Introduction

At the dawn of the 21st century, New York City has the largest municipal waste stream in the country. In 2003, NYC residents and institutions disposed of 3.3 million tons of refuse, and recycled about 430,000 tons, a figure that was down from previous years due to the temporary suspension of glass from NYC's recycling program.[1] In 2001 and 2000, New Yorkers had recycled around 690,000 tons of paper, metal, glass, and plastic annually. The reintroduction of glass recycling in April 2004 set the stage for returning to these tonnage levels, with the diversion rate rebounding from a low of around 12 percent in March 2004 to over 17 percent two months later.

How the System Works in New York: Municipal Collection and Private Processing

Managing NYC's large tonnages of recovered materials takes place within a framework that involves both City government and the private sector. The New York City Department of Sanitation ("the Department" or DSNY) collects recyclables from NYC residents and institutions, and trucks them to processing facilities operated by private firms who hold contracts with the Department.

Once residential[2] recyclables are delivered to private contractors, they move out of the hands of the public sector. The firms that own and operate the processing facilities take responsibility, both operationally and financially, for preparing recyclables for use as feedstock in the manufacturing process. In this way, the newspaper, cans, and other recyclables separated at home are eventually used to make new products.

Utilizing the private sector in this way has clear benefits, such as the infrastructure and technologies that private recyclers have built up locally, regionally, and nationwide over the last 20 years. But reliance on the free market brings with it major challenges as well. The dollar value of a ton of New York City's paper, metal, or plastic frequently changes. Prices are based on the global supply of and demand for such materials at any given time.

While recyclables may seem to be "there for the taking" from our garbage—readying them for use in manufacturing or other production processes costs a significant amount of money. And because of market volatility, there are periods in which these costs are not mitigated by the sale of processed recyclables. This makes for a rough ride for the businesses trying to make a living in materials recovery. It also places competing priorities on New York City's waste-management system.

DSNY Recycling Processors as of May 2004

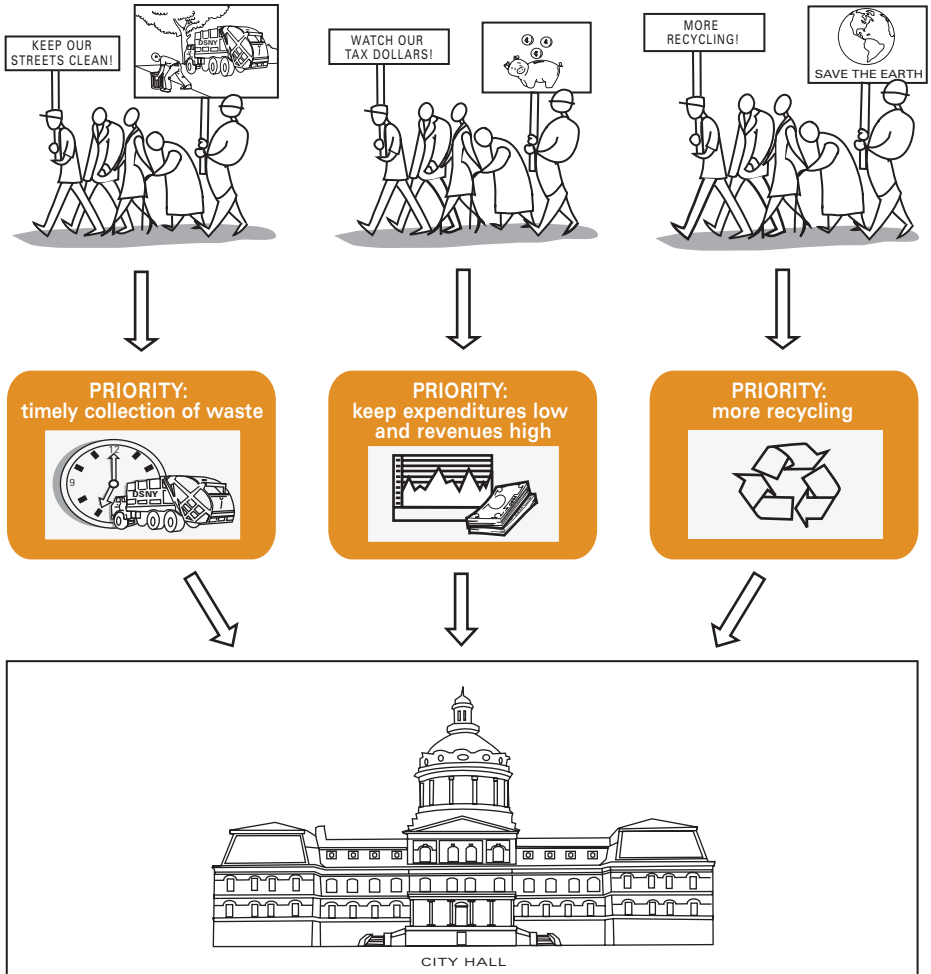
Paper Processors:
Approximately half of the DSNY-collected mixed paper goes to five processing facilities, which sort, bale, and resell it to paper brokers or manufacturers. The other half goes to Visy Paper, located on Staten Island, which manufactures linerboard for corrugated cardboard boxes.

Metal, Glass, and Plastic Processors:
All of the MGP collected by DSNY (which also includes beverage cartons and drink boxes) goes to three sites in and around the New York area run by Hugo Neu Schnitzer East. DSNY is in the midst of negotiating a long-term MGP processing contract. When contract negotiations are complete, New York City can look forward to a new, state-of-the-art facility that is located within city limits and is accessible by truck and barge.

Municipalities and the Market

City government is under intense—and justified—pressure from citizens to move waste (both trash and recycling) off the curb and out of the city on a daily basis. At the same time, it must respond to the very widespread support that recycling enjoys among the public, regardless of the state of markets. And all the while, it is accountable for the wise use of taxpayer funds. Yet as a direct or indirect seller of recycled materials, a municipality faces market uncertainties far beyond its control (Figure 1).

Figure 1
Competing Priorities for Municipalities



"Timely Collection of Waste" vs. **"More Recycling"**
In a dense city like New York, collecting paper and commingled recycling separately from refuse is slower than collecting all waste together, and requires more equipment and labor, spreading resources thin.

"More Recycling" vs. **"Keeping Expenditures Low and Revenues High"**
Collecting, transporting, and processing recyclables usually costs more than collecting, transporting, and disposing of all waste, especially when recycling markets are bad.

"Timely Collection of Waste" vs. **"Keeping Expenditures Low and Revenues High"**
Devoting more resources to the collection of recycling and refuse is necessary to provide timely collection of waste, but this raises expenditures.

These competing priorities make it extraordinarily challenging to operate recycling programs in a cost-effective and yet environmentally sound manner. One method to meet this challenge is through long-term service contracts, entered into with one or more private processors.[3] Many cities require processors to accept a certain tonnage of recyclables every day or face large penalties. Often contracts require processors to accept low-value commodities (like glass) if they want access to high-value materials like aluminum. And most contracts set floor and ceiling prices for commodities that insulate both parties from market fluctuations.

Floor and Ceiling Prices in Processing Contracts: How They Work

Prior to finalizing a contract, the municipality and the processor agree on a floor and ceiling price for each ton of processed recyclables. Depending on the value of what is being recycled, the floor and ceiling prices may be negative (the municipality pays the contractor to take recyclables) or positive (the contractor pays the municipality).

This arrangement protects the municipality from having to pay large amounts to processors to accept low-value material during bad economic times. Conversely, the use of the ceiling means that in a boom market, the contractors can reap the rewards. Both parties are insulated against market volatility.

Arrangements that legally bind contractors to work with the municipality for significant periods of time can ensure that, in the long term, the municipality will save money by recycling, and also that recyclables will truly be put to beneficial use. In fact, the history of residential recycling over the past decade in NYC has shown that short-term contracting inhibits private investment in infrastructure and technology, and limits the pool of interested bidders.

In the first decade of New York City's recycling program, it was necessary to bid out one-, and then five-year contracts to keep materials moving under less-than-optimal materials-recovery arrangements. Now, however, DSNY seeks wherever possible to structure contracts that—barring major problems—give firms a twenty-year time line upon which to plan business. Such contracts are currently in place with Visy Paper on Staten Island and can be used as a model for other relationships.

The Importance of Long-term Primary Processing Capacity

Nonetheless, residential recycling will sometimes be costly—sometimes far more so than waste disposal—depending on how refuse collection and disposal costs stack up against those for recycling collection and processing. And if strong markets for a particular material are not there, it will be prohibitively expensive to recycle components of the waste stream that can, in theory, be recycled. Moreover, the massive tonnages generated in New York City each day mean that only processors with large capacity and flexible operations will be able to adequately respond to the Department's deliveries. Such realities set very real constraints on recycling in the New York City context.

At the same time, there are more and less favorable forms of large, flexible, primary processing capacity. More often than not, when waste-management companies provide municipalities with this kind of processing, such services act as "add ons" to their primary business of waste transport, transfer, and disposal. In fact, many waste-management companies have increased their profits by buying landfills around the country in order to more efficiently move residential garbage from curbside to final disposal. For this reason, even though such companies offer recyclables processing, they lack profit incentives to maximize the amount of recyclables recovered because they can earn more by simply disposing of these materials.

In contrast, more cost-effective large, flexible processing capacity tends to be provided by companies whose primary focus is materials recovery, instead of waste disposal. For these companies, there is a built-in incentive

to minimize what is not recycled, and maximize what is. Such companies include traditional scrap-recovery operations, as well as newer, recovery-focused industries.

Recycling is a constantly evolving economic process. The volunteer-based community recycling centers that started in the 1970s gave way to municipal-scale recycling programs in the late 1980s. As soon as these programs were underway, waste-management companies rushed to capitalize on the large tonnages of materials collected at public expense. By and large, this was the order of business in the 1990s.

Today, the waste industry is consolidating, and waste management costs are rising. But a new breed of recycling processor is stepping up to the plate, combining a 1970's-style dedication to recycling with solid business experience and a capacity to turn a profit through resource recovery. In New York City, Hugo Neu Schnitzer East, a large, scrap-metal–recovery company, is an example of this new breed. The firm's size, marketing expertise, and background turning scrap into commodities make it well qualified to handle NYC's residential material, which it has processed since 2002. A contender for the long-term contract to be awarded in the near future, Hugo Neu Schnitzer East signals a new age for recycling where companies no longer struggle to succeed through ever-growing subsidies, but instead find ways to integrate recycling into the business fabric of New York City's economy.

This report examines how New York City got to this point, and why it still faces considerable recycling challenges in years to come. The chapters cover current recycling economics, the history of New York City's recycling program in light of such economics, and an in-depth comparison of NYC to several large U.S. cities. The information presented points to some clear conclusions:

- The top priority for recycling policy development in New York City should be securing large-scale, technologically advanced, primary processing capacity.

- The economic development initiatives that will help New York City maximize diversion will be those that facilitate the location and/or development of such primary processing capacity in or near the City.

- In order to be successful, such initiatives should involve companies whose focus is materials processing and not waste disposal, and who have the expertise to market NYC recyclables globally, nationally, and regionally, as well as locally.

- In the short and medium term, it will be far wiser to capitalize upon existing infrastructure and business experience, rather than as yet unbuilt, unproven, or unestablished ventures.

To help put this information in context, the report presents various appendices that describe state recycling goals (Appendix I); comparative studies on recycling rates and costs (Appendix II); waste-prevention policy and planning (Appendix III), public education about recycling (Appendix IV); NYC recycling data for 2002 (Appendix V), and comparative recycling data for Chicago, Los Angeles, New York, San Francisco, and Seattle (Appendix VI).

In addition, the CD that accompanies this report contains historical documents from the early years of NYC's recycling program: *New York City Recycling Strategy White Paper* (1988); *Preliminary Recycling Plan* (1990); sections from the 1992 *Comprehensive Solid Waste Management Plan*; and the 1993 New York University Report, *Exploring Economic Opportunities in Recycling*.