residents may place at the curb.
 - Curbside recycling containers with attached lids are recommended with a minimum of 35-gallon capacity for weekly curbside collection. Larger, 64-gallon and/or 96-gallon recycling containers with wheels and attached lids are recommended for every other week collection (residents might be given two size options).
 - Gannett Fleming understands that an automated cart system may not be feasible in Mt. Lebanon. This is primarily due to limited access to the curbside for a large steel arm to reach out from the side of a collection truck to grab recycling (or waste) containers. Recycling containers fitted for semi-automated collection are a feasible alternative to fully automated cart collection. Semi-automated containers include an aluminum or steel load bar that serves as a handle for customers. These containers offer collection flexibility because they can either be manually unloaded into recycling trucks in the same way containers are serviced now or they can be lifted by a hydraulic auto-lifter that is attached to the recycling truck. The cost of containers fitted with a load bar is only slightly higher than a container with similar specifications. Gannett Fleming recommends semi-automated containers are used in Mt. Lebanon because of their flexibility. Many waste collectors prefer automated lifting to reduce worker injury and increase efficiency. If semi-automated containers are in place it could reduce cost as the result of a future competitive bid solicitation for curbside solid waste services. Some haulers will see the opportunity to lower operating cost with semi-automated collection, including collecting more recyclables per stop.
 - Act 101, Section 902 Recycling Grants available through PADEP may fund up to 90% of the purchase of recycling containers. The maximum allowable grant is \$250,000 per grant cycle.
- Every other week collection can perform well under a PAYT program but is not expected to maximize recyclables recovery. Weekly curbside recyclables collection is recommended to elevate participation and total recyclables recovery which is needed to

reach peak diversion goals. Our analysis shows at least 64-gallons to 96-gallons of capacity are required to store two weeks of recyclables generated by a typical household. 96-gallon containers may not be practical for some Mt. Lebanon households that have steep sidewalks or steps due to variable elevations. However, based on Gannett Fleming's curbside audit conducted 08/27/14, many households in Mt. Lebanon already use 64-gallon and larger containers for recyclables.

- Increased curbside collection services for organics.
 - April through December curbside collections of tree trimmings (not to exceed 4" diameter and 4' length), garden residues, shrubbery, and similar materials. Exclude grass. Christmas tree collections.
- Increased residential drop-off opportunities for organics including more open hours and days and more locations to drop off materials.
- Increased curbside and/or drop-off collections opportunities for special handling materials including household hazardous wastes and electronics.
- Effective education, implementation, and enforcement which includes buy-in and cooperation from the solid waste collector.
- Education and promotional programming to encourage and support grass-cycling and backyard composting, including selling compost bins at cost.

Mt. Lebanon – Pennsylvania – Curbside Solid Waste/Recyclables - Photographs



Photo 1: 08-27-14.



Photo 2: 08-27-14



Photo 3: 08-27-14.



Photo 4: 08-27-14.
Estimated 15% of households observed did not set out recyclables.



Photo 5: 08-27-14.



Photo 6: 08-27-14.