

The true price of reduction, part 2

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RESOURCE
RECYCLING



The second part of this two-part article provides suggestions on how program coordinators can overcome the institutional barriers affecting the progression of a municipal recycling program.

By Robert Lange

In the first part of this article, it was explained that the collection costs associated with recycling are typically much greater than those associated with refuse collection. The differences being attributed to a recycling program's fundamental targeting of less items per household, the increased number of stops a collection vehicle must then make to make up for less at each stop, and a recycling program's general reliance upon resident compliance for capturing targeted recyclables. Although this intrinsic efficiency disparity exists between refuse and recycling collections, it is possible to lower and stabilize the cost of processing recyclables and, thereby, bring overall recycling system operating costs more in parity with current and future refuse system operating costs.

Stabilizing processing costs

Municipal managers acculturated to evaluate efficiency based solely on cost per ton are prone to see recycling as costly, especially in comparison to the efficiencies of refuse collection service. However, one area where recycling has the opportunity to level the field, or bring the two material management systems costs closer to parity, is through long-term contracting. This form of contracting insures stable and lower pricing for recyclables processing, in comparison to refuse disposal cost, and, thereby, lowers a municipal recycling system's cost per ton.

Most municipalities do not process their own recyclables, instead choosing to outsource the task. One of the goals of outsourcing is to try to stabilize annual costs and secure appropriate expertise. But, if contracts are not sufficiently long enough to allow for the ups and downs of the commodities markets, this goal will be difficult, if not impossible, to achieve.

Instead, programs with short-term contracts will suffer from the feast-or-famine syndrome, where one year they'll create an excess of revenues, only to suffer a shortfall of programmatic resources when commodity prices fall. Such dramatic changes in commodity prices, and the subsequent impacts upon programmatic costs, are frequently accompanied by attitudinal mood swings on the part of local constituencies addressing present and future program direction.

During times of high commodity prices, local advocates and legislators may call for the immediate expansion of the program. During times of poor commodity markets, local officials may decide, in the face of dwindling tax revenues and lower commodity prices, to make programmatic cuts, reductions which seriously undermine the programmatic investment made up to that point. These kinds of cuts confuse the public and compromise their goodwill toward programs that require their full cooperation to succeed. In fact, neither strategy for managing a recycling program is sustainable.

Long-term contracting for processing allows the development of contractual mechanisms between municipalities and their ven-

dors that can even out prices over time. By doing this, a municipality can ensure that a steady amount of revenue will be produced annually to help off-set program costs. For those recyclable streams that require a net tip fee per ton for processing, the amount that must be allocated is then sufficiently predictable to be budgeted annually. An annual budget need for processing can be determined by multiplying the average annual tonnage expected times the per-ton fee, further factoring in any allowed contractual adjustment for inflation.

The key to stabilizing processing costs is controlling the impact of short-term variations in commodity values. Longer contract terms can help to diminish the effects of commodity price volatility. Commodity prices, like stock prices, are unpredictable in the short term. Viewed from a broader perspective that fully takes into account the performance of commodity prices over decades, it is possible to have confidence that, when averaged out over a period of time, commodities prices provide a predictable average return. If this were not the case and if there were not scrap businesses that have traditionally organized themselves around this business model, stabilizing processing costs and revenues would not be possible. The stability of commodity prices over the long term can be used by municipal managers through long-term agreements between municipalities and their recyclables processors, to stabilize processing costs, and to take advantage of the revenue produced over the long term, in order to make up for periodic short-term market downturns.

To compensate the processor for the additional risk assumed in providing the municipality with the security and predictability needed for annual government budgeting, a municipality must also be willing to sacrifice some portion of its fair share of the total revenue generated over the contract term to its processor. It is possible to secure short-term gains of considerable magnitude by being prepared to enter and exit the market, as needed. The operators of municipal recycling programs do not have this same-day trader-like luxury, since, once a service is begun, it cannot be suspended without great difficulty, inconvenience to a number of constituencies and expense. On the other hand, a private business in partnership with a municipality (over a decade or more) can provide the municipality with stable pricing over that period of time in exchange for a greater share of the revenue produced from the

recyclables collected, when the post-consumer recyclables commodity market is highest.

Contracting for recyclables

A municipality must possess first-hand knowledge about the quantity and quality of the post-consumer recyclables it collects, especially if recyclables are to be treated as saleable commodities. While gross quantities are not difficult to determine, the composition of that gross quantity is not always available. The best way to secure that information is to perform a waste characterization study. It is important to characterize refuse and recycling at the same time and with the same methodologies. By doing this, it is possible to gain information about the individual quantities that your program is currently capturing, as well as what is still left in the trash that can potentially be redirected to recycling, with the cooperation of the public.

Waste characterization studies cost a lot of money, and not all municipalities will have the resources for such an undertaking. If the resources are not available to hire an outside consultant that specializes in conducting this kind of study, then existing resources will have to do. One way of gathering this information is to have existing processors report monthly composition information based upon incoming tons of unprocessed recyclables and outgoing tons of finished materials and residue. As a supplement to this data, municipal staff can monitor deliveries at existing processing centers and use the feedback to modify the processor's self-reported data further. As a less attractive alternative, generic data from the U.S. Environmental Protection Agency can be used as a substitute, or use the composition data from a neighboring municipality that has performed such a study and has similar housing and demographic characteristics.

In addition to the composition of the recyclables stream in your own municipality, you must also be knowledgeable about where your municipality is situated, with regard to its access to local and global markets for post-consumer recyclables, and what present infrastructure exists in your area for receiving and processing recyclables. Transportation costs can quickly diminish the post-processing net revenue. Figure 1 displays recycled paper composition for New York City.

A few other factors are important to

determine the market value of the post-consumer recyclables in the control of a municipality. For example, is the municipality subject to a state bottle bill? Is the scavenging of redeemable containers significant in the community? These can be factors in determining the value of the comingled metal, glass and plastics (MGP) stream in a municipality, particularly in urban areas. Also, to what degree does the municipality have control over contamination, a function of resident compliance, type of collection, density (heavy pedestrian traffic passing by recyclables set out for collection), and collection workers' practical ability to leave contaminated recyclables at the curb.

Determining the best solicitation mechanism for securing processing services

Municipal managers are somewhat constrained by the limitations imposed by their local officials on contracting. While each municipality will have its own procurement policies, there are certain solicitation methods that are fairly common to all municipalities, at least in their generic form. Most municipalities solicit services in one of two basic manners, either through bids or requests for proposals (RFPs). Both methods can be used to secure processing services, and each possesses both advantages and disadvantages.

Bids are very useful, but only when the formulators of the bid are knowledgeable about all aspects of the service to be delivered – specifying those details in the requirements of the bid – leaving price as the only thing to be determined. The non-negotiable aspects of a bid allow for municipalities to retain the greatest number of contractual protections usually preferred by government. However, the restrictive aspects of a bid also preclude information sharing between a municipality and the pool of potential contractors, information which could be used to better inform the future contractual relationship. In the extreme, a bid is an invitation to the potential vendor pool to simply take-it-or-leave-it; it is procurement without subtlety. The biggest downside to a bid is that, if the solicitor hasn't fully understood the market and the bid as structured is critically flawed, it may result in few or no takers for

the service.

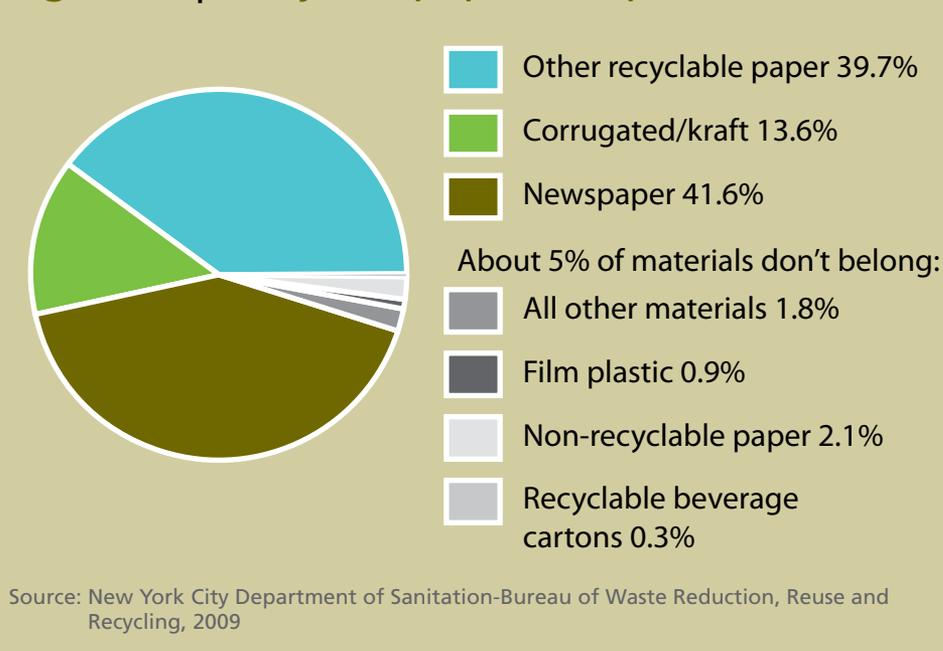
An RFP, in contrast to a bid, allows for negotiations that can be used to satisfy concerns of both parties. Government employees are not always as familiar with business concerns as the private sector. This format gives the business community an opportunity to share those concerns and educate government managers. Some of the limits of an RFP are that the process takes much longer than a bid to formulate and solicit. The time needed for contract development through a negotiation process is added to the solicitation timetable. Soliciting services through an RFP also reduces a municipality's control over pricing – negotiations can cause compromises in terms and pricing. The preparation of a response to an RFP requires more thought and planning on the part of proposers. Depending upon the vendor pool and their collective level of sophistication, this method may present challenges to competition as well.

Preferred contract structures

Whether secured through a bid or RFP, the foundation of any recyclables processing agreement must be the composition of the recyclables delivered by the municipality. Over time, the composition of recyclables is not likely to change considerably; but, the longer the contract period, the more important it is to incorporate into the agreement the flexibility to make periodic modification to the composition of the typical or average ton through composition studies initiated by either party. Payment for those subsequent studies can be born by the initiator or be paid for through internal contract resources, if structured this way in the final agreement.

To maintain objectivity and fairness for both parties, the composition of each ton must be tied to post-consumer trade publication prices that are issued biweekly or monthly. Use trade publication prices that reflect mill or finished prices – not loose material – basically post-processing commodity values. The reason to use mill prices or post-processing values is that they fully reflect the value-added price of recyclables once they have been processed and readied for market. The cost of processing by a contractor can be factored into the monthly calculation of net value, as the potential pool of contractors for the service can be required to bid or propose a per-ton dollar amount for services rendered. This

Figure 1 | Recycled paper composition



amount should reflect the potential processor's actual cost, overhead and desired profit margin per ton received.

Prices in the agreement should be calculated monthly. One means of averaging out volatility monthly is by subjecting all monthly trade publication prices to a rolling average formula that will even out the peaks and valleys of commodity prices. A three-month rolling average is adequate to successfully provide this outcome, but a longer period, such as 12 months, can be used as well.

In selecting the appropriate trade publications, care should be taken to allow some room for greater revenue sharing on the part of the contractor than is reported by the publications' listed prices, (i.e., by using more conservative published prices to compensate for market fluctuations, which may or may not be properly captured by the published values). To the extent the contractor can better the trade publication monthly prices, through his/her own marketing efforts, the excess can be retained by him/her as additional profit and, thereby, can act as a risk cushion.

Calculating the monthly value of the tons delivered

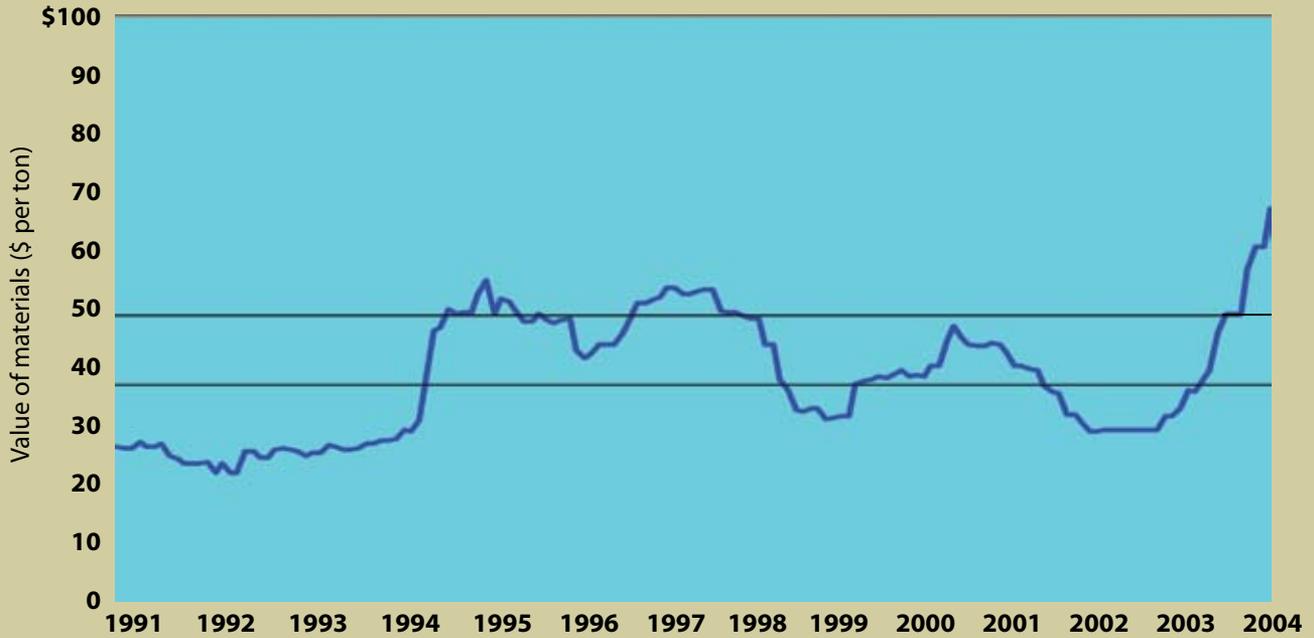
This is calculated by taking the monthly composite value of a single ton (composition percentage times the trade publication values chosen) and deducting the vendor

per-ton processing fee allowance (overhead plus profit), thus giving you the final adjusted monthly cost or revenue per ton for the municipality.

The above formula can be used in a contract to determine the final value of a ton delivered to a vendor each month after processing costs are accounted for. This value can be a positive or negative payment to or by the municipality. Next, to stabilize the monthly values within an acceptable range, it is important to set a floor-and-ceiling value for the adjusted monthly cost or revenue amount, to limit the effects of major price fluctuation on both you and the vendor. In an expense contract, such as for processing MGP, the floor price would be a per-ton price above which you would never have to pay, except when adjusted for inflation. [NYC pays to have its MGP processed due to the high percentage of glass, urban related contaminants, high degree of scavenging and local labor and operating costs].

The ceiling price would be the lowest possible cost per ton that you would ever pay, again, except when adjusted for inflation. In a revenue contract, such as for paper, the floor price would be a minimum per-ton price the municipality would be paid by the contractor, regardless of market conditions, while the ceiling price would be the maximum per-ton amount the contractor would ever have to pay the municipality in a single month. The floor price for paper guarantees a municipality a constant revenue stream over the life of the

Figure 2 | Stabilizing commodity prices



Source: New York City Department of Sanitation-Bureau of Waste Reduction, Reuse and Recycling, 2005

contract, while the ceiling price guarantees the contractor that short-term precipitous climbs in commodity prices will not result in an immediate payout to the municipality, but will, instead, be preserved within the confines of the agreement, to a degree, to help offset losses when commodity prices once again fall.

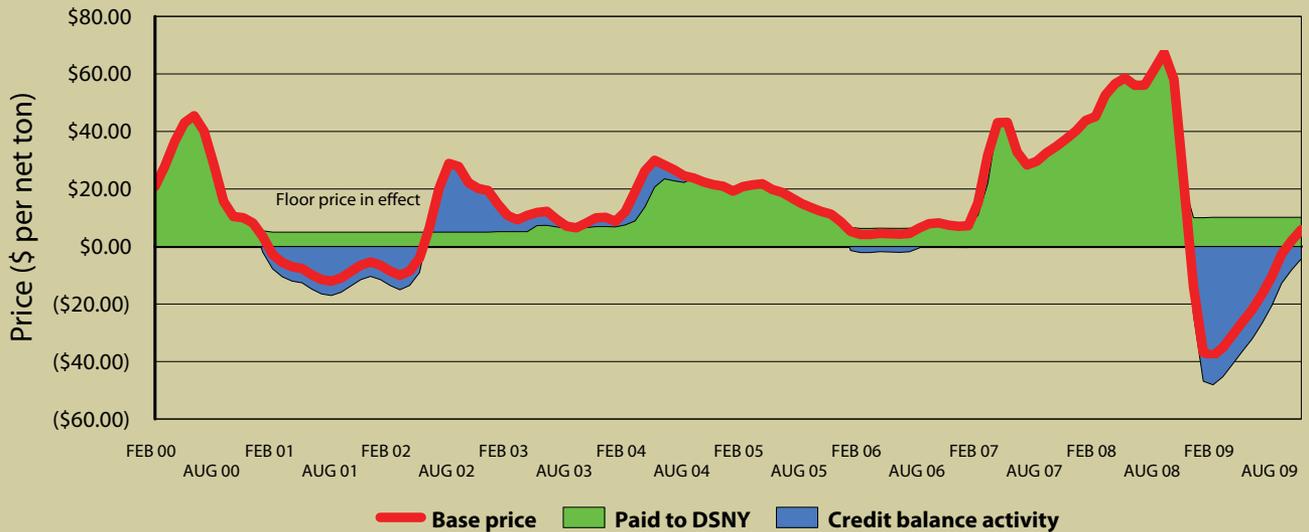
The floor and ceiling prices keep prices or costs within a reasonable range for both parties. When the monthly value

of a ton falls outside the floor and ceiling amount, either below the floor or above the ceiling amount, credits are generated within the contract that can be redeemed by the credited party when prices or values again fall within the acceptable stable range (Figure 2).

In a paper contract, where the commodities values collectively insure that a revenue-only contract can be established by the municipality, monthly values below

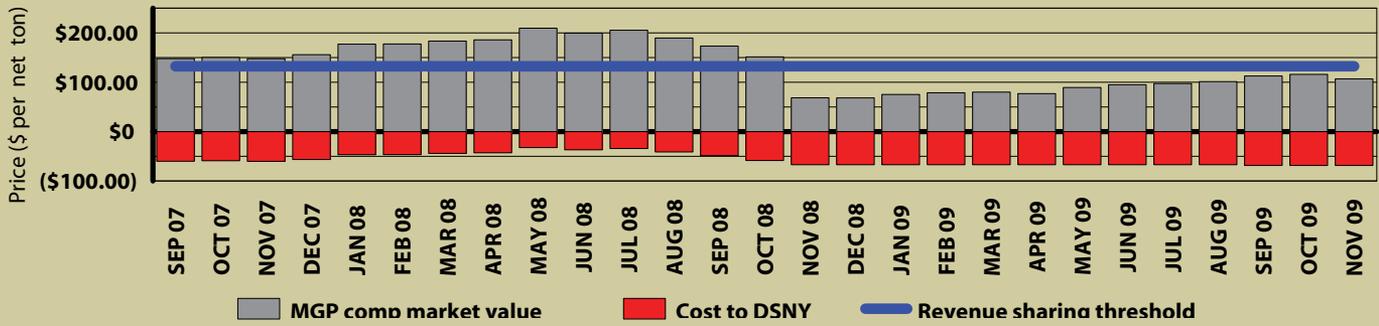
the floor result in a credit to the contractor that equals the absolute difference between the floor price (contractor must pay per ton to the municipality) and the contractually-calculated value of the ton in that month. This amount is paid back to the contractor, per ton, in a month when the monthly value of a ton again rises above the floor price. When the monthly value of a ton rises above the ceiling price, the municipality is credited the per-ton

Figure 3 | Recovered paper pricing, from start of contract to date



Source: New York City Department of Sanitation-Bureau of Waste Reduction, Reuse and Recycling, 2009

Figure 4 | Effect of MGP revenue sharing (according to DSNY contract with Sims Municipal Recycling of New York)*



* Contract start: January 1, 2009

Source: New York City Department of Sanitation-Bureau of Waste Reduction, Reuse and Recycling, 2009

difference between the ceiling price and the per-ton value that month above the ceiling price. This amount is to be paid back to the municipality, per ton, in a month when the value of a ton again falls between the ceiling and the floor price (Figure 3).

In an expense contract, where the composite value of the commingled recyclables collected and delivered to the vendor are not sufficient to fully offset the cost of processing, thus returning the municipality a revenue amount, the set up is much the same. However, the numbers will all remain negative to reflect the fact the municipality will always pay – sometimes more, sometimes less – depending upon the composite value of the recyclables collected in any particular month, as determined by the trade publications chosen for that purpose. In other words, the floor, ceiling and actual amount paid each month will be set in negative numbers (Figure 4).

How NYC applied this approach

Beginning in the mid-1990s, the Department of Sanitation’s (DSNY) Bureau of Waste Prevention, Reuse and Recycling began structuring its contracts with its recyclables processors using the above described structure. The first such arrangement was a long-term mixed paper supply agreement with Pratt Industries of Australia. Sanitation’s supply agreement with Pratt was the linchpin in an arrangement brokered by the city’s Economic Development Corporation for Pratt subsidiary, Visy Paper New York Inc., to build a linerboard mill on Staten Island and accept paper directly from city collection vehicles, unprocessed.

The original agreement with Pratt was for 20 years, but has since been extended by another 10 years to continue for up to 30 years. The agreement is a revenue arrangement, meaning the DSNY is only paid and will never pay. From 1997 to present, that contract has paid the city a minimum of \$10 for every ton delivered, equaling a grand total of \$47,213,290.

In early 2000, the department issued two citywide bulk metal recovery contracts that have a term of up to 20 years, both of which were awarded to Hugo Neu Schnitzer East (subsequently Sims). One contract is for the removal, by the contractor, of bulk metal, while the other is for the acceptance of deliveries of bulk metal by sanitation personnel. Both are revenue-only arrangements. The removal contract had a minimum floor price payment to DSNY of \$15 per ton removed, and the acceptance contract had a minimum floor of \$30 per ton accepted. From 2000 to present, the two contracts have produced a combined \$4,918,276.

In early 2000, the department also issued a solicitation structured, as previously described, for the acceptance by processing contractors of mixed paper directly from DSNY collection vehicles. The solicitation resulted in the award of five individual contracts, two with local processing companies linked to mills, with initial floor prices of \$5 per ton. That figure would later be raised, by mutual agreement, to \$10 per ton. The group of contracts, which are all structured as revenue-only contracts, have a term of up to 20 years. Those collective awards, through present day, have generated \$34,114,721 in revenue.

Finally, in September 2008, the de-

partment awarded a 20-to-40 year contract to Sims Municipal Recycling of New York, LLC to construct a materials recovery facility for processing all of the city’s MGP, and a portion of the mixed paper collected by sanitation (the arrangement is described in greater detail in “One small step for NYC, one giant leap for recycling,” found in the November 2009 issue of Resource Recycling). While the paper portion is structured to always return a stream of revenue to the city, the MGP portion, because of both the large percentage of mixed cullet in the city’s composite mix and the reduction in aluminum caused by bottle bill scavenging, is a net cost, per ton, to the department; but, when commodity prices are high, in any particular month, the increase in value is applied as an offset to the monthly per-ton fee amount for that month’s tonnage.

What we’ve learned

While collection costs, per ton, for recyclables in NYC remain high, and will no doubt remain that way due to the intrinsic challenges described in the beginning of this article, processing costs have been stabilized and revenues from the sale of recyclables have been maximized. While the net cost, per ton, for recycling is still higher than that for simply disposing of refuse, the net or systemic per-ton cost for recycling is slowly approaching that of disposal.

As raw materials again increase in price, and post-consumer commodities as substitutes for raw materials gain in value, system costs will come closer to approaching parity. If disposal costs continue to

rise, it is expected the short-term dip in disposal costs presently being experienced as a result of the recession aside, it is expected that over time recycling system costs will be both competitive and perhaps less costly than refuse system costs. Once achieved, I have no doubt that cost parity will herald in a new phase in recycling infrastructure investment. **RR**

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