

Chapter 2

MODERN HISTORY OF NYC RECYCLING

New York City's recycling program shares many characteristics with programs in other U.S. cities. As in most places, residents actively participate in sorting and setting out paper, metal, glass, and plastic, which are collected at curbside and brought to private recycling plants for processing.

Yet there are other ways in which New York stands out. The City manages collection through a municipal workforce, paid for out of the City's budget. Unlike most large municipalities, New York continues to use manual-loading collection trucks, instead of semi-automated or fully automated vehicles. And New Yorkers put refuse and recycling out in bags or their own bins, rather than standard-issue carts that many jurisdictions use (often in conjunction with automated collection).

Why does New York City have this particular recycling program profile? The program we know today is a product of choices made during the early years of "modern" recycling in the City. To envision NYC's waste-management future, it is important to take a close look at this history; it is full of lessons.

"Modern" Recycling Comes to New York

In 1970, the Environmental Action Coalition, the nonprofit group that organized New York's first Earth Day, introduced "modern" recycling to New York City.¹ In contrast to earlier practices of recovery and reuse of waste materials out of economic necessity, modern recycling reflected a growing, popular response to what was then perceived as a massive and mounting waste crisis.

The decades after World War II saw a skyrocketing of waste generation, both in absolute terms and per capita. Some of this increase was due to the explosive increase in disposable food and beverage containers, as well as excess packaging. As early as the 1950s, producers discovered that doing away with the deposit and refill system for bottled drinks—and adding layers of wrapping, sealing, and boxes—increased the marketability of products and hence profits (Photo 2-1). Overall, the volume and mass of materials produced, sold, and consumed increased in absolute terms. This was driven by the economy's need to expand and, according to some, a change in culture and lifestyle that impelled Americans towards consumption and disposal as a way of life.

Photo 2-1

"No Deposit, No Return" bottles, introduced in the 1950s, offered convenience but had a major impact on litter and solid waste.



Throughout the 1970s and into the 1980s, local recycling centers took hold in cities across the nation, offering sites where residents could drop off paper, metal, and sometimes glass—but there were few municipally run recycling programs. NYC had its own community-based redemption centers, some of which paid money for recyclables based on their market value. Others operated as volunteer drop-off points, with proceeds going to the neighborhood groups that organized and ran them. At that time, New York State had not enacted the Bottle Bill, so revenues from redemption came from contracts set up with buyers of secondary materials. In the early 1970s, this arrangement looked promising. Markets for metal and paper were quite strong, and the centers generated small amounts of revenue. But by the mid-1970s, the bottom had dropped out of metal and paper markets. Hefty government subsidies made up for the losses in revenue that these centers experienced.

Instability of paper markets also explained why DSNY's first experiment with curbside newspaper collection lasted only briefly, from 1970 to 1973. Working in collaboration with nonprofit groups, DSNY set up voluntary programs for newsprint curbside collection in Queens, Manhattan, and Staten Island. At first, the venture was able to cover its costs. But by 1974, the price of paper was so depressed that paper processors did not renew their contracts, and the program was shelved. Community recycling centers limped along after that, educating the public about recycling, but yielding little in the way of revenue or overall waste reduction.

By the late 1980s, there was broad consensus nationwide that dwindling landfill space was creating serious problems for disposal. Although a number of waste historians have since shown that the national perception of "landfill crisis" was unfounded, New York City's unusual geography and density indicated that it faced serious capacity challenges for its waste.²

At that time, there were still some incinerators in operation in the City. Local officials, as well as some environmental groups, looked to waste-to-energy as a promising disposal solution. Planning began for a large facility to be sited at the Brooklyn Navy Yard that would take up to half of the City's residential refuse. But incineration was vociferously opposed by other groups. As part of their protest, organizations like the Natural Resources Defense Council (NRDC) demanded that the administration seriously look into recycling as a counterpart—if not an alternative—to energy recovery. Around this time, New York State enacted the 1988 Solid Waste Management Act, which required all municipalities to establish local recycling programs. It was in this context that DSNY began the planning process for a citywide recycling program.

Establishing the Citywide Recycling Program

The Fall of 1986 saw the City's first experiments with curbside recycling collection since the 1970s. DSNY started a pilot program to collect and recycle newspaper, a commodity that was plentiful in the waste stream and for which a market already existed. A voluntary newspaper-only program was launched that year in Community Board 2 in Manhattan. The following summer, each borough had a single-district, newspaper pilot project (Photos 2-2 and 2-3).

In 1987, the Department proposed a citywide recycling program that would add metal, glass, and plastic containers to the newspaper already collected. The Sanitation Commissioner at the time, Brendan Sexton, instructed the DSNY's Office of Operations Planning, Evaluation and Control (OPEC) to outline a set of program priorities, activities, and timetables. In January 1988, OPEC responded with a white paper entitled *New York City Recycling Strategy*. Commissioner Steven Polan succeeded Sexton, and in 1991 issued a follow-up *Preliminary Recycling Plan* reporting on the City's progress. In 1992, the Department released a *Comprehensive Solid Waste Management Plan*, which contained extensive reporting, analysis, and planning for each element of

the City's recycling program. (The CD that accompanies this report contains PDF files of each of these documents.)

During these early years of the recycling program, the Department reviewed various program-design options with an eye toward organizing recycling in a cost-effective and efficient, yet realistic, manner (Table 2-1, page 46). In doing so, it faced a number of questions still debated by recycling programs everywhere:

- Which materials should be designated for recycling?
- Should participation be voluntary or required by law?
- What is the most optimal way for residents to sort, separate, and set out recyclables?
- What kind of trucks should be used?
- Should the Department build and/or operate its own materials-recovery facilities, or rely on private processors?
- Were there enough local private processors to take the recyclables that would be collected?

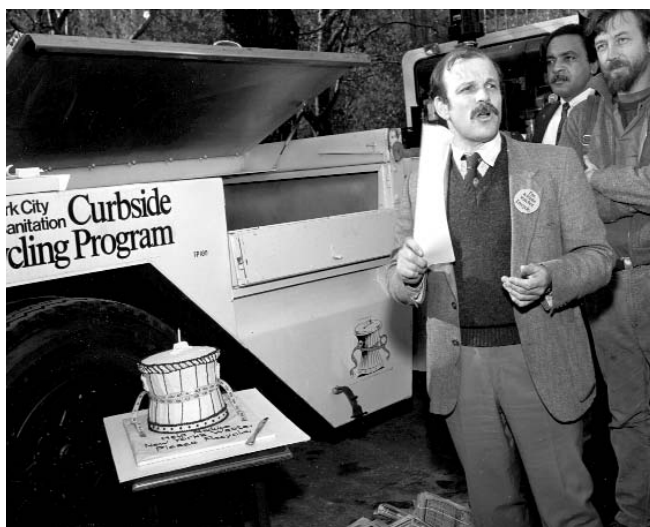
Photo 2-2

In 1986, the Department began a pilot newspaper-recycling program with trucks that look very different than those used today.



Photo 2-3

Brendan Sexton, then Commissioner of the NYC Department of Sanitation, launches curbside newspaper recycling in front of City Hall, November 1987.



Overall, the Department's goal was "to give high priority to [recycling] materials whose removal provides economic, operational, or environmental benefits to other disposal methods,"³ and to do so in a manner that made sense operationally and financially. How to achieve this goal, however, was anything but self-evident.

Which Materials Should Be Designated for Recycling?

From the outset, it was clear that secondary materials markets would constrain and guide the design of NYC's recycling program. As the Department put it, the decision about what to recycle "hinges largely on the interrelationship between the quantities of various recyclable components in the waste stream and the

Table 2-1
Program-Design Options

Number of sort categories (for generators)				
Many				None
← > 4	4	3	2	1 →
Materials designation				
Expansive				Restrictive
← "Wet/Dry"	"High-Quality Recyclables"	-	"High-Market-Value Recyclables"	→
Container type				
← Rigid/dedicated	Plastic/paper bags		No separate container	→
Number of trucks/collection rounds				
← > 4	4	3	2	1 →
Type of collection truck				
Non-compacting				Compacting
← Multi compartments			Single compartment	→
Automated loading		Semi-automated		Manual loading
Type of collection system				
← Curbside	Containerized	Buy-back	Drop-off (staffed or not-staffed)	→
Type of processing facility				
Materials-recovery facility to handle multiple, segregated waste streams		Materials-recovery facility to handle a single, commingled waste stream		Mixed-waste-recovery facility for mixed refuse
Source: 1992 Solid Waste Management Plan for New York City, page 8-8.				

potential 'value' of those materials in the secondary stream."⁴ At that time, planners considered "market demand the single greatest limitation to recycling."⁵

In 1988, both regional and export demand for post-consumer recycled paper and metal was modest—but there was a long historical precedent for recycling these materials; scrap metal and paper dealers had traded in commercial discards for years. To a certain extent, this was true for color-sorted glass as well.

Recycled plastics markets, in contrast, were fledgling and tentative, but there was an expectation that capacity would mature as recycling became more entrenched. This would be aided by the fact that an easily identifiable subfraction of plastics—namely bottles and jugs—were being manufactured from HDPE and PET, two of the more easily recyclable resins. In the eyes of the public, plastics were "high profile" because of their relative newness and their non-biodegradability. Although they represented a small fraction of the waste stream at the time, they were exceptionally unsightly and long-lived (Photo 2-4).

Another criterion DSNY used to designate materials is no longer relevant to waste management, but was important at the time—combustibility. In the late 1980s, the City expected to use energy recovery (i.e., burning waste as fuel) as a disposal option for the future. It recognized that if energy-recovery facilities were to be built, it would be advantageous to remove “non-combustibles” such as glass, metal, household bulk, dirt, rubble, and asphalt from refuse to increase the heat yield of garbage. In addition, many in the environmental community were concerned about the risks involved with incinerating plastics. Since that time, incineration has ceased to be considered in waste-reduction planning

in NYC. But such considerations did at the time drive the identification of glass, plastic, metal, and construction and demolition waste as advantageous to divert from the waste stream.

Photo 2-4

Early on, NYC’s recycling program targeted plastic bottles and jugs. Since most plastic bottles and jugs are composed of HDPE and PET plastics, they are more easily recycled than other kinds of plastics.



The existence or expectation of markets, combustibility, and sheer momentum (most cities included paper, metal, glass, and HDPE/PET plastics in their recycling programs) drove the Department’s choice of materials to designate for recycling in 1988. New Yorkers would recycle two groups of materials: paper (newspapers, magazines, and corrugated cardboard) and MGP (metal cans, aluminum foil wrap and trays, glass bottles and jars, and plastic bottles and jugs).

The City’s waste stream was unparalleled in size, and as the program began there was a great deal of concern that if the recycling program overloaded the marketplace with materials, prices would fall. As the Department observed, “the potential availability of recyclable materials, if the entire Northeast region embarks on collection programs, is larger than the current capacity of markets to absorb them.”⁶ Its 1988 white paper on recycling strategy warned that “paper and metal markets will be inundated at a time when growth in both industries is highly dependent on export sales.”⁷ If that happened, recycling could end up bankrupting itself before it even got started. This did not ultimately take place, but the problem of market volatility and material gluts would continue to pose serious challenges, even as the industry matured in NYC and nationwide.

Should Recycling Be Mandatory?

Although the Department had achieved good voluntary participation in its pilot programs, comparative research at the time suggested that “voluntary programs peak at a lower and less consistent level of participation which will not achieve long-term savings.”⁸ It was clear that “a Citywide mandatory policy would involve the entire population, create awareness and peer pressure and foster the marshaling of the combined resources of all City agencies and community organizations.”⁹ Consequently, the Department recommended that recycling be made mandatory.

The plans outlined in the 1988 White Paper laid the groundwork for New York City's first recycling law, Local Law 19, which passed in early 1989 (Photo 2-5). The law made recycling mandatory, and set an effective 25-percent mandate for solid-waste recycling in NYC, to be achieved by 1995.¹⁰ It called on the Sanitation Commissioner to conduct further "study of existing markets for processing and purchasing recyclable materials, and the steps necessary to expand these markets."¹¹ As part of this, DSNY was directed to work jointly with NYC Economic Development Corporation to improve market conditions for recycling in the City by attracting processors with tax incentives, loans, and other inducements.

Local Law 19 also laid out a research agenda. It required the Department to analyze the generation rate and materials composition of residential, institutional, and commercial waste streams. Other provisions directed the Department to undertake public education about recycling, and established a framework for citizens' Solid Waste Advisory Boards. The Law called on the Department to draft commercial regulations that would require private carters to source-separate recyclables. It also required DSNY to establish and fund buy-back/drop-off centers in each borough as a supplement to curbside collection—a venture that, for reasons outlined below, proved costly and inefficient, and was ultimately discontinued.¹²

How Should Residents Sort and Set Out Their Recyclables?

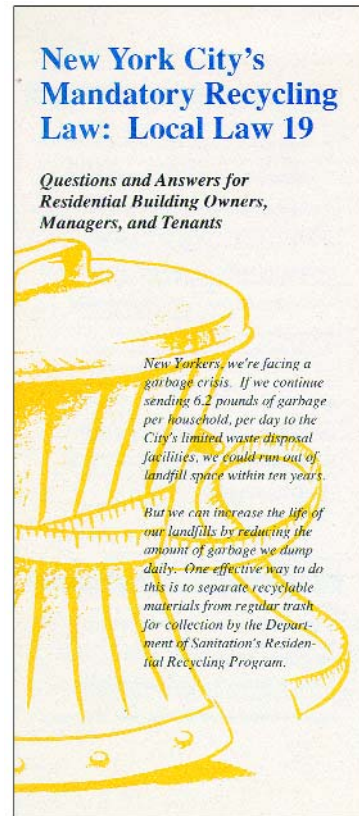
Almost two decades of experimentation with municipal recycling programs nationwide had proved that under drop-off schemes, "it is harder to get and sustain participation and consequently the tonnage collected is usually much lower than that from direct collection."¹³ Curbside collection, in contrast, could bring in large tonnages in short periods of time, a clear gain in efficiency.

Redemption centers, also known as buy-back centers, had to rely on contracts with scrap dealers that "traditionally impose[d] minimum quantities and quality controls" that routinely exceeded the actual supply and condition of dropped-off materials.¹⁴ As a result, most "successful" buy-back centers for residential recycling lost money, and needed to be heavily subsidized by local government. Their alternative—voluntary drop-off centers—recovered only a tiny fraction of the recyclables in the waste stream. The time and effort to haul recyclables to a center, especially in New York City where many people do not own cars, meant that only devoted citizens with lots of spare time, energy, and transportation capacity would drop off recyclables. Moreover, both buy-back and drop-off centers would reduce curbside collection efficiency, requiring the Department to essentially pay twice for each ton collected through this method.

Because of the high expense involved, the Department ceased supporting buy-back centers in 1995 and concentrated on implementing the curbside program citywide.

Photo 2-5

To help New Yorkers understand New York City's mandatory recycling law, the Department issued this pamphlet in 1990.

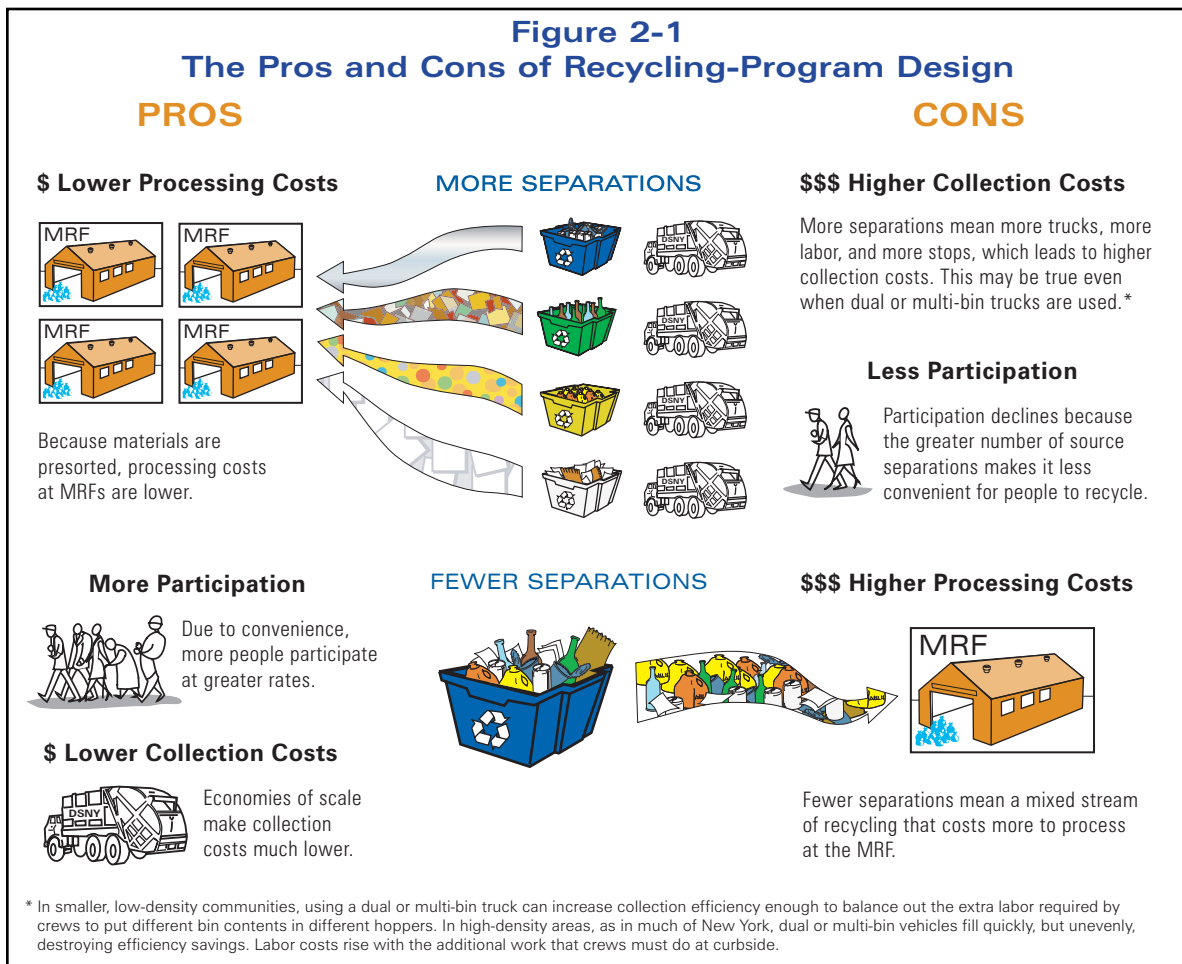


Under a curbside collection scheme, a crucial question would be how actively residents would have to sort recyclables from trash, a process known as “source separation.” This was a complicated matter. As Department analysts put it:

In simplistic terms, the higher the degree of source separation, the lower the level of public participation/diversion, the higher the collection costs, the lower the processing costs, the higher the market revenue. In other words, there are offsetting costs and benefits that tend to cancel each other out.¹⁵

As this quotation and Figure 2-1 illustrate, a municipality faces distinct pros and cons with regard to the number of recyclable material separations it requires of residents. Increasing the number of separations (i.e., the number of recycling bins/bags each resident will need to use for designated materials) can significantly reduce material-processing costs, but will result in higher collection costs and lower public participation. Conversely, reducing the number of material separations can increase participation and lower collection costs, but will lead to more expensive processing fees.

In the late 1980s, the Department could look to a wide range of program designs in operation across the country (and internationally) for ideas about how best to coordinate this program aspect. A few municipalities collected all trash and recyclables together, requiring no extra work on the part of the resident. Later, at the materials-recovery facility, metal, glass, plastic, and paper would be recovered through a combination of electrical, magnetic, and manual methods.



Other municipal programs required residents to place all recyclables into one “blue bag,” collected along with regular trash bags in a single truck, and sorted after tipping. These were perhaps the most convenient recycling arrangements for residents.

More burdensome were programs that required residents to sort recycling at home into two or more categories. In some places, residents sorted material into “wet” and “dry” fractions to be collected separately. Municipalities sorted the dry fractions for recycling recovery, and disposed of, or (in rare cases) composted, the wet fractions. Other localities employed “multi-material separation,” with residents sorting paper, cardboard, metal, glass, and plastic into many separate categories, each in its own bin or bag. Still others designated “MGP” as one group and paper/cardboard as another. As planners at the Department noted,

Between the two ends of the recycling spectrum [i.e., no separation and multi-material separation] lie decisions about how best to segregate and collect the targeted materials, which in turn drive decisions about the appropriate intermediate processing steps that are required to prepare the materials for their respective end-users.¹⁶

In New York, requiring people to participate (or risk a fine) would bring with it responsibilities. Participation couldn’t be so burdensome that it would unfairly tax residents’ time and labor. Yet there were vast advantages in having residents do some source separation at home. Scenarios like single-stream recycling, mixed-waste processing, and to a lesser extent, wet/dry separation, were rarely in use at that time. Research on them showed contamination of recyclables with unusable waste products, higher labor costs (due to the extra work needed to sort recyclables from each other and from contaminants), and a much lower quality yield. Separating paper from MGP was a more proven method of maximizing the value of collected materials.

Moreover, with over 70 percent of the City’s housing units in apartment buildings (five or more units), there was also the question of the division of labor and responsibility among residents, superintendents, and building owners. Was it fair to fine owners or supers if residents failed to comply with the law? And how could non-complying residents be identified anyway? This problem, unique to multi-unit buildings, presented a conundrum.

Factoring in burdens to residents, supers, and owners; collection costs; and the costs for post-collection separation and processing, the Department recommended the collection of designated metal, glass, and plastic containers in one stream; and newspapers, magazines, and corrugated cardboard in a second. Refuse would constitute a third, separate stream. This arrangement was set forth over other options because of the high costs and/or low quality of recovered recyclables associated with alternatives. As the Department put it in 1988, “this method of collection strikes a balance between easy participation and collection and easy separation and processing.”¹⁷

How Often Should Recyclables Be Collected and What Type of Trucks Should Be Used?

In addition to how residents would set out their recyclables was the issue of how often these recyclables would be collected, which would have direct bearing on the cost efficiency of the program. Each additional collection would bring with it labor, fuel, and maintenance costs. Picking up recycling weekly would be popular with residents, but would quickly drive up expenses, and increase local truck traffic on already busy streets. Less frequent collection avoided these ills, but meant that residents would have to store recyclables for days or weeks at home.

The Department consequently faced three options: (1) the “substitution [of a recycling collection] for one regular collection” one day per week; (2) the addition of one recycling collection per week on top of regular collection; and (3) the concurrent collection of refuse with recycling using three-bin trucks. A comparison of collection costs and benefits at the time calculated the first option as most cost-effective, but concluded that a mix of strategies would probably have to be used, given the variation in housing density among the city’s diverse neighborhoods.¹⁸ Throughout most of the 1990s, garbage was collected two or three times per week, while recycling was collected weekly or biweekly (every other week). However, in 1999 citizen pressure led to the implementation of weekly recycling collection in all 59 districts of the City (a service that, due to the City’s fiscal crisis, was suspended in July 2003, and resumed again in April 2004).

Another issue in designing the program was the choice of trucks. Then, as now, there were many varieties of “garbage truck,” each of which had different advantages and drawbacks when used in conjunction with recyclables collection. Trucks could have one, two, or several separate compartments. They might be compacting or non-compacting. Compacting refuse is widely practiced because it increases collection efficiency by allowing more material to be loaded into a single truck. But compacting recyclables entailed problems—broken glass, squashed cans, and mangled plastic bottles (frequently with contents still in them) made for a messy recyclables stream. Another decision was whether to stick with the manual trucks the Department was using (which required workers to toss bin contents and bags directly into hoppers) or to switch to automated collection vehicles that helped crews to lift, tip, and replace standard-issue containers.

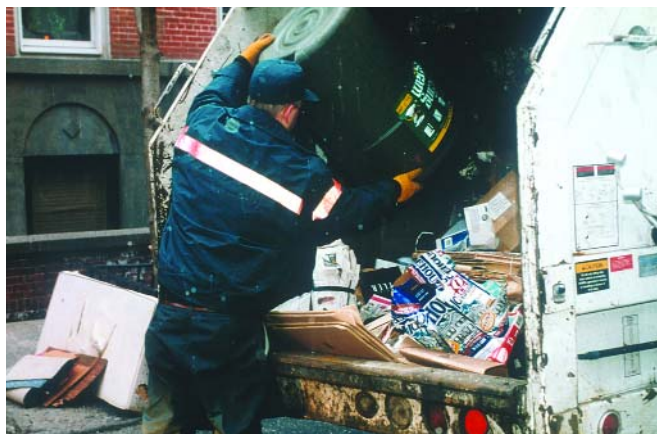
The 1992 *Comprehensive Solid Waste Management Plan* noted that “In New York City, the use of large-capacity trucks with compacting capability is essential for an efficient citywide recyclables collection system.”¹⁹ “Efficiency” here meant minimum labor hours, fuel gallons, vehicle wear, and air/noise pollution per unit volume of refuse collected. Of course, compacting would entail problems of glass breakage, but the Department observed that “collection cost-savings far outweigh any added processing costs or lost material revenues.”²⁰ And manual trucks would be essential, since automated collection could only work if residents used standard-issue bins and where there was no street parking.

The infeasibility of distributing and maintaining the use of millions of carts argued against automated collection. Automation would also require keeping cars off streets on collection days. This would be highly disruptive to city motorists, especially as DSNY’s street-sweepers operate on a far different schedule than curbside collection, and automation would require a second set of alternate-street parking rules to make way for refuse and recycling trucks.

So the Department decided to collect recyclables using compacting, single-bin, manual rear-loaders (Photo 2-6), with future research to be conducted on dual- and three-bin trucks. Dual-bin trucks were eventually introduced in over half of the City’s sanitation districts.

Photo 2-6

In order to efficiently collect recyclables on busy city streets, the Department of Sanitation decided to use rear-loading trucks that compacted recyclables.



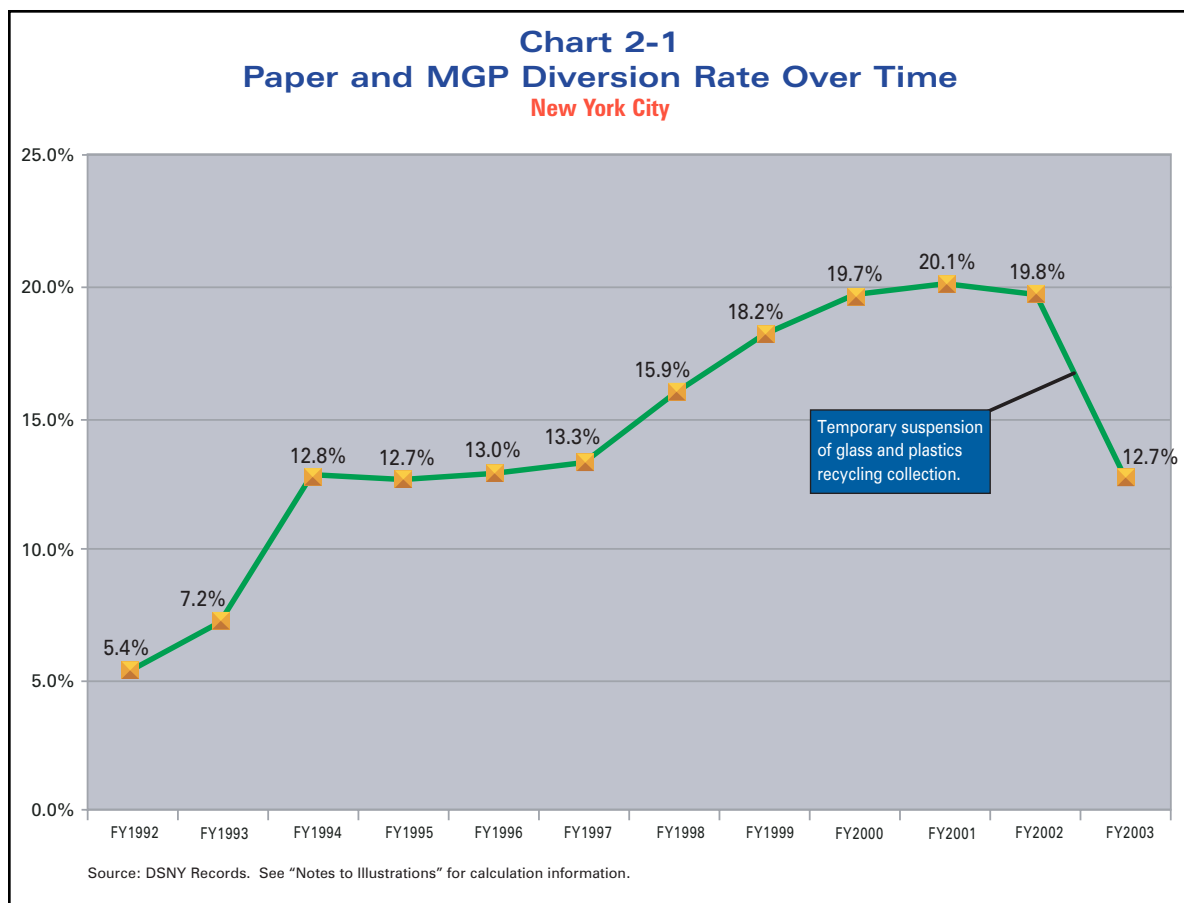
Recycling Becomes a Way of Life for New Yorkers

The challenges related to organizing the program and getting residents to participate would continue throughout the 1990s, but would be eventually worked out with repeated waves of public education (see Appendix IV for more information on NYC's public information efforts about recycling), standardization of requirements throughout the five boroughs, and uniform collection frequency citywide.

In 1991, when 40 out of 59 community districts, or over two million households, were receiving curbside/containerized recycling collection service, the diversion rate was six percent. Although New Yorkers did not generate the tonnages mandated in Local Law 19 by the specified deadlines, over the rest of the decade, the diversion rate would slowly climb, reaching 20 percent by the turn of the century (Chart 2-1).

Survey research of tens of thousands of New Yorkers confirmed that by the late 1990s, the Department's public education efforts were well received and making slow but steady progress in explaining the fundamentals of the program. Details of these efforts are reported in *NYC Recycles!*, and *Recycling, What Do New Yorkers Think?* available on the Department's website.

Moreover, as will be discussed in greater detail in the next chapter, the attainment of a 20 percent diversion rate in 2000 was consistent with rates achieved for *metal, glass, plastic, and paper* recycling in nearly every other U.S. city, including Seattle and San Francisco. What's more, 20 percent diversion represents an above-average diversion rate for multi-unit recycling nationwide. The diversion rate, in short, reflected what the surveys measured: recycling was becoming a "way of life" for New Yorkers.



Processing Recyclables: Early Problems

Not As Easy As Expected

In contrast to the relatively easy task of promoting resident participation, finding the capacity to accept thousands of tons of recyclables each day posed complex challenges. The assumption of the authors of Local Law 19 had been, “if you collect it, they will come.” “They” would be recycling processors willing to pay the City enough per ton to make recycling cost-effective. In mandating tonnages that the Department had to collect, the City Council presupposed that these processors were out there. This was not entirely true. As the DSNY wrote in 1991:

...the underlying premise of many public recycling programs—including New York City’s—has been that if a supply of recyclables is created, investment dollars will flow to manufacturing facilities and processes that utilize recyclables. However, the validity of this premise is a function of comparative manufacturing costs and revenues generated.²¹

Nonetheless, among politicians, environmental advocates, and citizens groups, there were high expectations that New York City’s size and clout would have a massive impact on market conditions, and would make recycling here very profitable. John Schall, a visiting professor at Yale University who consulted on the City’s new solid-waste-management plan, summed up the mood of optimism.

Scale is everything in this kind of program, and this will have the biggest scale you ever saw. In one stroke you will be able to educate everyone the same way, and you will send a strong message to mills and recycling plants that New York has resources that no other city can possibly compete with. That can turn the city into the world center of recycling.²²

To many observers it seemed only natural that processors would seize on the opportunity NYC offered: thousands of tons of recyclables every day. But to DSNY, there was reason to be cautious against leaping to the conclusion that either capacity or markets would develop quickly:

The City has only limited opportunities to speed the development of recycling markets. While the private investment decisions necessary to productively utilize recyclables can be motivated at the margin by local incentives, they are more fundamentally based upon the relative costs structures between recyclables and virgin materials, historical biases and federal tax preferences toward new materials, and prevailing economic conditions.²³

The economic viability of recycling was complicated by the very real possibility that New York’s massive waste stream would overwhelm fledgling secondary markets, driving prices paid for recycled materials down as supply flooded in. In a 1991 Recycling Plan update, the Department warned that the City would have to lose money on recycling before markets stabilized, writing, “the City must be prepared to bear increased marketing costs for the foreseeable future.”²⁴ And it prepared New Yorkers for the fact that there would be a time lag between recycling program success and the development of facilities to process what is collected. Yet the Commissioner at the time remained hopeful that, with time, markets would develop and processing capacity would be established in New York City. “Based on what we know to date...it is possible, even probable, that with time and experience, these costs will decrease.”²⁵

Limits to Private-Sector Processing

As soon as the recycling program went into effect, DSNY established contracts with private paper processors already at work in the New York area for paper processing, paying roughly \$27 per ton in 1990 dollars (the equivalent of \$37 today) for processing, with no revenue in return. Most of the MGP processing was carried out under agreements with a handful of private MRFs in Newark, New Jersey and Westbury, Long Island. In these cases, the Department paid a \$40 to \$60 per ton processing fee, forgoing any revenue-sharing.²⁶

In the existing private recycling sector in the City in the late 1980s and early 1990s, firms dealing with paper and scrap metal were far better established than those processing other materials. The reason was historical precedent (Photo 2-7). Throughout the U.S., businesses that generated large quantities of used paper and cardboard, as well as scrap metal, had always sold these materials to dealers. Recycling of these materials, while not considered an environmental policy, had been practiced within the paper and metal industries since they began.

What was new in the 1970s and 80s was that residents were getting into the act on a far larger scale than the occasional newspaper or can drive for charity, or the limited drop-off of recyclables at the local recycling center. The now-growing stream of newspaper, magazines, cardboard, and cans that residents participating in curbside recycling would contribute was still very much like the materials that these processors had been collecting for years. No major revamping of recycling facilities for them was necessary. So as long as prices held up, paper- and scrap-metal-recycling capacity was there.

Similarly, recycled glass had in the past enjoyed a strong reuse industry, with refillable bottles standard for milk, beer, and soda. With the advent of disposable cans and bottles in the 1950s and 60s, the practice of refilling had declined to almost nil (Photos 2-8 and 2-9). In the late 1980s, some glass recycling was still taking place, but it depended on clean, presorted feedstock. Given the fact that virgin glass was relatively inexpensive to

Photo 2-7

Left: A scrap-metal dealer in the 1930s inspects the household items and machine parts he has collected for scrap. Right: A New York City “junk man,” circa 1920, with a load of paper for recovery.



Photo 2-8

Below: A milk delivery man handing a man a crate of milk bottles, 1929. Refillable bottles such as these were widely used at that time. Right: Bottles that were not collected as part of deliveries were redeemable for a deposit, as indicated in this 1932 Canada Dry ad from the *Los Angeles Times*.



**BRING BACK
YOUR CANADA DRY
BOTTLES**

A cash refund is now made on all Canada Dry bottles
returned. This new policy enables you to enjoy The
Champagne of Ginger Ales at even lower cost than before

Even now you can enjoy Canada Dry—The Champagne of Ginger Ales—at new low prices! You can bring back your bottles and get a refund on them. This really means that now you pay only for the contents, if you return an empty bottle every time you buy another. At an extra cost, you can enjoy all the sparkling flavor and charm of The Champagne of Ginger Ales. For at these new low prices Canada Dry costs no more than ordinary ginger ale.

A few months ago, this two-bottle-refund policy was started in the East. It was such a success that Canada Dry now is extending it so rapidly as possible to other cities. Buy the large size and the regular 12-ounce size by the case. Then you will always have it on hand when friends call.

NEW (CONTENTS) PRICES

LARGE SIZE 20¢ Plus 5¢ refundable bottle deposit (12-ounce)	REGULAR SIZE 2 for 25¢ Plus 5¢ refundable deposit per bottle (6-ounce)
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(“BOTTLES RETURNED” IN SOME PLACES FOR SODA, BEER, OR OTHER SPECIAL SERVICES)

NOTE: These “refund” prices are effective in Los Angeles and immediate vicinity only. It is hoped that they can be extended everywhere in the near future.

CANADA DRY
THE CHAMPAGNE OF GINGER ALES

produce, this meant that glass recyclers relied on industrial scrap glass, commercial glass, and a small amount of presorted consumer glass from drop-off centers.²⁷

Plastics recycling, even in 1991, was more a concept than a practice—with unproven technologies and few processors. NYC’s first drop-off centers, for instance, accepted only metal, paper, and glass—the same was true of many programs throughout the country in the 1970s and 1980s.²⁸ As late as 1987 industry analysts observed that:

Plastic recycling is in a relatively early stage of development compared with other materials for several reasons. Substances like aluminum, glass and steel have been used by industry much longer, and reclamation for these technologies are more advanced. The volume of plastics used to make bottles and other containers also is still considerably smaller than the more traditional materials, and the recycling of plastics consequently lags far behind.²⁹

Photo 2-9

By the late 1950s, deposit bottles were replaced by “no deposit, no return” cans which were considered more convenient.



Like glass, existing plastics recycling largely targeted clean, presorted streams (from sources like restaurants or bottle-bill redemptions)—not the commingled residential MGP that needed extensive processing.

Yet while there were industries for recycling separate streams of paper, metal, glass, and plastic, in the early 1990s, what had not developed was an industry for sorting and processing commingled metal, glass, and plastic recycling collected from residents in one stream. Scrap-metal dealers, glass-recovery firms, and plastics recyclers did not have experience sorting discarded, metal, food or beverages containers from plastics and glass, nor were they prepared for the putrescible materials in this stream that had to be cleaned and disposed of after processing. These firms were interested in metal, glass, and plastic in the MGP stream, but only after such materials were sorted out, cleaned, and baled.

One method for the City to gain some control in this situation was to develop its own processing capacity. If it could ensure that facilities within New York City would reliably accept its recyclables day in and day out, and share any resulting profits, the City could proceed to build its program with more confidence than if it relied completely on the willingness of private firms to come forward.

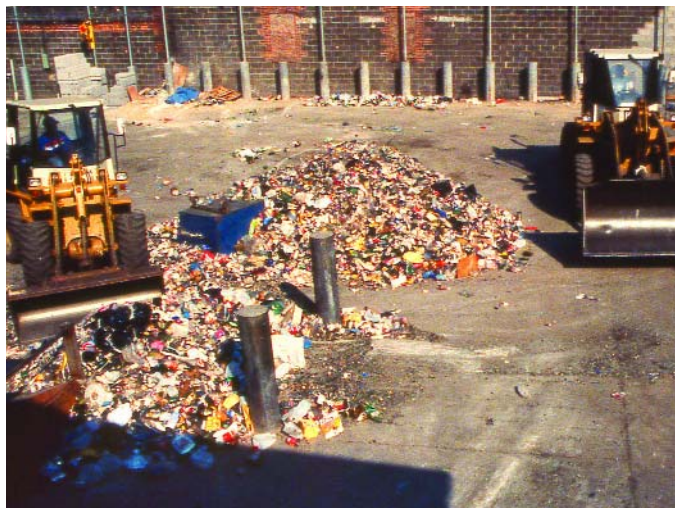
City MRFs

In the late 1980s, the Department had to face the fact that “New York City has no private sector separation facilities for commingled [i.e., MGP] residential recycling.”³⁰ While newspaper processors had operations in and around New York, it looked as if the City itself would have to construct processing facilities, or at least transfer stations, for commingled metal, glass, and plastic.

It was not surprising, given this scenario, that the City in the early 1990s viewed publicly owned facilities as an integral part of New York City’s recycling future. The Department’s first public MRF project was an Intermediate Processing Center (IPC) in East Harlem, which it constructed and operated under contract with Resource Recovery Systems, Inc. The Center, located at 242 East 128th Street, opened in 1988 with a processing capacity of 20 tons per day (Photos 2-10 and 2-11). Within a year, the plant was handling around 120 tpd running

Photo 2-10

Exterior shots of the East Harlem Intermediate Processing Center show its small layout.



multiple shifts. The Department paid processing costs and any additional operating costs of the facility, and was entitled to receive a portion of any revenue the company made from the marketing of sorted and baled materials.

The mix of private and public arrangements were, for the time being, enough to handle the City's MGP recyclables stream. But more capacity, and more favorable economics, would soon be needed. In a 1990 interview with the *New York Times*, then Commissioner Steven Polan called the lack of processing capacity "the single most significant hurdle" for the recycling program, saying that "the success of the department's short- and long-term plans depends upon the availability of sufficient public and private processing capacity as well as markets for the materials."³¹

In response, Polan outlined plans to construct several additional public MRFs. These would be owned, financed, and overseen by DSNY, though constructed and operated under contract to private sector firms. The first two would be sited in Staten Island and Brooklyn. In the long run, it was anticipated that the City would need "as many as ten large-scale processing facilities to accommodate the tonnage" of expanding recycling programs—at least five of which would be City-owned.³²

Despite the existing availability of private processors for paper, it made sense for the City to consider taking over portions of this business along with MGP processing. Much would be gained by "developing new facilities to sort, bale and transport our newspaper directly to paper mills, rather than relying solely on short-term contracts with intermediate brokers."³³ The volatile paper market, at a dismal low in 1990, had made this necessity clear—the City paid dealers as much as \$27 a ton to take paper at that time.³⁴ And the Department

Photo 2-11

Interior shots of the East Harlem IPC, showing the rudimentary sort technology in use in the early 1990s.



declared that “Sanitation has defined the development of newspaper de-inking capacity as its highest market development priority.”³⁵

DSNY began considering the construction of an MRF at Fresh Kills in 1990. By early 1992, it had issued a Request For Expressions of Interest (RFEI), to which a number of firms responded with plans for large processing facilities. The 1992 *Comprehensive Solid Waste Management Plan* reiterated the pressing need for a public recycling facility to serve sanitation districts in southwest Brooklyn and Staten Island, noting that it would be essential to have capacity to process both MGP and paper, as well as for the manual color-sorting of glass. An RFP followed, and the Department selected Resource Recovery Systems of Connecticut as the builder/operator. Plans for construction continued through 1993, and the Department applied to the NYS Department of Environmental Conservation to fund half of the \$17.5 million price tag for capital costs. It was estimated that if a 300-ton-per-day capacity were achieved, processing would run the City \$39.70 per ton with an additional \$11.30 per ton in capital costs over twenty years. Revenues, in turn, would generate about \$21.73 per ton, for an overall net cost per ton of around \$29. And if capacity were increased to 600 tpd (which would raise capital costs to \$20 million), this net cost would fall to only \$16 per ton, due to economies of scale.³⁶

Despite the envisioned efficiencies, fiscal constraints in 1994 caused the project to be downsized. This was based on the observation that when transportation costs were figured into a 300-tpd facility, utilizing private MRFs for Brooklyn’s recyclables was shown to be more cost-efficient than shipping them to a city facility in Staten Island (Table 2-2).

In addition, Staten Island Borough President Guy Molinari—at that point deeply engaged in the local fight to close the Fresh Kills landfill—voiced objections to the transport of any additional out-of-borough waste to Staten Island. As a result, the scope was reduced to a smaller, Staten-Island-only project. Yet just at that time plans for Visy’s paper-only MRF, also to be located in Staten Island, began to take shape. In order to secure the Visy plant, the city agreed to supply it with Staten Island paper, meaning that the envisioned MRF’s scope would be further curtailed. At that point, the economies of the system could not be worked out. By the end of 1994, the project was officially cancelled.

The vision of a system of public MRFs also started to come under fire by the business community. In 1993, the private recycling industry, organized under the aegis of the New York/New Jersey Coalition of Recycling

Table 2-2
1994 Cost Comparison Between
Proposed Staten Island MRF and Existing Private MRFs

Sanitation districts served	Tons per day	Proposed Staten Island MRF		Existing Private MRFs	
		Cost per ton	Total	Cost per ton	Total
Staten Island districts	180	\$74	\$13,320	\$102	\$18,360
5 Brooklyn districts	220	\$91	\$20,020	\$ 52	\$11,440
Total	400		\$33,340		\$29,800

Source: Internal DSNY calculation, July 11, 1994.

Enterprises, started publicly challenging the “\$125 million city program to build five publicly owned centers in five boroughs.”³⁷ Asserting that their own MRFs were running below capacity, they sought to block DSNY’s requests for capital funds in the City Council. DSNY responded that “city-owned plants would handle more sophisticated sorting and separating, cost less to operate, process more materials more efficiently, and stimulate the sagging market for recyclables,” and would also cut down on transportation costs for DSNY trucks.³⁸ The Coalition, joined by the Chamber of Commerce, countered that “instead of spending tax dollars, the City should merely set the regulatory standards and let the free market reign.”³⁹ The position of environmental groups was neutral. As NYPIRG put it, “we have no preference...we just want to get (recycling) done.”⁴⁰

In May of 1994, the East Harlem IPC was permanently closed. At that point six years old, the facility was considered costly and obsolete, with very high per-ton processing costs. The Times noted that “the decision came as a blow to community leaders in East Harlem who had lobbied for city, state and Federal money to build the plant in 1985 as a public-private partnership.”⁴¹ It didn’t help that 1994 was experiencing a very poor recyclables market, with “recycling centers across the country...backed up with empty plastic soda bottles, glass containers, cans, and newspapers.”⁴² Manufacturers were, in fact, finding it cheaper to buy raw materials than recycled ones.⁴³

Glassphalt: A Public Outlet for Glass

In contrast to the aborted efforts to build public MRFs, there existed for a time a public arrangement for using sorted glass that worked well. The problem of glass breakage and contamination was seen early on in the recycling program, leading recycling industry executives to complain that “the city is now mixing glass, plastics and aluminum cans...a process that breaks and contaminates the glass, making it less valuable than it could be.”⁴⁴ But as the 1992 *Comprehensive Solid Waste Management Plan* pointed out, extensive testing by DSNY had confirmed that “only compacting trucks are feasible for New York City. Non-compacting trucks...are unduly inefficient and expensive.”⁴⁵ What was needed was to find a beneficial use for the mixed cullet in the form it was collected. Fortunately, soon after the recycling program went into effect, the Department of Transportation (DOT) began accepting glass from firms contracting with DSNY, using it to produce glassphalt at its Brooklyn facility (Photo 2-12). Further demand for mixed, broken glass was created by new City requirements for paving contracts, which required bidding firms to use mixed cullet in their road material.

The DOT had mixed success using the cullet. Asphalt production is a science; to make paving that can be applied correctly and will stand up to sustained use requires achieving the right mix of stone aggregate and asphalt concrete (AC, commonly known as “tar”). Although pretty to look at in the finished product,

Photo 2-12

The NYC Department of Transportation produces asphalt at its Hamilton Avenue plant in Brooklyn. Prior to 1997, the plant used the glass collected through the City’s recycling program to produce “glassphalt.”



glass as a substitute for stone aggregate can be inferior, especially if the size of the cullet shards is larger than a quarter inch, which it frequently was in the early days of the recycling program (Photo 2-13). Tar does not adhere as well to glass as it does to stone, leading to premature disintegration of the glassphalt roadway.

Some of these problems were alleviated when the DOT imposed more stringent crushing specifications on DSNY contractors. But these specifications, and the additional processing cost associated with achieving them, led the contractors to deliver cullet inconsistently (crushing it when they could, and at times seeking other outlets for it as aggregate outside the City). The resulting fluctuation in deliveries meant that DOT had to store large stockpiles of cullet in some periods, and ran low on others.

Despite these problems, the use of cullet in asphalt production might have continued had several events not transpired to make recycling *asphalt* (as opposed to glass) a priority. The first was the DOT's increasing need to tear up streets before repaving them, since repeated applications of new asphalt over the years had moved the street level closer and closer to the level of the curb. The work that ensued led to a surge in millings that the DOT would have to use or dispose of in some way. The second development was improved asphalt recycling technology, so that as much as 40 percent of the aggregate-tar mix could be substituted with millings, which are also known as Recycled Asphalt Product (or RAP) (Photo 2-14). The DOT's Brooklyn Asphalt Plant underwent redesign between 1994 and 1997 to install the new technology, and became a major outlet for the large surplus of stockpiled asphalt at sites throughout the City, and the steady stream of new millings from ongoing road work.

While this was taking place, the City decided to, and began to, close the Fresh Kills landfill. This effectively eliminated a cheap disposal outlet for excess millings, both as waste and for use as temporary road-building material for access to the active face. These developments, in conjunction with the quality problems and uneven supply that the DOT had experienced in the past, led to its decision to stop using cullet in

Photo 2-13

During the mid-1990s, many of the City's streets sparkled with bits of glass. But there were problems with the quality of this material.



Photo 2-14

A pile of Recycled Asphalt Product (RAP), waiting to be crushed and screened for reuse in new asphalt production by the NYC Department of Transportation.



production. Ironically, the coming of asphalt recycling meant the downfall of mixed-cullet recycling, with processors now looking to end-uses for cullet, such as drainage and alternative daily cover at landfills outside the City. Today, the DOT recycles 160,000 tons of RAP per year through new asphalt production, and delivers another 270,000 tons of asphalt and millings per year to DSNY for use in surfacing projects at its various facilities.

Early Initiatives to Develop Private Capacity to Process NYC Recyclables

While the City pursued the idea of public MRFs, the Department still considered it essential to supplement City resources with more and better private capacity, brought about through the restructuring of contracts. In 1990, the Department noted:

...the city is offering short-term contracts to processors [of MGP] but this makes it harder for processors to participate. Many do not have the capacity to handle the amount of material the city is generating, and without longer term contracts, they have little incentive to invest in the extra equipment for such daily loads.⁴⁶

Private firms, especially those that used recycled materials as inputs to production, would have different goals and constraints than a public MRF. For one, since their bottom line was profit in a competitive and fluctuating market, their focus would be on guaranteed supply and consistency of input, much like any other type of manufacturing. This would create both opportunities and challenges, as the Department remarked:

We know that end users of secondary materials prefer certain materials specifications and guaranteed long-term supplies, particularly if large capital investments on their part are required in order to expand capacity. Our goal must be to develop ways to respond effectively to those needs.⁴⁷

Promoting Recycling Through Economic Development

Developing private capacity also presented the possibility of stimulating industries that combined manufacture with processing. If firms that accepted residential recyclables could use them to produce products on site, this would keep economic benefits within the City in the form of lower costs for DSNY, as well as jobs and tax revenues. In theory at least, keeping secondary inputs local would result in local environmental benefits—less truck transport, lower energy use, and reduced emissions (provided the industries supplanted local virgin production).

To bring this about, it was widely believed at the time that the City's direct intervention in the market as a buyer of recycled products would play a significant role in creating demand. A 1991 Department statement advocated "increase local usage of recycled materials, through expansion of traditional City procurement techniques to encompass a broader range of materials (e.g., plastic wood for a variety of products) and through the development of nontraditional "markets" (e.g., using compost for landfill cover and for reclaiming degraded areas), as in the past we have developed 'glassphalt.'"⁴⁸ In this scenario, hopes were high that if the City could mobilize its massive purchasing power and need for material goods, facilities and markets would follow.

In addition, in the early 1990s the Department also expected that policy implementations at the federal level would consolidate demand for recyclables nationwide. Recycled-content legislation, product-use bans, preferential procurement policies, taxes on virgin materials, and product-labeling requirements, were among the

initiatives that the Department considered promising. In fact, the DSNY's 1992 *Comprehensive Solid Waste Management Plan* explicitly called on the federal government to pursue the development of national recycling markets within the context of the Resource Conservation and Recovery Act (RCRA), the major piece of federal legislation governing solid-waste management. The Department voiced its strong support for Bill S. 976, an initiative designed to "establish annual recycling utilization rates for manufacturers, importers, and distributors of packaging and paper products," so as to create demand for products throughout the country.⁴⁹ None of these initiatives, however, ultimately passed.

In early 1992, Emily Lloyd replaced Steve Polan as commissioner. Lloyd had an extensive public sector background in local economic development. Her tenure coincided with the most intense period of interest and work in this area the City would see in the 1990s and beyond. Lloyd spearheaded a focused project to develop recycling business infrastructure, with the goal of "using more of New York's solid waste materials to make products locally, instead of sending the separated trash to recycling plants around the country."⁵⁰

In late 1992, Mayor David Dinkins created a task force to promote economic development for recycling industries, led by the NYC Economic Development Corporation President and a business advisory council. He also established an Interagency Task Force chaired by a Deputy Mayor to "coordinate the work of city agencies involved in recycling and economic development."⁵¹ Together, their charge was to:

... lure recycling plants... find large, cheap plots of land; counter high operating costs; change public-sector purchasing policies; improve the quality of recyclable materials; find the right markets; and speed up the city's time-consuming approval process.⁵²

In 1992 and 1993, there was a great deal of activity on this front. The City sponsored three conferences to bring together recycling industry representatives and public officials. The Empire State Development Corporation published "Pipeline," a bimonthly report of all recycling-related companies who had sought public assistance to locate in NYC. There was talk of developing a recycling industry development council to coordinate information, navigate city bureaucracy, identify joint-venture opportunities, and secure a dedicated source of low-cost energy from New York Power Authority.

The NYC Economic Development Corporation sponsored a report proposing a recycling industrial park at Bush Terminal, Brooklyn, to take advantage of the stream of processed recyclables that the City's MRF would provide.⁵³ On the private side, local firms (most of them in the paper-recycling or garbage-hauling business) were gearing up for increased capacity. Star Recycling of Brooklyn was expanding and upgrading equipment, Brooklyn's Waste Management of New York (not affiliated with Waste Management, Inc.) was "busy buying up buildings in the Williamsburg section."⁵⁴ New national players like Browning-Ferris Industries and Waste Management, Inc. (WMI) were "moving to take advantage of the growth," consolidating the foothold they had gained in the commercial sector in the wake of Mayor Giuliani's crackdown on corruption among trade waste carters.⁵⁵

At the state level, the Office of Recycling Market Development (ORMD) funded several feasibility studies of recycling options in the New York area. Several involved the Community Development Organization Bronx 2000, which was at that time sponsoring the R2B2—a facility handling deposit plastics, wood pallets, and other recyclable materials from clean (i.e., not residential curbside) waste streams. Between 1992 and 1993, ORMD made several small grants to the organization to study disposable diaper recycling and dry-cell battery reconditioning, neither of which proved to be workable environmentally and financially.

1993 Task Force Report

One of the Task Force's most visible accomplishments was a 1993 report conducted by NYU's Urban Research Center and Appleseed, a nonprofit economic development group (Photo 2-15).

The work, entitled "Exploring Economic Opportunities in Recycling," outlined a bold vision of "a new blue-collar industry...that could generate up to 4,000 new jobs"⁵⁶ in New York, reinfusing the City with an economic vitality that decades of deindustrialization had eroded. (A pdf copy of this work can be found on the CD issued with this report.) The City's massive size meant a concentration of supply of recyclables and (for some products) a concentration of demand for recycled products. In addition, its concentration of marketing and distribution networks could, under the right conditions, provide opportunities for either vertical or horizontal integration of processors and manufacturers.⁵⁷

But the report's authors also acknowledged the disadvantages of NYC as an industrial location. Costs were substantially higher for land, construction, electricity, labor, and living expenses than almost anywhere else in the country. NYC's density meant extremely strict restrictions on air and water emissions. Permitting and city contracting requirements were complicated and discouraging, especially in light of "new land use planning and development procedures that have dispersed governmental authority more widely among independently elected and appointed officials."⁵⁸ This made risking venture capital in the already volatile recycling market an even more precarious undertaking.

In contrast to the naive "if you collect it, they will come" approach, the NYU Report provided a sophisticated analysis of the kinds of economic development that could realistically be expected to emerge in New York City. It noted that "while the collection of secondary materials is inherently a local activity, there is no guarantee that the expansion of sorting and consolidation facilities will occur within the city's boundaries."⁵⁹ In the authors' opinion, established secondary materials industries would in general not be likely to locate in New York, since "there may be opportunities to increase their consumption of recycled material; but there is no reason to expect that this would either increase the demand for their product or alter existing patterns of production."⁶⁰ Overall, the report noted that "industry is much more likely to grow through incremental capacity expansion at existing plants [elsewhere], and there is no existing [recycling] production base within the city from which the industry could grow."⁶¹

There were, however, some potential exceptions to this tendency. The first was in newsprint production, which could operate at smaller scales than virgin mills and had a natural balance of local supply (readers) and demand (newspapers). A second possibility was the manufacture of plastic "intermediate goods" (processed recycled plastics that can be used in product manufacturing, such as plastic pellets) from recycled plastic bottles. In part because of the lack of development in the industry, plastics processors and manufacturers—in theory—could operate on the small scale needed to survive in New York's dense environment.

Photo 2-15

This report, issued by NYU's Urban Research Center and Appleseed, presented one of the best analyses of NYC's potential for recycling economic development. (A pdf version of the NYU report can be found on the CD accompanying this report.)



In general, the NYU report stressed the “importance of small and mid-sized companies already doing business here as a prime resource in the development of recycling-related industries in New York.”⁶² These companies were used to the adversities of a NYC location, among which was “the city’s difficult business environment.”⁶³ Such businesses had learned to cope with “fragmented government and public bureaucracies whose priorities are (often necessarily) shaped by the needs and demands other than those of the business community.”⁶⁴ They knew that communities tended to challenge firms operating in “older, densely-developed neighborhoods where attitudes towards [recycling] operations, and to the possibility of expansion, are at best ambivalent, especially where their operations generate noise, dust and truck traffic.”⁶⁵ And they were at least somewhat prepared for local opposition to any facility associated with garbage, even environmentally friendly recycling plants. The reality of public opinion was such, noted the report, that “even those recyclers that do not produce such noxious effects can suffer from association in the minds of many citizens and public officials with the ‘garbage’ business.”⁶⁶

In this regard, the 1993 NYU report advocated including community-based economic development organizations to the fullest in the siting and planning process. It also identified small segments of the waste stream (such as textiles and household appliances) that community organizations might collect separately from the other recycling, for low-tech processing. It encouraged the City to think about recycled-product procurement not only in terms of content, but also in terms of New York City content, recommending that it “permit limited sole-source procurement of locally manufactured products.”⁶⁷ And it suggested that the City might also consider developing “pre-packaged” industrial sites before firms chose to locate—to avoid the Environmental Impact Statement (EIS), Uniform Land Use Review Procedures (ULURP), and other approval procedures that would delay new facility start-ups. Finally, it stressed the importance of offering more stable and predictable City contracts to processors already laboring under difficult circumstances.

The authors of the report concluded by reminding the Task Force that the next step was theirs. Although the NYU scholars had identified opportunities for recycling-related development, and made broad suggestions about the shaping of waste-management and economic-development policy, they left it up to the Task Force to follow up with specific recommendations for legislative, regulatory, and administrative action. Over the coming years, New York City, and New York State, would struggle to develop recycling markets—and local remanufacturing would not, by and large, develop as an outlet for NYC’s commingled recyclables. An examination of some successes and failures in this area of economic development shows why.

City Procurement of Plastic Products with NYC Content

In 1990, Utility Plastics Corporation of Brooklyn received a \$400,000 start-up loan from the State Urban Development Corporation, and another \$500,000 from the Empire State Development Corporation to develop a facility that would transform recycled plastic bottles into traffic cones and police barricades. The plant was completed for a total of \$3.6 million, \$1 million of which came from the primary shareholder, Brooklyn Union Gas. At the time, the idea of using recycled plastic from New York City residents to make products for City procurement looked like a promising avenue for recycling economic development. The media and the community received the facility enthusiastically:

...the Chairman of Brooklyn Union Gas Co. is betting his company’s money on a new manufacturing venture that could put more than 100 people back to work in the drug-ridden East New York section of Brooklyn. The company is perhaps one whose time has come....Sales could eventually reach \$2.5 million. More important than the size of this venture, however, is its significance to Brooklyn and the

rest of the city. New York has lost 161,000 manufacturing jobs in the last decade. This is a small step toward reversing that trend.⁶⁸

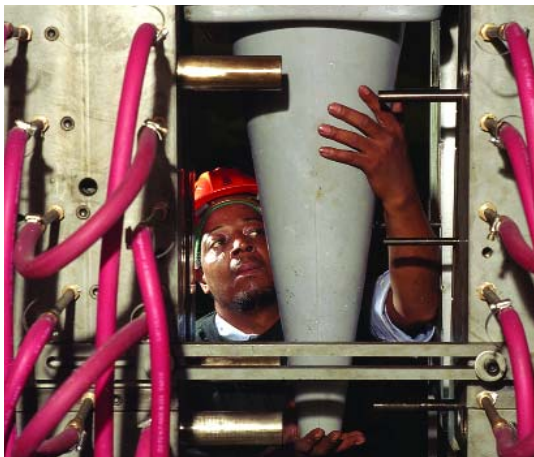
The facility planned to sell its product to Con Ed, Brooklyn Union Gas, New York Telephone, the Port Authority, and City and State Departments of Transportation. It would accept recycled plastics from DSNY, as well as other towns in the region, and expected to manufacture its products at “costs way below those of other traffic cone manufacturers, many of whom would use more expensive virgin plastic.”⁶⁹

Maintaining low material costs was essential because, the article pointed out, “labor costs will be significantly higher than those of competitors, who don’t need the manpower to sort what comes in.”⁷⁰ The wages the plant would generate were seen as a social, as well as economic, benefit to the area, and the venture was portrayed as a “win-win project for everybody involved.”⁷¹ (Photo 2-16)

Only two years later, Utility Plastics was struggling to stay afloat. *Crain’s New York Business*, which had reported extensively on its promise in 1990, now observed that, “despite the great fanfare surrounding its launch, the

Photo 2-16

In the early 1990s, the Utility Plastics Corporation of Brooklyn recycled plastic bottles into traffic cones and police barricades.



Brooklyn company has had little success selling its plastic traffic cones and police barricades to its prime targets—state and city agencies.”⁷² This failure was attributed to both market forces and marketing strategies:

The plight of Utility Plastics shows just how hard it is to sell products in the depressed market for recycled materials. The company has run into trouble rounding up enough customers even though its cones and barricades have earned favorable reviews....The company’s woes show how risky it can be for businesses to depend on state and city procurement guidelines, no matter how well-intentioned....Public officials have steered minimal business to the company so far.⁷³

The reason for shortfall in public procurement demand was, according to the company’s CEO, the fact that “to purchase our products, they [public agencies] have to revamp their systems...[We] couldn’t generate much business from city and state purchasing agents seeking the lowest bidder.”⁷⁴ These problems were compounded by a slump in the plastics markets, which made products from elsewhere (both virgin and recycled) cost-competitive with the homegrown cones. Ultimately, the company vision of supplying city agencies with products made using DSNY-collected recyclables did not materialize.

There were a few other efforts to promote City agency use of recycled plastic materials. In 1993, a Parks Conservancy project contracted with Santana Products of Scranton, Pennsylvania to supply bathroom partitions and park benches with a specified content of NYC plastic. In 1995, there was a flurry of attention to the Department of Citywide Administrative Services’ (then known as the Department of General Services) purchase of plastic lumber for a pier project at Tiffany Street in the Bronx. The lumber, made of “the recycled extract of two-liter plastic soda bottles,”⁷⁵ totaled 607 tons for the pier, and had the benefit of being impervious to the marine organisms that degrade wood piers (although not to lightning, which melted the pier when it struck it some months later).

None of these promising initiatives, however, was able to create a sustained end-use for the tons of plastics moving through the DSNY waste streams each day. As the 1993 NYU report had observed, “many firms that...recycle HDPE and LDPE...have had considerable difficulty delivering their product at prices and in volumes that make it competitive with virgin resins.”⁷⁶ The reluctance of City agencies to purchase locally produced, recycled-content materials when they were more expensive than alternatives stemmed partly from the priority of State law requiring government agencies to accept lowest bids in awarding contracts.⁷⁷ While numerous City initiatives have attempted to incorporate preferences to mitigate the lowest cost imperative (such as provisions for minority- and women-owned businesses), such preferences have routinely been challenged through legal means by private firms seeking to bid on municipal contracts. The problems also stemmed from expecting more flexibility and preference than the massive, bureaucratized procurement system in the City would provide.

A Mill for Recycled Paper in New York City

During the 1990s, the NRDC, in partnership with other organizations, struggled to begin a project to build a paper mill in the Bronx that would take NYC’s recycled paper and turn it into newsprint, which it would sell to local newspaper publishers. The saga of this decade-long struggle is complex, but ultimately, no such mill was built.⁷⁸ As one journalist put it, “paper companies and developers seemed close to building at several points, but ultimately no one was willing to put up the money. After eight years, the project was formally abandoned...Investors decided the returns from the mill would not be enough.”⁷⁹ In 2000, the NRDC’s Allen Hershkowitz attributed investor withdrawal from the project on “the high tech market, the fact that so many

people were getting very high returns on stocks and high tech when we were going to financing.”⁸⁰ It seemed that there would always be a small window of investment opportunity for a start-up firm, especially a large one, in a constantly fluctuating market.

In contrast to the Bronx project, the development of a private paper-recycling plant and board mill on Staten Island was a rapid success. Work on the project started in 1995, under the leadership of the NYC EDC, when the City began the process of convincing the Australian Company, Visy Paper, a subsidiary of Pratt Industries, to locate a mill on Staten Island that would take New York’s recycled paper and use it to produce linerboard (Photo 2-17). The company was initially considering locating at sites in Pennsylvania and New Jersey, but was persuaded to build in Staten Island by a package of inducements. These included over \$50 million in abatements from city and state sources on real estate and other taxes, as well as a construction labor agreement with Building and Construction Trades Council that included a no-strike pledge and reduced overtime agreement, and a reduced electricity rate from Con Edison.

The project received loans from several sources, among them the NYC Industrial Development Agency, which floated solid-waste bonds to finance the project. New York State directed a total \$1.4 million into the project, with \$1 million from the New York State Department of Transportation for roadway improvements and \$400,000 in grants and loans from the Empire State Development Corporation.⁸¹

The bureaucratic aspects of project development were streamlined by awarding the contract without competitive bidding, and enabling fast-track environmental permit approvals.⁸² DSNY committed to delivering between 30 to 50 percent of the City’s residential wastepaper to Visy each year, using the existing, City-owned MTS (marine transfer system), in an agreement that entailed revenue sharing and no net processing fee to the City.

The facility, which cost roughly \$250 million, was projected in the late 1990s to have a capacity of 250,000 tpd and create up to 300 manufacturing jobs. In total, it was estimated that the construction phase of the project would generate \$16.2 million in taxes and \$495 million in overall economic activity alone. Once operating, the facility would generate annual taxes of roughly \$2.6 million, and an annual direct and indirect economic activity of \$107.2 million. The facility, which had the joint support of Borough President Molinari, Governor Pataki, and Mayor Giuliani was built in less than one year, and today is the City’s largest contractor for paper.

Photo 2-17

Now formally known as Pratt Industries, but still referred to as Visy Paper, this plant processes 150,000 tons of recycled New York City paper each year; around half of the City’s total recycled-paper waste stream.



Developing Private Processing Capacity: What Happened Instead

The exploration of ideas that went on between 1992 and 1993, and the flurry of planning that followed in 1994, was expected to lead to the development of a varied, high-technology recycling industry in New York City, representing a range of public and private facilities, and including both processors and recycled-input manufacturers. Ultimately, this did not happen.

Here and there, small ventures did appear that would make innovative products out of certain discards, but these factories generally used cleaner and purer commercial waste streams, and operated on very small scales. Firms specializing in glass tile manufacture, plastic pelletizing, and other niche products found that they could not use the large quantities of DSNY recycling, nor could they handle the mixture of materials and contamination that came along with it.

By the end of the decade, only one venture successfully emerged to respond to DSNY's voluminous, mixed-recyclables stream—Visy Paper of Staten Island. Despite millions of dollars in State funding of recycling economic development in New York City, other projects of this period, both public and private, failed to create primary capacity for residential recyclables. Nevertheless, New York never stopped needing to move its collected recycling up and out of the City each day. With public MRFs off the table, and other projects in only developmental stages, the only viable candidates for this job turned out to be local recycling processors.

Private MRFs

Who were these local processors with whom the City contracted to handle its recyclables? In general, they were enterprises owned and operated by established waste-hauling firms in the New York area, some of whom had been active in commercial refuse carting for decades. These firms responded to the short-term contracts issued by the City in an economically rational manner, for example, by supplying no major up-front investments in new sites, large plants, or high technology.

MGP processors set up sort operations on existing property already permitted for waste handling. They installed basic automatic sorting equipment—such as magnets and eddy currents for metals separation, and trommel screens to sift out broken cullet and fines—but did much of the processing manually. None engaged in remanufacturing. Instead, their profits from recycling depended solely on selling sorted and baled recyclables from both residential and commercial sectors on an open, secondary materials market (Photo 2-18). This market included brokers and manufacturers across the nation and throughout the world. In addition, these firms were actively pursuing other avenues of profit in collection, transfer, and disposal services for commercial generators.

Throughout the 1990s, the City forged a series of contracts with an array of local processors. DSNY began with short-term contracts in 1989, renewable on a yearly basis. In 1992, with some experience under its belt, the City bid out longer-term agreements. In some cases, the same firm bid for both paper and MGP (processed in different areas of the facility); in others, a firm specialized in one of the materials. By the end of these contracts in 2002, processing costs averaged about \$59 per ton. Meanwhile, two related outside political events of the 1990s altered the corporate identity of processors in NYC—the prosecution of organized crime elements in the local carting industry, and the entrance of several multinational “waste giants” into the New York market. As the 1990s progressed, the waste industry in the City and surrounding areas, as in the rest of the country, saw numerous mergers and acquisitions of smaller firms by larger ones.

Yet the basic nature of the NYC processing operations, and in most cases their location and capacity, remained unchanged. The reason for this was the financial constraints these firms still faced. Industry consolidation had resulted in unionization of the sorting work force, and consequently, higher labor costs. At the same time, the increase in diversion throughout the late 1990s strained operating capacities once considered ample for NYC recycling. Because processors had been contractually bound to accept material 24 hours per day, six days per week, they were not able to carry out major facility improvements. To make matters more challenging, NYC Contract Rules enabling the City to opt out of agreements with only ten days' notice had discouraged processors from investing in new facilities. These realities meant that even the arrival of large waste corporations like Waste Management or BFI in New York in the mid-1990s did not herald new, more efficient, larger capacity MRFs—it simply meant the same modest MRFs with new owners.

The Need For Reliability

This is not to say that parties with ideas for new processing technology, or interesting recycled-content products, were silent during the 1990s. Over the years, DSNY met with many entrepreneurs, some from as far away as Asia, who proposed to come to New York with a variety of ways to turn “garbage into gold.” Yet the City was constrained in its contracting choices by some very basic realities having to do with the waste stream.

First and foremost was the need for reliability. With collected tonnages of recyclables increasing from about 600 tpd in 1992 to over 2400 tpd by 2000, the City simply had to contract with firms of a size and capacity capable of taking large tonnages day in and day out, no matter what crisis came along or how tough the market became. Moreover, their technology had to be proven—not just in the laboratory or with clean streams of commercial recycling (as many enthusiastic entrepreneurs proposed)—but in the field with commingled, residential materials.

Furthermore, firms specializing in recycled-content manufacture had to be partnered with reliable processors who could deliver sorted, cleaned, and baled materials to them at a cost that would enable them to stay in

Photo 2-18

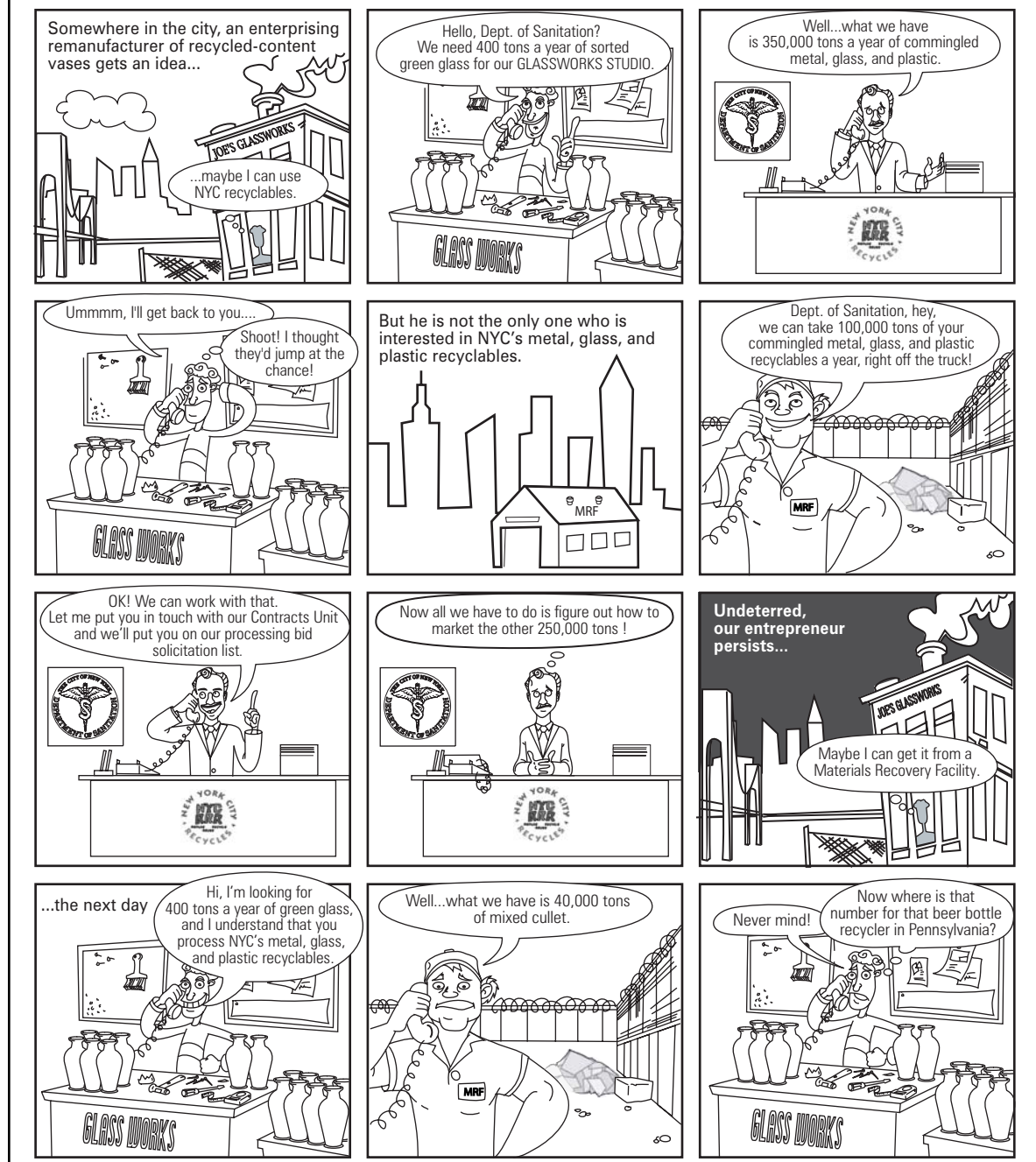
The MPG processors contracted with the City used automated sorting for metals, but relied on manual sorting for other materials. Most of their profits came from selling sorted and baled recyclables.



business. It was not enough, for example, for an entrepreneur to say, “I have a great idea for manufacturing glass vases, and I can handle a lot of the City’s residential glass if it comes my way”⁸³ (see Figure 2-2). For such an idea to work, the entrepreneur would need to work out how to get the sorted glass out of the commingled MGP that the Department was collecting from residents—as it was at the time, not under an optimal scenario of no contamination or no glass breakage. And it would be necessary to think about the economics of where the sorted plastic and metal would go once the glass was removed—which would mean

Figure 2-2
Cartoon of Exchange Between Potential Users
and Processors of NYC Recyclables

A little humor to illustrate a point



either widely expanding the entrepreneur's scope of operations, or partnering with one or more recycling businesses who would need to show similar preparedness. Finally, the entrepreneur would have to know that the manufacturing process he or she planned to use would be viable with NYC residential glass, and that the resulting product would sell to someone, somewhere.

In sum, although in many cases entrepreneurs stated that they would take NYC's recycling, they wanted it in a form far different from what was collected. To satisfy one processor's supply requirements would have meant changing everything about the recycling program: public education, sorting requirements, collection methods—all for only a portion of the total recyclables mix. This rendered such proposals unviable not just to DSNY, but to functioning recycling in New York City.

While the Department remained open to new ideas, and was active in putting manufacturers in contact with processors to develop them, its primary responsibility was to keep the flow of residential recycling moving. Thus its contracts required firms to prove their ability to (1) accept daily deliveries of specified tonnages of recyclables; (2) actually market the recyclables for beneficial use; and (3) maintain detailed records on tonnages delivered, tonnages marketed, revenue from sale of materials, and bases for any charges made to the Department for processing. Firms able to do this in the 1990s, with the exception of Visy Paper, were local waste-management firms.

High Processing Costs

The revenues that could be expected from residential recycling were constrained by various factors. Because of paper's generally strong market value, starting in 1996 contracts for processing of commingled newspaper, mixed paper, and cardboard were able to require a floor price to be paid to the City regardless of market conditions, with further provisions for revenue sharing when prices rose above a certain level. But because of market weakness for glass, as well as the higher processing costs entailed with sorting commingled materials, the MGP contracts could not guarantee a floor price to be paid to DSNY. Instead, in most years, the Department ended up paying for MGP processing, with revenue sharing only offsetting costs. (See Table 2-3, pages 72–73, for a chronology of how recyclables have been processed in NYC.)

Initially, the City paid processors a flat fee to accept, process, and market commingled metal, glass, and plastic. Later, MGP contracts incorporated provisions that allowed for a reduction in this fee when markets were doing well. Over and above these basics, the contracts included provisions which: (1) allowed the City to assess liquidated damages against vendors who failed to accept loads or otherwise failed to follow through on agreed upon terms; (2) made allowances for severe weather; and (3) prepared contractors to expect and plan for certain percentages of resident contamination.⁸⁴

When the Department's five-year MGP contracts expired in June 2002, bids to accept and process the commingled MGP unexpectedly came in between \$95 and \$165 per ton, far more than costs under the previous contracts. Bidders justified this escalation on the basis of labor and transportation costs they faced, which were considerably higher (in real dollars) than they had been in 1994. Bidders also sought an immediate infusion of cash to make infrastructural improvements, which were precluded by the six-day, 24-hour operation requirements, and short-term nature of prior contracts.

Bidders also cited a higher processing fee to cover costs associated with handling mixed cullet in the MGP stream. Depending on the sort techniques in use at each MRF, mixed cullet comprised as much as 40 percent

Processing and Marketing Recyclables in New York City

Table 2-3
Processing Chronology for NYC Recyclables

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994
Tons of Paper/MGP diverted per day*	N/A	N/A	N/A	Data not available			634	863	1,530
Paper-processing arrangements	DSNY relies on paper brokers who bid periodically to take collected tonnages. The City pays roughly \$27 per ton for processors/brokers to accept its paper.						DSNY enters into annual contracts with brokers, who market paper inside and outside NYC. Payment arrangements fluctuate between revenue (where the City is paid) and expense (where the City pays for processing), depending on market conditions. In November 1994, paper contract index revised to better reflect market conditions and increase DSNY's share of revenue.		
MGP-processing arrangements	MGP is not yet collected.			MGP collected and processed under pilot program. Processing is done by private contractors in Long Island and New Jersey for a flat fee of \$40 to \$60 per ton.			Some of the City's MGP is processed in DSNY's pilot Intermediate Processing Center (IPC). Average cost is \$175 per ton. The same private contractors continue to process the remainder of the City's MGP under short-term contracts that charge a flat fee for processing. DSNY solicits bids for longer term MGP-processing contracts.		
Major events	Pilot newspaper recycling collection implemented in many of the City's 50 community districts.			Recycling law passed.	Mandatory paper- and MGP-recycling program begins.	Borough-wide collection of designated recyclables phased in for all three-million City households and 5,000+ public institutions.			Crackdown on organized crime in NYC waste-hauling industry. As a result, contracts with several paper and MGP processors are terminated.
* Diversion tonnages are for the fiscal year and represent daily averages.									

* Diversion tonnages are for the fiscal year and represent daily averages.

Table 2-3
Processing Chronology for NYC Recyclables, continued

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
1,522	1,505	1,615	1,946	2,224	2,411	2,450	2,442	1,427	Data not yet available
DSNY sells two-thirds of its paper to brokers, with five-year contracts fluctuating between revenue and expense, depending on market conditions. The remaining one-third is sold to Visy Paper, with a provision that the City will always be paid a minimum floor price of \$10 per ton for paper, regardless of bad markets, and will gain modest revenue when markets are good.					DSNY reduces the share of paper sold to brokers to approximately one-half, and solicits five-year contracts with three additional five-year renewal options with floor prices (minimum payment per ton to DSNY). This ensures that DSNY will never pay for processing, and will share revenue when markets are strong. A 20-year contract is set with Visy, who receives approximately the other half of the City's paper. There is now no processing cost to the City to recycle paper, and there are favorable arrangements for revenue sharing during good economic times.				
DSNY enters into longer term expense contracts with a number of private processors (most in NYC). Average cost is \$55 per ton. Contracts involve straight tip fees without indexing. Through mutual agreement in 1994, contracts are renegotiated to include an index to track the market. Costs are reduced by revenue sharing when markets are good. Contracts are for an initial five-year period, extended by four one-year renewals. By the end of these contracts, DSNY is paying processors around \$59 per ton.					In June 2002, MGP contracts come up for rebid; processors bid between \$95 and \$165 per ton. As a result, plastic and glass recycling is suspended and household metal is processed through an existing scrap metal recycling contract, whereby the City receives \$30 per ton. DSNY solicits new bids to process MP and MGP. Scrap-metal processor bids to pay the City \$5.10 per ton for MP and charges \$70, later reduced to \$50 to process MGP. (Other bids charge around \$90 for MP and \$127 for MGP.) When plastics recycling resumes in July 2003, MP is processed via an interim contract with scrap-metal processor who pays \$5.10 per ton. DSNY issues RFP in August 2003 for long-term MGP processing, which includes revenue-sharing provisions. When glass recycling returns in April 2004, MGP is processed through an interim contract with metal-scrap processor who charges \$50 per ton.				
Expanded recycling phased in citywide.		Weekly recycling collection implemented.		Fresh Kills closes.	Glass and plastics recycling suspended.	Plastics recycling reinstated; alternate-week collection of recyclables.		Glass recycling reinstated; weekly collection reinstated.	
City begins to develop and implement paper mill project with Visy Paper.		DOT stops accepting DSNY's glass for "glassphalt" production.		World Trade Center tragedy	Ongoing NYC fiscal crisis				
				Metal and concrete debris from WTC is processed at Fresh Kills; much metal is recycled.				NYC paying nearly \$100 per ton for refuse export.	
National and international waste industry consolidates.									

of what was processed (Photo 2-19). As of 1997, this cullet was no longer accepted by the NYC Department of Transportation, for reasons described earlier. According to the processors, the costs of transporting this material to sites for alternate beneficial use as roadbed material or, in some cases, daily cover at landfills, justified the increased bids. Processors also cited costs associated with contamination of commingled MGP with non-designated plastics and organics.

Like any business, the processors contracting with the City had opted for a mix of technology, labor, and capital investment that would, over the period 1994 to 2002, yield the greatest profit for the least cost. This mix was calculated based on the processing fee they could charge the City, as well as the state of glass, plastic, and metals markets. And, in some cases, it was balanced against investment in other activities like processing commercial materials or refuse handling. When contract renewal came up in June 2002, these firms could not make the numbers work out without raising the processing fee.

Photo 2-19

Mixed cullet, a zero-value commodity, accumulated in stockpiles as shown here, and comprised as much as 40 percent of what was processed at MRFs.



Onset of a Crisis

This turn of events came just after the 9/11 World Trade Center tragedy in New York City in 2001, which compounded the local effects of an already mounting economic downturn nationwide. All agencies were called up on by the Mayor to cut wherever possible. Due to the potentially very high cost of MGP processing the City was facing, canceling glass and plastics collection seemed an obvious way to quickly reduce budget outlays. In June of 2002, the City Council passed Local Law 11, which suspended glass and plastic from the recycling program for one year, but directed the reinstatement of plastic one year later, and glass in 2004. Contracts with MRFs were not renewed for MGP processing.

Instead, DSNY entered into an arrangement with a scrap-metal processor, Hugo Neu Schnitzer East, already under contract to the City to receive scrap metal. The company operated three sites in and around the five boroughs (Photo 2-20). Using this existing contract, the firm would accept and process residential household and bulk metal, and would pay the City a minimum of \$30 for each ton. The glass and plastic that had formerly been collected for recycling was now collected and exported along with the rest of the City's refuse.

In late 2002, the City consequently rebid interim processing contracts for metal, plastic, and beverage cartons (MP) and MGP processing to meet the tight schedule for reinstatement of plastic and glass recycling set forth in Local Law 11. Nine qualified bidders, including Hugo Neu Schnitzer East, responded this time. Eight of the nine bid per-ton processing costs that ranged from \$70 to \$110 for MP and \$83 to \$172 for MGP. Hugo Neu Schnitzer East, by contrast, offered a positive floor price of \$5.10 per ton for MP. That is, it offered to pay NYC

that much for each ton of commingled metal, plastic, and beverage-carton recyclables that were delivered. And its processing cost for MGP was lower than those proposed by the other firms: \$70 per ton. Several months later, Hugo Neu Schnitzer East voluntarily reduced its bid for future MGP processing to \$50 per ton as it assumed responsibility for processing all of the City's MP at its three sites in the New York area, paying the City \$5.10 per ton.

In July 2003, plastic was reintroduced to the recycling program, and in April 2004 glass was added back. In the meantime, DSNY issued an RFP for a longer MGP-processing contract designed to avoid some of the problems with capacity and market volatility experienced since the beginning of the recycling program. It

had become clear that the answer to the problems with recycling was not, primarily, the need for local economic development of remanufacturing capacity that had been the focus of so much attention in the early 1990s. Rather, the focus of the new, longer term contract was to secure a firm with: (1) large-scale, primary processing capacity; (2) an ability to market materials regionally, nationally, and internationally; and (3) a disincentive to dispose of materials as residue.

Photo 2-20

When the City suspended glass and plastics recycling in July 2002, it continued to recycle metal through a scrap metal processor. DSNY trucks delivered household and bulk metal collected from residents to one of three sites operated by Hugo Neu Schnitzer East.



The Lessons of History

In 1992, Sanitation Commissioner Lloyd likened recycling to "mining or foresting," saying, "We're culling a resource from all this material and in the process replacing jobs lost in the manufacturing sector."⁸⁵ Since then, history has shown that recycling is *not* like mining or foresting. Recycling is an unusual meeting of the consequences of individual consumption and the needs of industrial production. It is a field in which the line between public and private sector is constantly under negotiation. And it is an enterprise that is expected to respond to sometimes conflicting economic, environmental, and/or social goals simultaneously.

Adjusting Expectations about Local Economic Development and Recycling

Despite this history, in 2003 there continued to be an expectation among some in the waste-policy community that much, if not all, of New York City's residential recyclables stream could be profitably remanufactured locally into new products, revitalizing New York's industrial economy while creating a cost-effective outlet for processed materials. For instance, in 2001, the Consumers Union, a nonprofit group active in NYC waste policy, advocated that:

Much more could be done to attract manufacturers that use recycled materials and to assist small businesses in this field. Unlike Visy Paper, many remanufacturing businesses are small, some with

great ideas that need to be tried on a small scale first. In order to effect change we must change economic development assistance so that it assists small business.⁸⁶

Such initiatives may help local businesses, and may even create badly needed manufacturing jobs in New York City, but they will not address the economic efficiency of recycling the materials that New Yorkers generate. Most remanufacturers of recycled products need a clean supply of materials, but do not necessarily require large volumes, especially if they are the type of small enterprise that thrives in an environment like New York. Thus their input requirements (as demonstrated earlier in the cartoon in Figure 2-2, page 70) will frequently be at odds with what the recycling citizens “supply.” Yet this does not change the fact that DSNY has a public mandate to collect and move along large quantities of recyclables, whatever their composition. To the Department, as to the public, recyclables are not a “supply” of inputs to production, they are the consequence of personal consumption. Unlike suppliers of other raw materials, consumers do not respond in quantity or material composition to producers’ needs.

This means that any remanufacturer seeking to use NYC residential recyclables will have to face the reality of NYC’s residential feedstock. Even under the most optimistic scenarios in which residents carefully source-segregate recycling and refrain from contaminating their sorts—residential recyclables will underperform alternative secondary sources. Presorted streams of recyclables from businesses, scrap from other industrial processes, and even reclaimed containers from deposit programs will be vastly more efficient to use in manufacturing.

While this does not absolutely preclude the development of small-scale manufacturers that make goods out of NYC’s residential recyclables, it is far more likely that NYC-based remanufacturers will turn to other sources for their secondary inputs; and that NYC’s residential MGP, after local processing, will be marketed outside City limits. Although the 1993 NYU study (discussed earlier) identified niche markets as the “best hope” for the development of the recycling industry in NYC rather than “major end-use manufacturing,”⁸⁷ it also noted that “by far the greatest number of firms and workers engaged in recycling-related business in New York are those involved in the collection, sorting, and consolidation of recyclable materials.”⁸⁸ Given the inherent tensions discussed, this is not surprising. But it suggests that the vision of thousands of new manufacturing jobs at hundreds of vibrant new firms is not going to be realized from the diversion of New Yorkers’ residential materials.

Visy Paper—which is both a processor and a remanufacturer—has been a notable exception to this trend, but it is the exception that proves the rule. In Visy’s case, a multimillion-dollar package of loans, tax incentives, and concessions from the City, the State, a utility company, and a labor union actually succeeded in getting a firm that used NYC recyclables to make commodities *within NYC*. But while Visy benefitted from a broad and ample package of subsidies and concessions, this was not the only reason it came to New York, and stayed. Unlike other ventures that failed in NYC, Visy did not have to secure investment from a coalition of private developers—it was an established concern with intentions to open a mill in the Northeast anyway. The incentives it received from the City and State can be said to have encouraged it to choose NYC over other locales, rather than helping it establish a business in the first place.

Most important, Visy was capable of transforming a less-than-clean, mixed stream of recyclables into a useable product. The liner board it manufactures is made from an undifferentiated mix of newsprint, magazines, catalogs, white office paper, cardboard, and junk mail. New York City’s collection arrangements, and an overall three-percent contamination rate for recycled paper, meant that this stream would be delivered to Visy’s door essentially ready to go through the mill. Any remanufacturing venture that hoped to use NYC’s residential MGP to make new products would have to be similarly equipped.

Unfortunately, these facts have not been taken into account in waste-policy advocacy in New York City, even in 2004. The return of recycling was predicated on the City's securing a long-term, cost-effective relationship with a primary processor. Nonetheless, there continues to be expectations that the way to ensure that processed residential materials are "sold for the highest value in the marketplace" is through "attracting new recycling-related industries and businesses to the city."⁸⁹ A recently released report by a coalition of environmental, consumer, and community groups, and led by NRDC, once again recommends "financing to companies...through tax incentives, loans, and grants, as well as help [to] these businesses to navigate the permitting and construction processes."⁹⁰ No matter how well intentioned such recommendations are, they still assume that local assistance to small processors or remanufacturers will affect demand for NYC's processed recyclables—and, as this chapter has extensively argued, such an assumption is just not reasonable.

It is interesting to note that the NRDC Report supports this argument with information about a regional authority (METRO) in Oregon that spans the City of Portland and 23 other municipalities, three counties, and has an area of nearly 600 square miles. The NRDC Report notes that this regional authority "provides grants and loans to businesses that make products with recyclable materials recovered in the region," although it provides no data on how much of Portland or other METRO region municipalities' residential materials are processed regionally as opposed to at other scales. In fact, it is much more likely that the pairing of supply and demand for processed recyclables will take place on a regional level, where materials can move across what have been termed "wastesheds," or areas in which they can circulate as (somewhat) free commodities. It is telling that the NRDC Report fails to mention that no large city—even in California where regionally based recycling economic-development projects are the most advanced—consumes and remanufactures its own residential recyclables within its own municipal boundaries.⁹¹

Recognizing the Limits to "Buying Recycled"

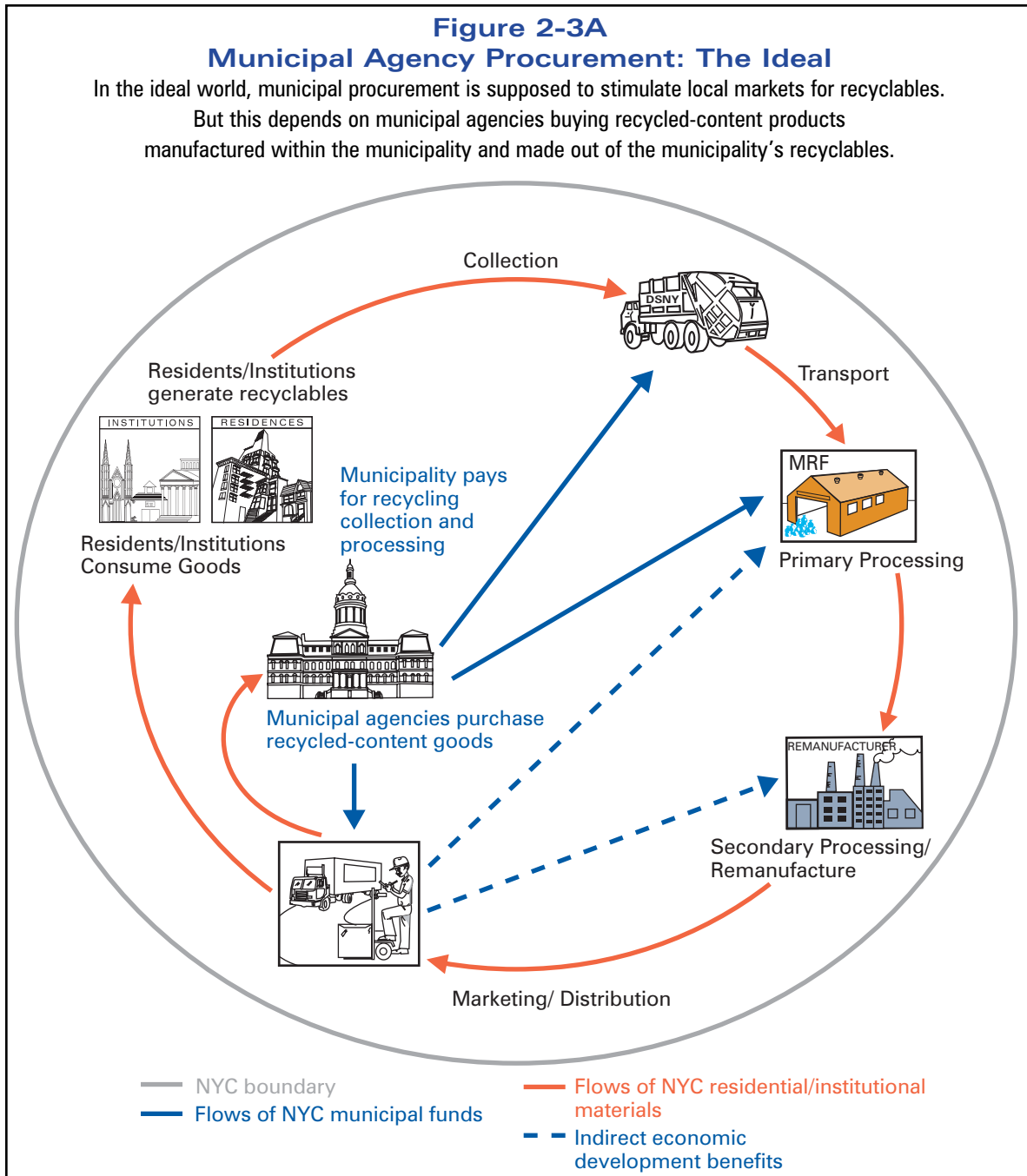
New York City agencies spend \$7 billion annually on goods and services. A portion of these goods could, in theory, be fabricated using recycled content. Over the past decade, there have been continued and frequent calls for the City to mobilize its massive purchasing power and "buy recycled." The expectation has been that if the City purchased such goods, it would build markets for remanufacturers in New York City, thereby aiding processors of collected recyclables, and, ultimately, improving the City's processing contract options.

Yet it stands to reason that if local economic development gains are expected to flow from local agency procurement of recycled content goods, the goods in question must be manufactured locally, out of local content. This condition significantly narrows the potential field of impact that any NYC agency "buy recycled" campaign could have. Given the difficulties that firms manufacturing finished products from recyclables face in New York City, the selection of recycled-content products made in NYC and/or out of NYC residential recycling is meager. The City is then left with some very weak options. It can buy products made outside the City that contain materials from MRFs that accept NYC recyclables. Or, it can commit to paying artificially high prices for a few locally made supplies—some of which may not meet specifications in the best manner.

This dilemma becomes particularly pressing when City agency purchasing and contracting is subject to competing demands for economy and accountability by the public and oversight agencies. New York City's Procurement Policy Board, for example, has consistently criticized the use of local preferences in purchasing.⁹² Other fiscal conservatives have called for an end to City contract guidelines that respond to human rights and environmental issues abroad. They argue that the City should act more like a business, and less like a social engineer, when buying products. The potential impact of the City's purchasing power on local recycling

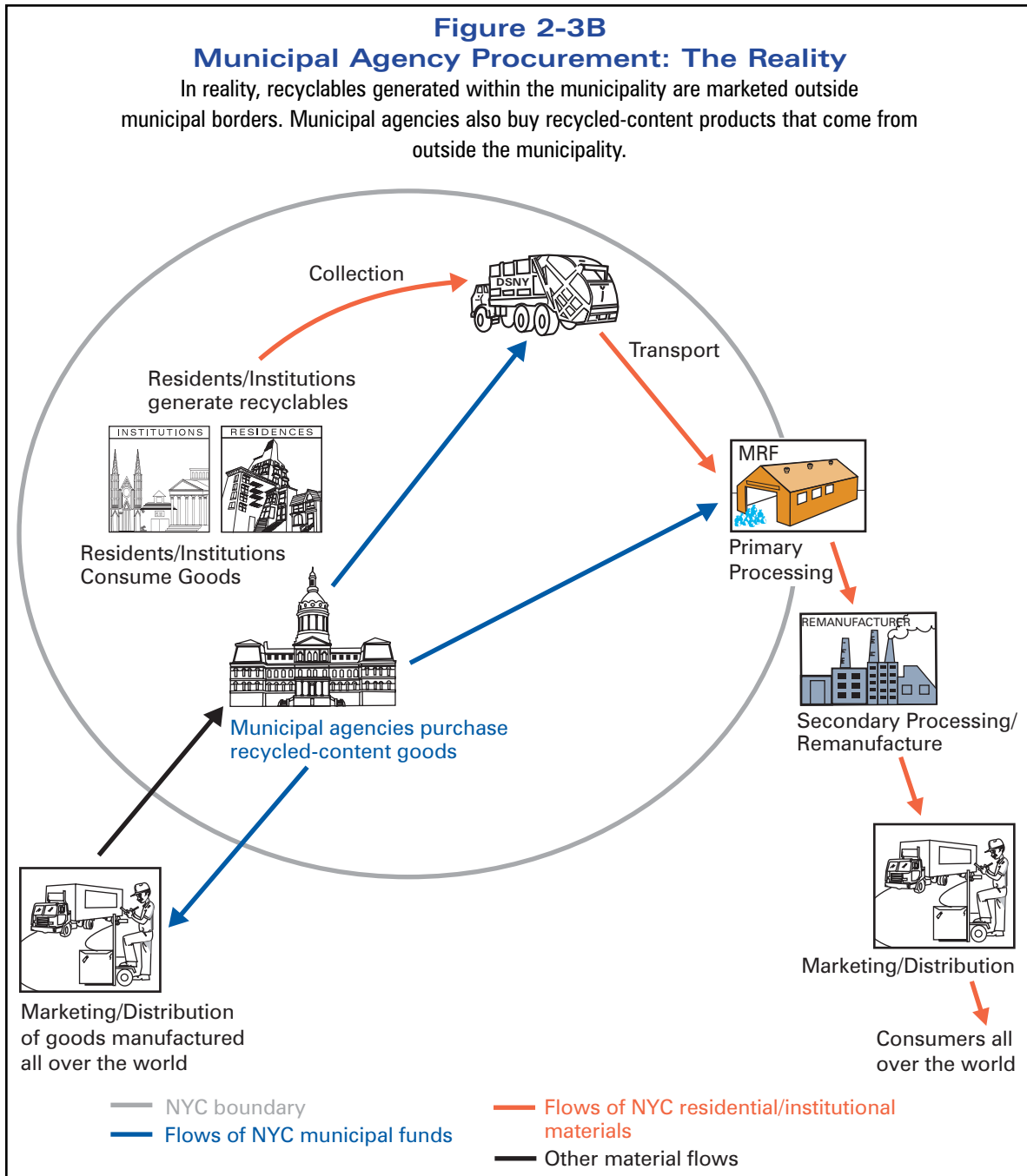
economic development becomes even more constrained under such pressures. And the probability of a local recycling industry responding to City agency demand becomes very tenuous.

Yet often these contradictions have been overlooked. It has been easier to assume that City purchasing will “somehow” stimulate the local recycling industry. The link between purchasing and local economic development ends up overstated and underexamined, as depicted in Figure 2-3. Under such circumstances, it is not hard to see why so many initiatives in this regard have stalled. And it suggests that the future of processing and marketing NYC recyclables has to be considered quite separately from any initiative to require agencies to “buy recycled.”



There is ample evidence that recycled materials need a larger scale, or “wasteshed,” than the municipality to circulate efficiently.⁹³ Nonetheless, there is continued advocacy for NYC agencies to “buy recycled” as means of “Making New York City’s Recycling Program More Effective” (the title of NRDC’s recent report). This Report argues that what is needed to improve the NYC Recycling Program is “new legislation that would require city agencies to purchase paper and other designated products with minimum levels of post-consumer recycled content, especially products that use recycled glass or plastic.”⁹⁴

There is no doubt that requiring City agencies to “buy recycled” would provide symbolic support for recycling in general. Such a requirement might or might not save agencies money, but it would certainly make a small



contribution to the national market for recycled-content goods. Yet passing such a law would not improve markets for NYC's recyclables, for reasons explained already. To do that would require an elaborate legislative-administrative effort on a scale heretofore never seen in U.S. cities. This effort would have to be mobilized such that remanufacturer supply and agency demand met within city limits on a level that would be economically meaningful for both. Given that agencies procure based on competitive bidding and firms market what they can profitably produce to buyers far and wide, such an effort would be at best extremely difficult, at worst redundant given the existence of much-better-functioning regional, national, and global markets for products that characterize the economy today.

Maximizing the Benefits of Privatized Processing

As late as 1994, DSNY still hoped to develop public MRF capacity throughout the five boroughs. The development of public facilities would not only provide "healthy competition" to private MRFs, but would "combine the benefits of public control and private expertise," since the MRFs would be built and operated by private contractors.⁹⁵

But private recyclers organized and actively fought against the idea of building any public MRFs. Political analysts of the time saw these events as part of a "growing debate over privatization of city services, as well as continuing controversy over recycling policy."⁹⁶ In their view, the case for privatization of a range of public amenities was mounting nationwide, and in fact, the trend has been towards smaller local government since then.

The decision to abandon the Staten Island MRF project was linked to the controversy at the time over Staten Island secession and that borough's intense opposition to the Fresh Kills landfill. But the City's overall shift away from direct involvement in processing reflected expectations about efficiency and cost-savings that, it was argued, only the private sector could deliver. What this line of reasoning failed to take into account was that other market forces would limit the range of private options that would ultimately flourish.

Some of these limits—in terms of ability to handle recycled feedstock and to survive strict regulatory conditions—were detailed earlier. Moreover, the private sector was hampered by continued factionalism among trade groups. Private recyclers had hoped to benefit from State and City funding earmarked for economic development. But in 1995, a real estate boom was in the making, and the real estate industry began pressuring Mayor Giuliani to direct tax-exempt financing for housing instead of environmentally oriented industrial projects.⁹⁷ New York State capped the City's borrowing authority for 1995 at \$122 million, \$120 of which was set aside for Visy, with a second \$120 million planned for 1997. Access to the remaining funds would be hard for other recycling industries to demand.

All the while, the national waste industry was consolidating, with several multinational corporations emerging as dominant players in the competition to process recyclables. These firms held two of the MGP-processing contracts with the City between 1994 and 2002. As mentioned in Chapter 1, the fact that these corporations profited as much from disposing of residue from recyclables processing as they did from selling processed materials for beneficial use further limited the benefits that free and fair competition was supposed to afford.

This history suggests that "privatization" in and of itself does not provide the efficiency or the cost-competitiveness that the City needs in its recyclables-processing contracts. What is needed instead is to channel economic development assistance to private firms that have the capacity, the technology, and the worldwide-marketing ability to extract the most value from NYC's residential recyclables stream, and who, moreover, have a business incentive to minimize residue.