Using Current City Infrastructure and Market Influences to Increase Recycling Rates and Decrease Garbage Landfilling Costs,

or

"Don't Pay For Your Neighbors' Garbage"

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key terms:

Solid Waste: all of the material a Household discards for the City to collect and dispose of, either through land filling, incineration, composting, or recycling.

Recycling: the material a Household sorts out of its solid waste for collection and redemption by the City.

Recyclable Content: Solid Waste material that can be recycled, whether or not a Household diverts it to recycling.

Redemption: When Recyclable material is diverted from household solid waste and brought to a Material Recycling Facility.

Garbage: the material a Household discards for the City to collect and dispose of by land filling or incineration.

Alienation: the process of delivering material to the point where it leaves the City's responsibility. For the City of Buffalo, this occurs when it delivers its garbage to the landfill and pays the "tipping fee" for the landfill to accept it.

The Current Scheme

The City of Buffalo discards around 136,000 tons of garbage each year[1]. The City estimates that it will cost around $4.8m this year to landfill this waste, not including the cost to collect it from each household[2]. Currently, the City charges each household between $135 and $158 each year for garbage collection and

[1] Erie County Department of Environment & Planning

[2] City of Buffalo 2007-2008 Adopted Budget, Enterprise Fund

disposal[3]. This fee structure covers the entire cost of the current collection and "tipping" (depositing the collected garbage at a processing facility that landfills the garbage) scheme. This fee is itself a composite of two separate fees. A "baseline" fee of $110.06/year pays for the operation and maintenance costs (trucks, crews, fuel, repairs, etc.) for the collection of household garbage and for the contract price for third party recycling collection and redemption. A second fee pays the tipping fee for the garbage each household produces for collection. This fee is $24.54/year, $40.68/year, or $47.57/year, depending on the size of the garbage tote: 35, 65, or 95 gallon (hereafter referred to as "service tiers").

The opportunities and benefits of recycling are under used in the City of Buffalo. The city currently achieves a meager 7% diversion rate. The rest of Erie County achieves a 42% diversion rate[4]. Clearly, a great deal of recyclable content is included in city household garbage. Buffalo pays about $42 per ton of garbage it "tips" and it receives about $10 per ton of recyclable content it redeems. Every ton of waste that households can divert from garbage to recycling saves the City $52, a 124% savings.

Clearly, this scheme suffers from several economic and environmental deficiencies. By simply adjusting the existing fee structure and collection scheme, the City of Buffalo can dramatically reduce the cost to most households for garbage disposal, increase City revenue derived from recyclable content diversion, and establish the City of Buffalo as a progressive, vital city committed to its residents and to environmental sustainability.

The Moral Imperative

[3] City of Buffalo Charter

[4] Erie County Department of Environment & Planning

The suggested changes contained in this proposal are justified upon purely economic grounds. But a robust recycling program also fulfills the moral responsibility that the current citizens of Buffalo have to each other, to future generations of Buffalo citizens, and to the present and future citizens of the global community. Landfilling our solid waste has two separate, but equally pernicious impacts upon our environment. Foremost, landfilling solid waste pollutes the land, air, and water that surround the site (See Appendix "A"). The toxins released into the environment have a harmful effect on ecosystems and human health. Secondly, the loss of reusable finished material to landfilling requires the further harvesting of raw materials from the environment. This proposal will not belabor the manifold harms that attend landfilling, and will focus more on the economics of Buffalo's Solid Waste management scheme, its economic deficiencies, and the solutions to those deficiencies.

Proposed Changes

The following proposals encourage households to produce less garbage and divert as much recyclable content to redemption as possible. The revenue derived from redeeming recyclable material will not cover the entire cost of its collection and will still require households to pay a "baseline" fee for the operation and maintenance costs of collecting and transporting recyclable material[5]. However, each ton of diverted solid waste substantially reduces the final cost of solid waste alienation to the City and its residents. It is vital to always keep this bottom line in mind - Buffalo will produce about 145,000 tons of solid waste each year, and recycling is the only environmentally responsible option AND it is far less expensive than landfilling or incineration.

1) Add More Service Tiers in Lower Capacities

[5] See City of Buffalo 2007-2008 Adopted Budget, Item 1260

A) Households that make the effort to reduce their garbage (and divert recyclable content) need to have the opportunity to pay a fee commensurate to the actual service delivered by the City. The City can provide this opportunity by adding more service tiers in smaller capacities, such as 12, 20, and 24-gallon tiers. The current garbage collection scheme has only three collection tiers, two of which (65 and 95 gallons) are above the average amount of garbage each city household produces each week, about 50 gallons per week[6]. The smallest size, 35 gallons, is only 15 gallons below this average. Given the large increments between tiers, the household producing 36 gallons of garbage pays the same as the household producing 65 gallons of garbage. This is similar to a Power company delivering electricity to a household in only 100 kWh, 200 kWh, and 300 kWh amounts, and charging households at the corresponding rates regardless of how much electricity the household actually uses. Obviously, the City cannot provide per unit usage garbage collection and billing the way it would with electricity, water, or gas. However, simply by adding a few more capacities below the average city household garbage production, the City can deliver this service more efficiently and distribute the cost more fairly among the usage tiers.

B) Conversely, removing service tiers above the average city household garbage production rate consolidates households that include a large amount of recyclable content in their garbage deposits into one or two “high use”, or “inefficient”, service tiers. Since these households are currently diverting little, if any, recyclable content, this change poses no risk of inducing these households to increase the amount of garbage they already deposit for collection.

C) Households do not produce the same amount of garbage each week; peaks in production generally occur around the Winter Holiday season, birthdays, when guests come in from out of town, and for a variety of other contingencies. Rather than have households use the next highest tier to accommodate the excessive garbage they may produce only four or five times a year, the City should sell

[6] Erie County Department of Environment & Planning

specially labeled, biodegradable garbage bags at a cost proportional to the amount of garbage those bags hold (that price would also include the cost of the bag). Alternatively, the City can sell garbage "stamps" households can affix to commercially purchased bags.

What Other Cities Do: Seattle offers residents garbage collection service in 12, 20, 32, 64, and 96-gallon tiers, and has achieved a 44% diversion rate. San Francisco offers garbage collection service in 20, 32, 64, and 96-gallon tiers, and has achieved a 75%-80% Solid Waste diversion rate. Seattle and San Francisco both have comparatively elevated poverty levels, 11.8% and 19%, respectively, indicating the viability of robust recycling programs even in cities with high rates of Household poverty.

What Buffalo Should Do: Buffalo should add 12, 24, and 50-gallon service tiers to its current collection service. Buffalo should also remove its 65-gallon service tier to consolidate all households above the 50-gallon tier into one "High Use" tier.

2) Revise the Fee Structure to Reflect the True and Total Cost of Household Garbage Alienation

A) The current fee structure reflects a preference for garbage: the 35-gallon tier costs $24.54 ($.70 per gallon), the 65-gallon tier costs $40.68 ($.63 per gallon), and the 95-gallon tier costs $47.57 ($.50 per gallon). The average City of Buffalo household produces about 50 gallons of garbage and recycles about 3.76 gallons of recyclable content (a 7% diversion rate). Under the current collection scheme, that household will need a 65-gallon container. If that household were able to reduce or divert an additional 15 gallons of garbage to recyclable content, it could use the next lowest service tier, the 35-gallon tier. However, under the current fee structure, that 35% total reduction/diversion corresponds to a mere 10% savings; an annual total of about $15.00. Adjusting the fee composition to

reflect the true and total cost of alienating garbage will provide a strong incentive for that household to divert at that rate (see Chart 2). Those households producing less garbage and diverting more recyclable content, both of which financially benefit the city, are actually subsidizing those households that produce more garbage, which comes at a greater expense to the city.

B) There are 122,322 garbage totes distributed to households throughout the City of Buffalo – 100,539 95-gallon totes, 6,207 65-gallon totes, and 15,576 35-gallon totes[7]. If each household deposited the maximum amount of garbage allowed[8], city residents would produce 343,000 tons of garbage per year. However, the current fee structure only collects enough funds to alienate 135,000 tons of garbage per year. This is because the City currently presumes that households will use only a percentage of their allotted capacity (city residents, on average, use about 40% of the total capacity allocated, but there is no way to know if that average is distributed uniformly among all households). When the City provides a tote to a household, it is providing a service to alienate the garbage that household places in it each week, up to and including the maximum. It makes no sense to charge a $47 annual tipping fee for a 95-gallon tote, when that tote could contribute 3.12 tons of garbage each year at a tipping cost of $136.50. The City must assume that each household will deposit the maximum amount of garbage allowed by the tier it uses and assess a fee commensurate to the true and total cost of alienating that amount, whether or not the household uses that maximum amount.

C) The Variable Fee should reflect the true difference in cost between each service tier. In addition to the difference in the Tipping Fee for different amounts of garbage, each service tier should pay for the difference in truck capacity, fuel, and labor it requires to collect and alienate that garbage. For example, imagine

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[7] City of Buffalo Department of Public Works

[8] The Buffalo City Charter. The City charter allows125 lbs for the 95-gallon tier, 85 lbs for the 65-gallon tier, and 46 lbs for the 35-gallon tier. All calculations were made assuming that the tote itself accounts for 5 pounds of the maximum.

two trucks, “A” and “B”, each with a 9,500-gallon capacity and 2 laborer crew. Truck A only collects on 1st Street, all of the houses on which use the 35-gallon service tier. Truck B only collects on 2nd Street, all of the houses on which use the 95-gallon service tier. Truck A will be able to collect 271 households, while Truck B will only be able to collect 100 households. Or, if 1st Street and 2nd Street both have 2700 households, 2nd Street will need 27 trucks to collect all of its garbage, while 1st Street will only need 10. Combining the operation and maintenance cost of all 37 trucks and distributing that cost evenly among the houses of 1st and 2nd Streets is patently unfair to the households on 1st Street*. This is precisely what Buffalo does when it assesses a uniform Baseline Fee of $110.06 to every household, regardless of its service tier. The garbage fee structure should treat each service tier as if it contracted for its own collection and alienation services; i.e., its own vehicles, crew, fuel (used both in collection and alienation), etc., in addition to paying the Tipping Fee for its service tier capacity. The cost of the labor, vehicles, fuel+, and crews to collect and alienate 135,000 tons of garbage should be distributed proportionally within the each service tier offered by the City, not among all service users. Applied to the current tier structure, this would result in 65-gallon tier users paying about 85% more than 35-gallon tier users, and 95-gallon tier users paying about 170% more than 35-gallon tier users* (see Chart 2). This structure ensures that each Household is paying the true and total cost of its garbage alienation without subsidy from other service tiers that deposit less garbage; each service tier is financially self sufficient and covers the total cost of garbage alienation. This fee structure also provides a powerful incentive for Households to reduce or divert

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* It would require slightly longer for Truck A to collect its capacity (27 Houses) than it would require Truck B (10 Houses), thus requiring slightly more fuel and labor-hours. However, this difference is negligible compared to cost of a whole collection truck, as well as the tipping fee, labor, and fuel expended on alienating the garbage from the city to the follow-on landfilling or incineration contractor.

+ This includes not only the fuel for collection, but also the fuel for alienating the collected garbage from the household deposit location (curb side) to the tipping location.

* There are some costs that are largely independent of garbage volume, such as office supplies, Commissioner’s salary, building costs, etc. The cost for these fees should be distributed among all users, but this cost is makes up a small proportion of the total cost.

solid waste, as it reflects the actual difference in resource consumption between each service tier.

What Other Cities Do: Both Seattle and San Francisco charge a double Baseline Fee for their 64 and 96-gallon service tiers. While this encourages Households to reduce their garbage deposits, it does not reflect true and total resource consumption costs these tiers. San Francisco subsidizes the total Solid Waste Fee for Households at or below 160% of the poverty level.

What Buffalo Should Do: At a minimum, the fee structure needs to be revised so that all Households pay the fair rate for tipping the garbage they deposit for collection. Buffalo should strive to incorporate all costs in alienating the garbage of a given service tier into that tier's fee. Buffalo should also subsidize Households at or below 160% of the poverty level using revenue derived from recycling.

3) Household Specific Billing

For these changes to be effective, their economic influence must extend to all households in the City of Buffalo, not just to the property owners. In the absence of strong community recycling consciousness, the City of Buffalo needs to ensure that all households have the opportunity to benefit directly from reducing or diverting solid waste.

A) Landlords will be encouraged to sever the Service Tier Fee from the rent charged to the property, while still incorporating the larger Baseline Fee into the monthly rent. This way, renters may directly reduce their monthly expenses by opting for smaller garbage containers. In doing so, they also indirectly reduce their monthly expenses by contributing to the total City recycling redemption, thus making it cheaper for owners to rent out property.

Or, In the alternative

B) Property owners will be required to maintain a garbage tote for each occupiable unit on their property. Landlords will further be required to sever the tote fee (or total garbage fee) from the total rent and presumptively charge the tenants the highest capacity rate. Tenants may opt for smaller service tier capacities and thus receive a refund directly from their landlords corresponding to the difference in service tiers. This provision will be included in all residential leases executed in the City of Buffalo.

What Buffalo Should Do: A statutory scheme is preferable as it ensures that every Buffalo Household will have a garbage tote, thus eliminating the incentive for Households to decline any garbage service and simply "dump", while also allowing rental Households the opportunity to save money by choosing lower service tiers.

4) Growing the Diversion Stream: How Profit Derived from the Redemption of Recyclable Content will be Applied

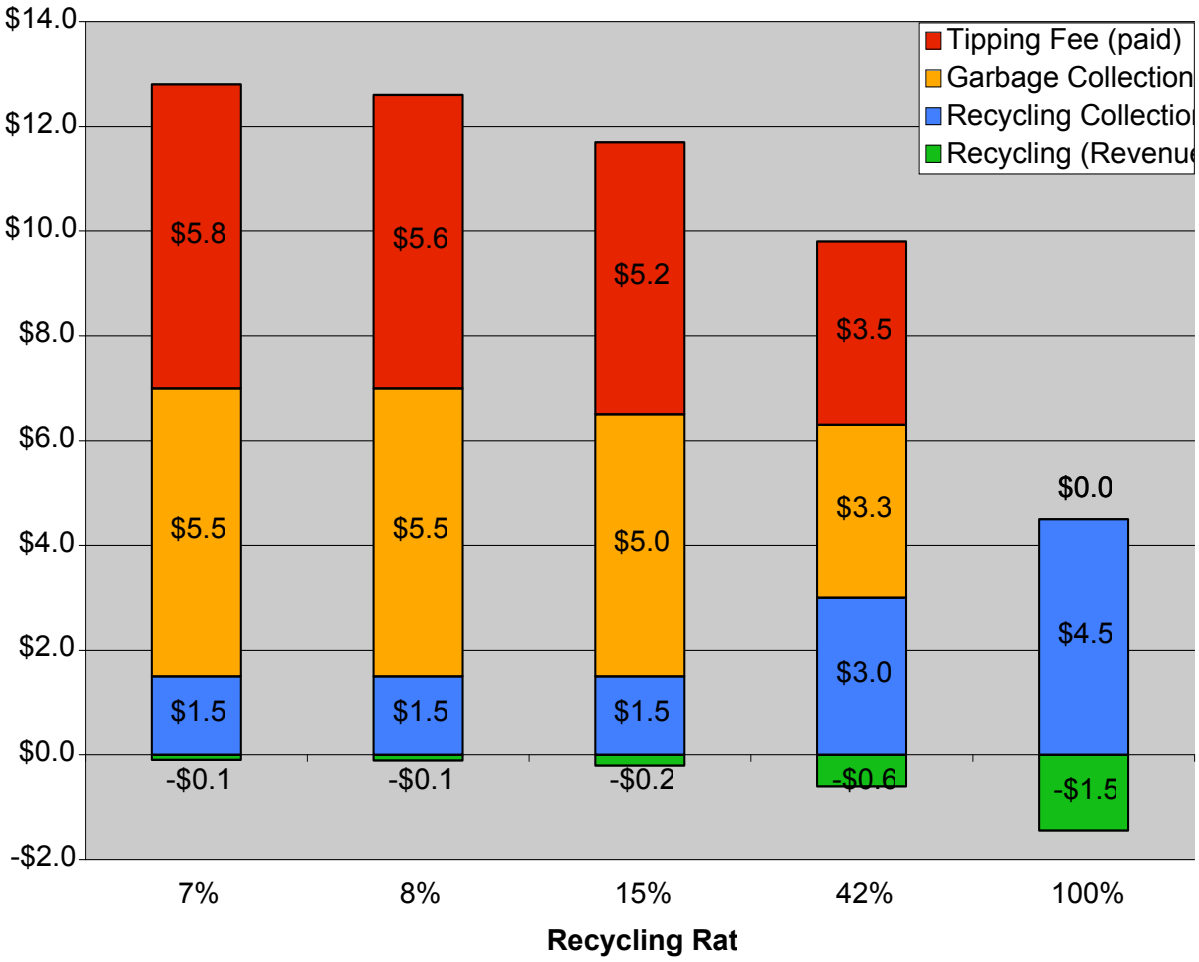
As more Households divert greater amounts of Recyclable Content from their garbage, the City can expect increased revenue from recyclable content redemption (Chart 1). Additionally, the revised tipping fee will, in all likelihood, generate more funds than required to pay the tipping cost for the garbage actually collected. These two trends will create a substantial surplus of funds available in the City's Enterprise Fund (the municipal account dedicated exclusively to solid waste management). This surplus should be used to expand the diversion stream; that is, make capital investments that allow city residents to recycle additional categories of materials, particularly those categories of

materials that constitute a typical “basket of goods” for households and offices: Resin Identification Code 1,2, and 3 containers, Compostable yard waste, mylar, and “e-waste” (discarded computer and entertainment components).

What Other Cities Have Done: San Francisco has expanded its diversion stream to include almost all categories of packaging, all yard waste, and food waste. Further, San Francisco built its own Material Recycling Facility to employ city residents.

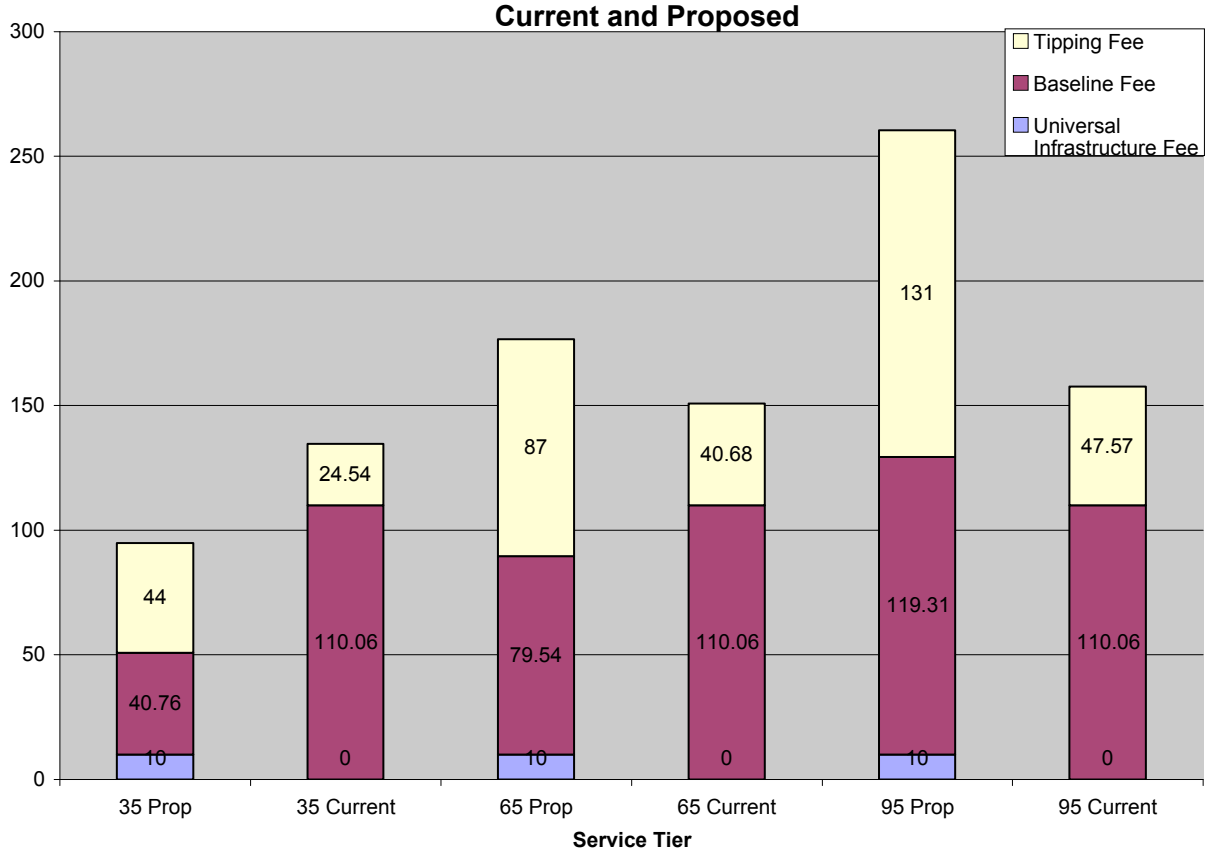
What Buffalo Should Do: Buffalo should strongly consider constructing and operating its own Material Recycling Facility. This will allow the City to expand the categories of material it can recycle, create jobs for city residents, and maximize fiscal efficiency by removing the corporate third party. The City should also help its own cause by resolving to purchase only those supplies that can be recycled. Even if the purchase cost of these supplies is higher than those supplies that are deposited into the garbage, the foregoing has shown that the cost of alienating these supplies as garbage is far more expensive than recycling them.

Chart 1: Projected Costs and Revenues at Various Recycling



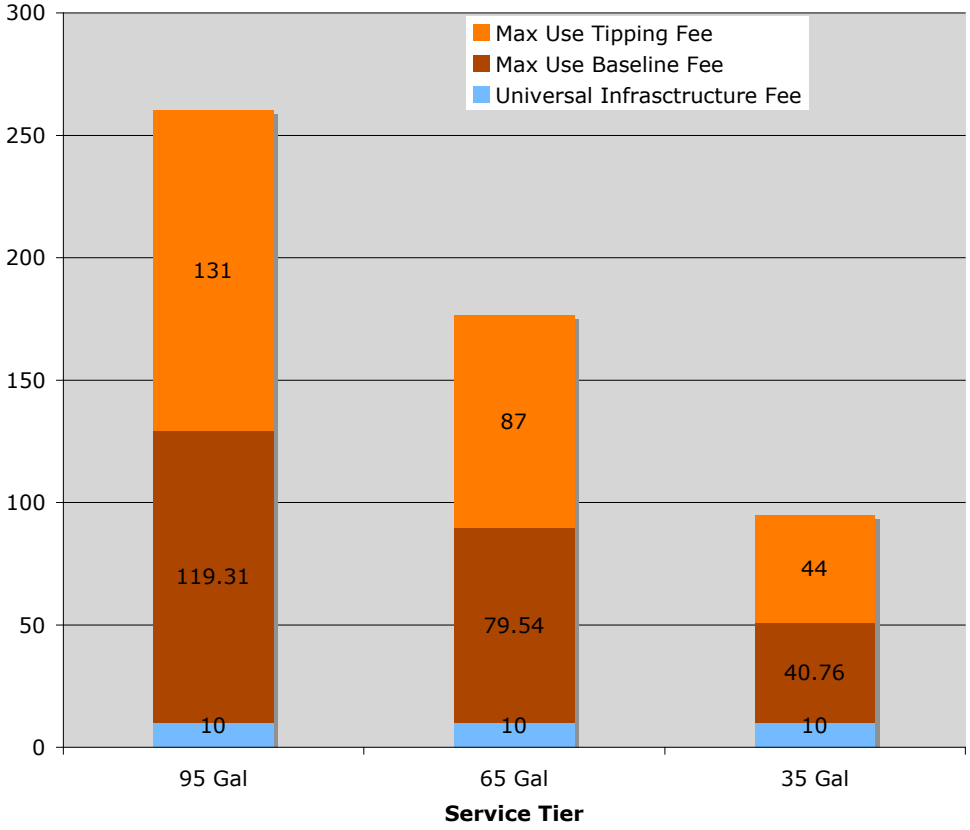
This Chart shows the projected costs and revenues using rough figures and neglecting costs that are independent of garbage volume. The cost of garbage collection, garbage tipping, and the contract for third party recycling collection all come out of the Enterprise Fund. The City's recycling contractor currently cannot recycle all material in the solid waste stream. The only way to achieve 100% diversion would be for Households to purchase only those products with packaging or residue that falls into one of the limited material categories the contractor can redeem.

Chart 2: Fee (Total and Composition) Comparison Between Service Tiers, Current and Proposed



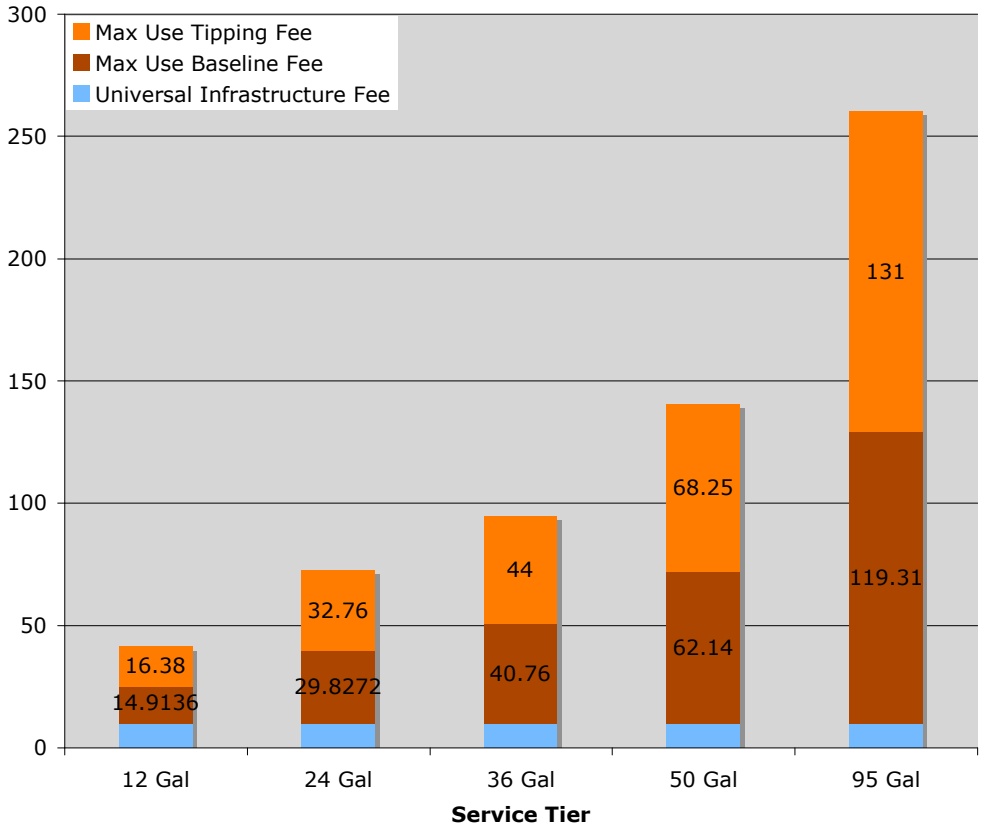
This Chart shows a side-by-side comparison of the current and proposed Fee Compositions. The current Fee Composition for each Service Tier consists of a Baseline Fee, which is supposed to pay for all solid waste collection from households and is evenly distributed among all service users, and a Tipping Fee specific to each Service Tier. Because the Baseline Fee is distributed among all users, there is very little difference in the household cost from tier to tier. The Proposed Fee Composition consists of a Universal Infrastructure Fee that covers all costs independent of household garbage production (Commissioner, administrative staff, building maintenance, etc.), a Baseline Fee that covers the cost of collection and transportation of the garbage collected from that tier, and a Tipping Fee that pays the cost of depositing the garbage at the landfill. Each Service Tier is financially self-sufficient under this Composition Structure. The disparity in total fees between the two Fee Structures illustrates the extent to which lower garbage producers subsidize higher garbage producers.

Chart 3: Revised Fee Composition by Service Tier



This Chart shows the cost disparity between the service tiers currently available to Buffalo residents if the Fee Structure was revised to reflect the true and total cost of alienating each tier's garbage.

Chart 4: Proposed Service Tiers under Revised Fee Structure



This Chart shows the cost disparity between the proposed service tiers. Each tier still pays for itself, but the smaller increments between lower capacities allows households to save money through reasonable decreases in garbage deposits (either through decreasing garbage production or increasing diversion to recycling).