

# RECYCLING RETURNS

*Ten Reforms for Making New York City's  
Recycling Program More Cost-Effective*

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April 2004

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## ACKNOWLEDGMENTS

The recommendations of this report have been shaped by a steering committee of representatives from 10 environmental and consumer groups (please see Appendix for a listing of these author organizations). We gratefully acknowledge the assistance of four graduate students who conducted significant underlying research for this report: Aspasia Alexandra Dimizas, Lisa J. Fisher, Theodore N. Lanzano, and Kelly Levin. The development of our recommendations was also informed by a two-day Recycling Roundtable held in November 2002 in New York City sponsored by the Citywide Recycling Advisory Board and the Center for Environmental and Economic Partnership. We also appreciate legal research provided by law students Nathan Alley, David Berman, J. Kyle Nast, and Karen Spiegel.

We would like to thank the many government officials and solid waste experts who spoke to us, on and off the record, about recycling in New York City and other municipalities around the country. We also want to acknowledge NRDC's Allen Hershkowitz and Eric A. Goldstein for their thoughtful comments on earlier drafts, and Emily Cousins for her superb help in editing and producing the final report.

Additionally, NRDC would also like to thank the Robert Sterling Clark Foundation, Inc., and The Overbrook Foundation for their steadfast support of our solid waste advocacy efforts, as well as our more than 550,000 members, without whom none of our work would be possible.

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## PRODUCTION

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## EXECUTIVE SUMMARY

In the summer of 2002, New York City suspended glass and plastic recycling due to record budget deficits. A year and a half later, the city has reversed course and decided to restore its full recycling program.

This remarkable turnaround is due in part to a greater recognition that recycling is more cost-effective than some observers originally thought. Analyses by the city comptroller's office and environmental advocates revealed that the controversial recycling suspensions did not save the \$40 million that the Sanitation Department had predicted. In fact, the gap between the cost of recycling and waste disposal has shrunk by more than 85 percent in the last decade, due primarily to increased recycling rates and skyrocketing trash export expenses. Paper recycling—more than half of the city's operation—is already less expensive than trash disposal. And with city officials now poised to enter into a landmark 20-year contract for processing recyclables, overall program costs will drop even lower.

Despite this positive economic outlook, our organizations strongly believe that the city must now undertake major reforms to make recycling even more cost-effective. We recommend 10 concrete strategies that can further reduce recycling costs and ensure a successful rebuilding and expansion of the city's recycling program. By making recycling more economically stable, these changes will help expand New York's program and prevent the city from repeating the numerous changes in residential recycling rules that have eroded public confidence in the city's program.

All of the recommendations in this report will create a stronger program, but three of them call for sweeping changes:

**Create a More Powerful Recycling Office** The current structure of the city's recycling program significantly hampers its ability to put cost-saving strategies in place. City officials should create a new recycling office that is more business oriented and on at least equal footing with the city's other solid waste units. With these changes in place, the city can better focus on reducing the costs of processing our recyclables and developing stronger markets to sell them.

**Streamline the Collection System** Collecting paper, metal, glass, and plastic accounts for more than 85 percent of the direct costs of running the city's recycling program, and so collection presents the greatest opportunity for shaving recycling expenses. By changing collection practices and streamlining routes and schedules, the city could dramatically lower its recycling costs.

**Strengthen the Public Education Program** A poll of residents in all five boroughs conducted in 2001 revealed that people remain confused about what can be recycled under the city's recycling program. The recent cutbacks to the recycling program only added to the confusion, and this confusion costs the city money. When the wrong items are placed in recycling bins or recyclables are mistakenly added to trash, the city's solid waste costs go up. A better-educated public will help the city collect cleaner, better-quality recyclables, boost recycling rates, make collections more efficient, and save more money.

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In addition to saving money, strengthening New York’s recycling program will also reap greater environmental benefits within and outside city limits. It is well documented that recycling conserves natural resources, including timber, water, and mineral ores. The recycling of recovered items also uses less energy and produces less pollution, including the release of greenhouse gases, than manufacturing new products from virgin materials. And recycling decreases the need for landfilling and incineration, both of which generate significant environmental problems.

This report concentrates on strengthening New York City’s core residential and institutional (e.g., schools, public hospitals) recycling and composting programs. The report is not intended to cover many other important strategies the city could pursue to reduce its overall solid waste costs and help the environment. Most prominently, our report does not directly discuss waste reduction measures the city could initiate (e.g., promoting reuse of durable goods, reducing consumer packaging). These actions could be even more environmentally preferable than recycling, although overall have been harder to put into practice in the city and around the country. Nor does this report discuss potential manufacturers’ responsibility and take-back initiatives—now in force throughout the European Union—that could reduce the amount and toxicity of the waste stream, as well as shift some of the costs of managing municipal wastes from taxpayers to the producers of consumer goods. Lastly, our report does not address other pressing solid waste issues in the city, particularly the need to develop an environmentally and fiscally sound plan to handle the city’s nonrecyclable trash.

While this report sets forth recommendations on strengthening discrete components of the city’s recycling operations (e.g., collection, processing, market development, public education), viewing these different elements as interdependent, and understanding how decisions in one area affect the rest of system, is critical to creating a vibrant and fully cost-effective program. Lastly, even though we focus on the city’s residential and institutional recycling program in this report, from both an environmental and economic perspective, we cannot emphasize enough the importance of integrating all solid waste planning efforts. For example, it is essential that planners examine the city’s entire waste stream—including commercial recyclables and trash—in designing any new transfer facilities and other infrastructure improvements. Likewise, streamlining the city’s costly truck collections requires officials to study both regular trash and recycling patterns throughout the city. It is our hope that this report, in addition to sparking the adoption of cost-saving reforms in the recycling program, will also assist the city’s ongoing efforts to develop a new comprehensive strategy for the city’s monumental trash loads.



## RECOMMENDATION 1

### CREATE A MORE POWERFUL RECYCLING OFFICE

Ensuring that recycling is more cost-effective in New York City requires a fundamental change in the governmental structure of the city's program. City officials should create a new recycling office that embraces a more entrepreneurial approach to recycling and is on at least equal footing with the city's other solid waste units. With these changes in place, the city can better focus on modernizing the sorting of our recyclables, developing stronger markets to sell these items, and making collection practices more efficient.

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#### RECOGNIZE THE HISTORICAL STUMBLING BLOCKS

New York City's recycling program is currently structured in a way that hampers its ability to implement cost-saving strategies. A historic stumbling block has been that the Sanitation Department has assembled neither the staff nor the resources necessary to sufficiently approach recycling from a business perspective. We recognize that there are historic market, labor, transportation, and other related forces that have been impediments to attracting new recycling investments, and these larger forces have played a role in higher costs and lower efficiencies in recycling programs across the country, including New York City. Nevertheless, partly due to the department's overall lack of economic expertise, the city has been unable to attract or construct modern processing facilities for our metal, glass, and plastic recyclables that could significantly lower long-term costs. The department has also been unable to develop any coherent market development plan to ensure that these recyclables are sold after processing for their highest values (see further discussion in Recommendation 4).

A related structural problem is that the city's small recycling office does not have sufficient clout within city government; indeed, the head of the program is not even at the level of assistant commissioner at the Sanitation Department. Because of this lack of power, recycling managers lack the ability to meaningfully influence collection practices in a way that might shave program costs. The recycling office has also had little say in the development of the city's overall solid waste planning. And the limited scope of this office hinders the interagency coordination necessary to advance many market development activities, such as boosting the city's procurement of recycled goods, which is now handled by the Department of Citywide Administrative Services.

In contrast to New York, other jurisdictions have structured their recycling divisions in ways that foster broader economic thinking and have more autonomy in overall solid waste decision making. One leading example is San Francisco's Department of the Environment (SFE), which directs and monitors the city's recycling program. Working with a private carter, local nonprofits, and businesses, SFE helps develop and expand recycling programs by controlling the rate charged to residents for garbage and recycling pickup and by providing grants for recycling initiatives. This process allows SFE to not

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only determine policy for the day-to-day operation of the program, but also focus on market development (e.g., finding outlets for additional plastics or establishing buyers for the city's compost) and conducting education and outreach programs to maintain a high quality of recyclables. In addition, SFE has taken the lead, working with elected officials, in pressing sister government agencies to demonstrate their commitment to meeting the city's waste reduction goals.<sup>1</sup>

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## **CREATE A BUSINESS-MINDED RECYCLING OFFICE**

Following the lead of this and other governmental entities around the country, we strongly recommend that the city undertake a fundamental change in how its recycling office is organized. One approach is to create a new recycling unit outside of the Sanitation Department that would devote more resources to the economics of recycling and that would have parity with other city agencies. Our organizations are not set on any single model for moving the recycling office out of the Sanitation Department, but the city's Economic Development Corporation (EDC) may offer some guidance. This agency, which is responsible for promoting economic growth in the city, took a leading role in helping to ensure the development of the \$250 million Visy Paper Mill on Staten Island in the 1990s. Additionally, because of the EDC's business savvy and independence from the Sanitation Department, City Hall has recently asked this agency to take a greater role in long-term garbage planning, including aspects of the recycling program.<sup>2</sup>

Alternatively, the city could seek to overhaul the existing recycling office within the Sanitation Department itself. There are obvious advantages to keeping the recycling functions at the Sanitation Department, especially given the importance of collection practices in determining overall program costs. And the Bloomberg administration's restructuring of the city's education bureaucracy suggests that major internal changes at Sanitation are possible. Still, the department's overall lack of institutional support for recycling over the past decade raises serious questions as to whether it is ultimately the appropriate entity to be responsible for advancing this program beyond the status quo.

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## **TAP INTO INDEPENDENT FUNDING SOURCES**

A newly independent recycling office will need independent sources of funding. Many vibrant recycling programs around the nation rely partially or exclusively upon a source of revenue outside of the general municipal tax base—a feature that allows these jurisdictions to avoid annual budget battles and provides for more long-term investments in their program. Moreover, this dedicated funding source is commonly structured to provide incentives to reduce overall waste loads. For example, in San Francisco, as in over 6,000 municipalities across the nation, an independent source of revenue is generated by the so-called pay-as-you-throw scheme, which allows the city to charge residents for each container of trash collected, but provides free recycling pickup.<sup>3</sup> In California's Alameda County, a "source reduction and recycling board" is financed in



part by a surcharge of \$6 per ton of trash (on top of the disposal fee) disposed of at the two county-owned landfills.<sup>4</sup>

New York City’s recycling program—and the Sanitation Department as a whole—lacks any autonomous funding source. Instead, the department’s entire \$1 billion in annual operating expenses must be negotiated each year through the often contentious mayoral–City Council budget process. This arrangement has hindered consistent spending by the city on public education outreach, market development efforts, and infrastructure improvements, as well as contributed to the steady series of confusing changes to the recycling programs over the last decade.

Accordingly, in addition to creating a new recycling office, the city should also seek to secure a supplemental funding source for the program outside of the city’s annual operating budget—ideally designed in a way to encourage recycling and waste reduction. Possible sources of additional revenue involve:

- Generating funds through the economic development and financing of recycling and other solid waste projects (e.g., Visy Paper Mill), including revenue sharing from sales of recovered materials
- Leasing city-owned properties for recycling-related businesses
- Collecting recycling surcharge fees for trash transported through city waste transfer stations
- Creating a pay-as-you-throw system for all or selected New York City neighborhoods (this new revenue stream would serve as an alternative way of financing the recycling program and thus should partially substitute for existing municipal taxes attributable to recycling and trash management)<sup>5</sup>
- Imposing advance disposal fees on the manufacture or consumption of certain products or packaging (e.g., tires, electronics, appliances)<sup>6</sup>
- Collecting unclaimed deposit monies through the state’s bottle bill program (see discussion in Recommendation 6)
- Implementing extended producer responsibility funding mechanisms in the city, such as requiring consumer product companies and their distributors to help share in the costs of recycling their packaging waste.<sup>7</sup>

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We recognize that our proposed reforms would be a bold step for New York City. But the experience of the last 14 years has led us to the conclusion that the ultimate success and cost-effectiveness of recycling in New York City requires a seismic shift in the underlying governmental structure of the program.

## RECOMMENDATION 2

### STREAMLINE THE COLLECTION SYSTEM

It is impossible to discuss money-saving recycling reforms in New York City without zeroing in on the city's collection system, since collection costs account for the vast bulk of recycling expenses. By updating to newer collection technologies and by streamlining routes and schedules, the city could dramatically lower its recycling costs.

Aside from administrative and overhead expenses, the costs of running the city's recycling program consist of two main components: the cost of city sanitation workers collecting recyclables from homes and apartments; and the money the city must pay, if any, to private companies to process and resell these materials. In 2002, sanitation collections represented 86 percent of the direct expenses of the recycling program.<sup>8</sup> Thus, shaving collection expenses could have a big impact on lowering overall recycling costs in the city.

The most visible inefficiency in the city's current system is that sanitation workers pick up too few recyclables during the course of their daily shifts—often resulting in half-filled trucks and a high per-ton collection cost. The numbers tell the story:

- Prior to recycling suspensions in 2002, sanitation workers picked up an average of 5.9 tons of metal, glass, and plastic and 6.7 tons of paper during each truck shift.<sup>9</sup>
- In contrast, sanitation crews packed an average of 10.5 tons of regular trash into each truck during their shifts.<sup>10</sup>
- On average, city trucks with two workers collect 9.7 tons per day of trash and recyclables over an 8-hour shift.<sup>11</sup>
- Figures from other cities underscore the inefficiencies: *each worker* in San Francisco picks up an average of 8 tons of trash and recyclables during a regular 8-hour day (thus averaging 16 tons for every two workers), while workers in Toronto collect on average 25 tons of trash and recyclables in their 10-hour shift.<sup>12</sup>

New York's collection inefficiencies cost money. For fiscal year 2002, the city's Independent Budget Office calculated that it cost the Sanitation Department roughly \$156/ton to collect metal, glass, and plastic materials, \$140/ton for paper, and \$86/ton for trash.<sup>13</sup> While it is problematic to use these average-per-ton figures to determine overall costs (see Recommendation 9), and there is some uncertainty over their accuracy, they do show that recycling-collection efficiencies could be dramatically improved.

Although sanitation officials have historically resisted changes in this area, we believe that the rebuilding of the metal, glass, and plastic program, as well as the recent expiration of the union contracts governing trash and recycling collections, offers a fresh opportunity to streamline the operation.

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## **STUDY SINGLE-STREAM COLLECTION**

One of the most talked about topics in recycling circles these days is so-called single-stream collection. Under this approach, all types of recyclables—generally paper, metal, plastic, and glass—are placed in one bag or bin, picked up in one truck, and later sorted at a processing facility. In contrast, most cities—including New York—have traditionally relied upon a “dual stream” system that utilizes one truck for metal, glass, and plastic collection and a separate truck for paper.

By picking up paper, metal, plastic, and glass together, the Sanitation Department could potentially increase the city’s recycling collection efficiencies by more easily filling up recycling trucks during each shift. Single-stream collection would also make it easier for New Yorkers in lower-density areas of the city to recycle by allowing them to place all recyclables into one container, which could increase overall participation and diversion rates. With more recyclables placed out for pickup along each truck route, collection efficiencies go up. Because of these and other advantages, single-stream collection has recently been implemented in San Francisco, Los Angeles, Phoenix, and other large cities.<sup>14</sup> Nearby Broome County, New York, also converted to single-stream in September 2002, and so far has reduced the cost of processing recyclables by almost 15 percent in 2003.<sup>15</sup>

Critics of single-stream collection point out that mixing materials can reduce the quality of recyclable goods—especially contamination of paper by broken glass—as well as raise processing costs. Industry representatives, however, assert that the most sophisticated single-stream processing plants now operating around the country can match the contamination rates at more traditional multiple-stream facilities.<sup>16</sup>

Given the potential to significantly lower collection costs, we recommend that the Sanitation Department consider implementing single-stream collection and conduct pilot programs in one or two sectors of the city.<sup>17</sup>

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## **EVALUATE ALTERNATIVE TRUCK DESIGNS**

In a city as diverse as New York, a one-size-fits-all approach to collection does not make sense. The city should consider varying truck sizes on the basis of population density. For example, the city could switch to larger 35-yard trucks in high-volume areas of the city, as opposed to the traditional 25-yard packer trucks. In Philadelphia, the recycling program uses a variety of trucks, including 22-cubic yarders, 20-yard side-loaders, and 35-yard trucks, as well as 32-yard dual-bin trucks that load on both sides.<sup>18</sup>

To their credit, New York City sanitation officials have taken some initial steps to diversify the recycling truck fleet. In 22 low-density districts, the city operates dual-bin recycling trucks—with paper on one side and metal, glass, and plastic on the other. Data suggest, however, that the use of these trucks could potentially be expanded to as many as seven to thirteen additional districts.<sup>19</sup>

The city could also experiment with semiautomated trucks that can be operated by only one worker—as opposed to the current two-person crews in low-density neighborhoods. In San Francisco, semiautomated trucks service the entire city, collecting

trash and recyclables from single- and multifamily homes as well as apartment buildings.<sup>20</sup> Philadelphia and Toronto are also beginning to explore this change.<sup>21</sup>

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## **ADJUST THE COLLECTION SCHEDULE**

New York City could also lower collection expenses by better integrating its pickup of recyclables and trash. Despite the increased diversion of materials for recycling over the past decade—with some city neighborhoods reaching 30 percent prior to the plastic and glass suspensions—there has been no reduction in the frequency of trash collection during this period.<sup>22</sup> With more city waste being diverted into the recycling stream, the city could reduce the number of regular trash pickups without overloading sanitation trucks. This reform could translate into big savings for the city by both reducing the number of trucks on the road and maximizing the collection efficiencies of the remaining vehicles.

Recognizing the savings opportunities in this area, the Bloomberg administration proposed in its FY'04 budget to reduce trash collection in more than half of the city's neighborhoods. Ultimately, the administration had to withdraw its proposal—which reportedly would have saved \$11 million in the current fiscal year—in the face of political and community opposition.<sup>23</sup> We are sensitive to nuisance and other concerns that have been raised over proposed service reductions, especially in high-density neighborhoods. But we believe that the mayor, working more closely with the City Council and community leaders, can propose once again to reduce garbage collection in targeted districts without jeopardizing quality of life.

At the same time, we applaud the return of weekly recycling collection in April 2004 with the resumption of full metal, plastic, and glass recycling. Sanitation officials have acknowledged that every-other-week recycling collection, which was instituted on a temporary basis in July 2003, results in lower recycling tonnages.<sup>24</sup>

## RECOMMENDATION 3

### INCREASE REVENUES BY USING MODERN SORTING FACILITIES

It is difficult for recycling programs to save money without the proper equipment to process bottles, cans, and paper. Recyclables handled by old or dilapidated facilities do not bring top dollar in the marketplace, leading to higher processing costs. New York City could save millions of dollars by modernizing the facilities it uses to process metal, plastic, and glass materials.

Until last summer's recycling suspensions, New York City sent its metal, plastic, and glass items to a handful of outdated sorting plants in Queens, Brooklyn, and the Bronx. The result was often badly contaminated recyclables that were difficult to sell—especially mixed, crushed glass—and high operating costs.<sup>25</sup> Despite the poor performance, these plants had little incentive to upgrade. The city would only offer them short-term contracts that could be cancelled on 10 days notice. And with little guarantee of a return on capital investments, the owners of these facilities had no reason to make the necessary improvements. By the summer of 2002, these firms ratcheted up by 40 percent the average amount of money the city would have had to pay to process its metal, plastic, and glass materials in FY'03.<sup>26</sup>

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#### **ESTABLISH LONG-TERM CONTRACTS WITH SORTING FACILITIES**

Unlike New York, many other major American cities have modern sorting plants—commonly called material recovery facilities or MRFs—that can help deliver savings to municipal budgets. The successful facilities share some critical elements. They often start with a partnership between the city and a private company. The city generally offers the firm a long-term contract (10 to 20 years), and with that commitment of sustained business, the company invests in building high-tech plants. Both parties are vested in the quality of the recycled goods, since both share revenues from well-sorted materials. And over time, the company and the city receive a return on their investment.

Philadelphia provides an excellent example of this successful partnership. After several years of negotiation, Philadelphia contracted with a large private company, Smurfit-Stone Container Corporation, to codesign a modern MRF. In large part because of its long-term commitment to deliver these recyclables to the plant, Philadelphia is *paid* at least \$18/ton for its metal, glass, plastic, and paper recyclables.<sup>27</sup>

New York State offers a few promising models of its own. In Broome County, officials recently constructed a new publicly owned, single-stream MRF, but entered into a long-term contract with a private company, Waste Management's subsidiary, Recycle America Alliance, to run the plant.<sup>28</sup> Similarly, Westchester County built a \$24.4 million MRF in 1992 that is also run by Waste Management. Westchester just added a special wing to its MRF to sort paper by grade, which will allow the county to sell its paper at higher prices.<sup>29</sup>

New York City has one bright spot on the infrastructure front, thanks to the city's support for the \$250 million Visy Paper Mill on Staten Island. This mill processes an average of 1,000 tons of paper each day, including roughly 40 percent of the paper from the city's recycling program.<sup>30</sup> To help get this mill built, the city entered into a 10-year contract, with the option of two 5-year extensions with Pratt Industries, the Australian parent company. In conjunction with Empire State Development, a quasi-state agency, the city also put together an attractive financial package for the mill project, including tax-exempt bonds, tax breaks, and government loans.<sup>31</sup> The city is guaranteed a minimum revenue stream of \$10/ton for paper over the life of the contract.<sup>32</sup>

*The city has recently taken a giant step forward by seeking to sign a 20-year contract with a private firm to process the city's metal, plastic, glass, and potentially paper recyclables.*

Building upon the success of the Visy mill project, we recommend that New York City officials move swiftly to develop—either public or private—state-of-the-art MRFs to process the city's metal, plastic, and glass recyclables. The city has recently taken a giant step forward by seeking to sign a 20-year contract with a private firm to process the city's metal, plastic, glass, and potentially paper recyclables.<sup>33</sup> In awarding this long-term deal, however, it is critical that the city maintain sufficient flexibility to experiment with alternative collection methods (e.g., single-stream), as well as to add new materials to the recycling program in the future (e.g., textiles, organics). The city should also seek to ensure that any final arrangement with a private firm minimizes costly and environmentally damaging truck traffic. To its credit, the city has expressed an interest in maximizing the use of the city's waterways and rail lines to transport recyclables.<sup>34</sup>

We also urge the city to favorably consider proposals from facilities that would process not only metal, glass, and plastic items, but also the roughly 60 percent of the program's residential/institutional paper stream not currently under contract to Visy. After metal, paper is generally the most valuable commodity in the city's recycling program. Thus, the inclusion of paper in any final award could significantly improve the financial arrangement for the city by helping to offset the processing costs for less valuable glass items. Having an MRF process metal, plastic, glass, and paper could also save collection dollars by providing the city's dual-bin trucks with a one-stop drop-off location, and by allowing the city to experiment with single-stream collection.

Lastly, we urge the city to give greater weight to proposals that seek to channel recyclables, where practical, to the highest environmental and economic end uses available.<sup>35</sup>

## RECOMMENDATION 4

### DEVELOP MORE MARKETS FOR RECYCLABLES

As New York City boosts the quality of its recyclables through improved collection and processing, it must at the same time take a greater role in ensuring that these items are sold for the highest value in the marketplace. Recognizing the importance of maximizing prices for its recycled goods, the city launched several market development initiatives over the past decade.<sup>36</sup> Unfortunately, none of these undertakings produced any coherent or sustained plan of action. To jump-start the city's work on this critical issue, we set forth four recommendations.

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#### ATTRACT NEW RECYCLING INDUSTRIES AND BUSINESSES

Attracting new recycling-related industries and businesses to the city is one of the best ways to help stimulate the market for recycled materials. Many cities offer regulatory and economic incentives to help attract businesses that market or rely on recycled materials. In Portland, Oregon, for example, the regional waste planning authority, Metro, provides grants and loans to businesses that make products with recyclable materials recovered in the region. Metro employs a full-time market development coordinator and supporting technical staff to implement this innovative program as well as other market development initiatives.<sup>37</sup> New York State has also supported start-up recycling businesses through its Empire State Development program. As one example, Empire State provided funds to a Brooklyn-based glass recycler to produce a new material using over 80 percent recycled glass for use in countertops, vanities, partitions, and other architectural treatments.<sup>38</sup>

New York City should follow the lead of these cities and states and provide financing to companies or processing facilities through tax incentives, loans, and grants, as well as help these businesses to navigate the permitting and construction processes. Additionally, New York City should hire specialists in retaining businesses that use recycled materials. We are pleased that the city, in seeking to sign a long-term metal, plastic, and glass contract, prefers candidates who are willing to develop markets in New York City.<sup>39</sup> We hope that the city can view the issuance of this new long-term contract as an opportunity to revive its long-dormant market development work.

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#### ESTABLISH RECYCLING REQUIREMENTS FOR CITY AGENCIES

Another tool for expanding the market for recycled goods is to require city agencies to buy products made from recycled materials. Many governmental entities have established recycled procurement requirements and standards for paper and other products. For example, the White House issued an executive order in 1993, strengthened by an order in 1998, requiring federal agencies to purchase all printing and writing paper with at least 30 percent post-consumer recycled content.<sup>40</sup> As a result of these executive orders, the amount of recycled paper purchased by the federal government increased by 98 percent

*The city should now launch a full-scale research effort to identify potential local uses for recycled commodities by the government and its contractors.*

between 1993 and 1999.<sup>41</sup> The U.S. Environmental Protection Agency has also issued guidelines designating more than 50 items made with recovered materials (e.g., carpet, park benches, playground equipment, traffic cones) that federal agencies, states, and localities using federal funds and government contractors must purchase if spending more than \$10,000 a year on that item.<sup>42</sup> The city of San Francisco has also put on the books a law requiring its agencies to purchase 30 percent post-consumer recycled printing and writing paper, as well as all recycled products designated by the EPA.<sup>43</sup>

Unfortunately, New York City's track record in purchasing products made from recycled materials has been poor. Despite the economic and considerable environmental benefits of creating market demand, buying recycled goods has not been a priority over the past decade.<sup>44</sup> Although data are hard to obtain, it appears that neither the Department of Citywide Administrative Services (DCAS) nor individual city agencies that handle their own purchasing are routinely buying paper with 30 percent post-consumer recycled content. To its credit, the DCAS has recently hired new staff to procure recycled goods and other environmentally preferable products. But given the sluggish progress on this issue, we recommend that the City Council enact 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. One council bill on city procurement that was introduced in 2002, Intro 29, offers a good starting point for drafting such procurement legislation.<sup>45</sup>

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#### **ENACT MINIMUM CONTENT LAWS**

To stimulate the use of recycled materials by industry, we recommend that city or state officials advance laws and policies that increase the use of recycled materials in new products. As discussed in more detail in Recommendation 5, one way to accomplish this objective is to establish state or city minimum recycled-content standards for specific products and packaging. In addition to minimum content standards for glass products, New York State and city officials—following the lead of California, Oregon, Wisconsin, and other states—should also advance new requirements for paper and plastic goods.<sup>46</sup>

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#### **STRENGTHEN PRODUCT RESEARCH**

New York City should explore new opportunities for encouraging research and development on recycled-content products. The city started down this road in 1993 when the mayor signed an executive order creating an interagency task force to promote the use of recycled products and other materials in the construction industry.<sup>47</sup> The city should now launch a full-scale research effort to identify potential local uses for recycled commodities by the government and its contractors. To help on this issue, the city should work with the Empire State Development Corporation's Environmental Management Services Unit, which provides businesses with up to 80 percent of funding for research and development and up to \$200,000 for start-up of projects that result in pollution prevention and economic development.<sup>48</sup>



## RECOMMENDATION 5

### IMPROVE COLLECTION AND MARKETING FOR GLASS

The collection of glass bottles and jars for recycling will resume in New York City in April 2004, a move that, if done right, could create a savings in managing our waste.<sup>49</sup> In order to ensure that glass recycling is cost-effective over the long term, the city will have to implement new solid waste approaches as well as push for reforms in Albany. In particular, by moving swiftly to improve collection and strengthen markets for glass—two strategies that have generated success in other major cities—the city can make glass recycling a stronger money saver.

From a technical standpoint, glass is one of the easiest materials to recycle. Melting recycled glass of the same color to make new containers is relatively simple and efficient. New bottles and jars can be made with up to 70 percent recycled glass—referred to as cullet.<sup>50</sup> Moreover, recycled glass melts at lower temperatures than virgin materials, lowering energy use and air pollution.<sup>51</sup>

Glass recycling in New York City, however, is problematic. Glass collected from city homes and apartments is often unsuitable for making new glass containers, largely due to the manner in which it is collected. When glass containers are tossed together in the back of city recycling trucks and compacted, the end product is broken shards of glass made up of different colors, or so-called mixed cullet. Because mixed cullet cannot easily be made into new single-colored bottles, and because government officials have not provided the private sector with the proper financial incentives to cost-effectively process and resell this material, recovered glass collected by the city has historically had a very low market value. The processing and marketing of the city's mixed cullet has been further complicated because it is often contaminated with food and other organic material—which may be attributable in large part to the city's poor public education program.<sup>52</sup> As a result, much of the glass collected through the city's program in recent years has been directed toward low-end uses, for example, as cover material at out-of-city landfill sites.

Not surprisingly, the difficulties with reusing the city's collected glass have complicated efforts to make our overall recycling program more cost-effective. Indeed, due in large part to weak markets for mixed cullet, the private companies that formerly processed the city's metal, glass, and plastic stream proposed in 2002 to increase the average cost of processing one ton of this combined material by over 40 percent. Over the last year, a private vendor paid the city \$5.10 per ton to process metal and plastics. But adding glass back into the mix means the city will have to pay the vendor \$51 per ton to handle all three of these items. (As indicated in Recommendation 3, if metal/plastic/glass are contracted out with paper materials, these processing costs will be more favorable for the city due to the relatively high market value for paper.)

The restoration of glass collections will increase overall processing costs, although these costs are still significantly less per ton than export expenses. But the city can offset the increase in processing costs by saving dollars on the collection side. Because glass makes up more than 50 percent of the total weight of the metal, glass, and plastic

recycling stream, adding this hefty load back into the recycling program will make collection more efficient.<sup>53</sup> In short, each recycling truck will carry a heavier load, thus lowering the per-ton cost of recycling metal, glass, and plastic. (See discussion on collection costs in Recommendation 2). At the same time, as New York City Comptroller William Thompson has pointed out, restoring glass collections could allow the city to reduce the total number of sanitation trucks on the road, which in turn would lower overall solid waste expenses.<sup>54</sup>

With this favorable fiscal projection, it is essential that the city advance new strategies to increase the cost-effectiveness of collecting and processing this material and address the weak market conditions for glass.

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### **ATTRACT STATE-OF-THE-ART PROCESSING FACILITIES**

Perhaps the most important strategy the city should pursue to reduce the costs of glass recycling in New York City is to attract a state-of-the-art processing facility to handle our mixed cullet. Technology currently exists to significantly reduce contamination of mixed cullet and process it for beneficial uses (e.g., sand blasting, road aggregate, fiberglass). According to industry representatives, there is equipment that can effectively sort mixed cullet for use in new bottles.<sup>55</sup>

Finding ways to attract modern processing facilities to handle the city's glass will not be easy. New York City has taken a step in the right direction by negotiating with private companies to process the city's metal, glass, and plastic, and potentially paper, recyclables over a 20-year period.<sup>56</sup> By offering a long-term contract, the city can help remove one barrier to private-sector investment in glass-processing infrastructure. We urge the city to give greater weight to proposals that will market glass to the highest environmental and economic end uses available.<sup>57</sup>

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### **REDUCE GLASS BREAKAGE AND CONTAMINATION**

Reducing the amount of broken mixed colored glass the city must handle could also lower overall costs. One way to help accomplish this goal is to cut down on the total amount of glass entering the city's recycling program by expanding the state's Returnable Container Act (or Bottle Bill) to include bottled water, iced teas, juices, and other noncarbonated beverages. If this state law were expanded, the city could divert as much as 220 tons per day of glass containers out of the waste stream, saving the city as much as \$10 million in collection and disposal costs.<sup>58</sup> It would also result in stronger glass markets since containers redeemed under the Bottle Bill program at supermarkets or redemption centers are generally unbroken and uncontaminated, and thus can be more easily recycled.<sup>59</sup> (More comprehensive Bottle Bill reforms are discussed in Recommendation 6).

The city could also reduce glass breakage and contamination by implementing different recycling collection techniques. In Portland, Oregon, for example, residents are required to put glass bottles and jars in a separate paper bag before placing them in

*Perhaps the most important strategy the city should pursue to reduce the costs of glass recycling in New York City is to attract a state-of-the-art processing facility to handle our mixed cullet.*

recycling bins; the glass is then collected and placed in a separate compartment in the recycling truck.<sup>60</sup> Alternatively, the pickup of metal, glass, and plastic recyclables along with newspaper and other paper items, known as single-stream collection, could also reduce glass breakage since the paper acts as a cushion for bottles and jars. San Francisco has also experimented with varying rates of compaction in recycling trucks to reduce the amount of glass breakage and contamination of other recyclables.<sup>61</sup>

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## **STRENGTHEN RESEARCH AND MARKET DEVELOPMENT**

Lowering recycling costs will also require city officials to take a more active role in researching and developing markets for glass in the immediate future.

**Market Mixed Cullet For New Containers** As a starting point, the city's Sanitation Department and Economic Development Corporation should seek to identify manufacturers that could recycle our mixed glass cullet into new containers—the most sustainable and environmentally preferable option for New York. While mixed cullet has traditionally been unsuitable for creating new containers, the technology to reuse mixed contaminated glass for glass containers now exists, thanks in part to innovative research and development by the Gallo Glass Company in California.<sup>62</sup>

**Identify Other End Uses for Recycled Glass** Because not all of the glass collected in New York is likely to be sold to glass container manufacturers, city officials should also help create alternative uses for our mixed cullet. In fact, municipal recycling programs across the country rely heavily on noncontainer markets to utilize mixed cullet. A number of cities and states are using mixed glass to replace gravel in road building.<sup>63</sup> Indeed, New York City's Department of Transportation used mixed cullet in the production of so-called glassphalt during the late 1980s to the mid-1990s.<sup>64</sup> And Empire State Development has actively supported research on the use of glass in different transportation projects and is currently working with the New York State Thruway Authority to develop specifications for using glass in road building and other civil engineering practices.<sup>65</sup> Many jurisdictions and businesses have also used mixed cullet in the production of concrete, abrasives, wastewater filters, and drainage aggregate.<sup>66</sup>

**Establish Minimum-Content Standards for Glass Products** To stimulate the markets for glass, New York city and state officials should also consider the adoption of new laws that require manufactures to use a certain percentage of recycled glass in new containers or other products. Such minimum-content standards have successfully been established by various states for newsprint, paper and plastic trash bags, telephone directories, and plastic containers.<sup>67</sup> And two states—Oregon and California—have established minimum-content standards for glass products, including beverage containers and fiberglass building insulation.<sup>68</sup> According to California officials, their minimum-content laws have been one of the main driving forces behind the large demand for recycled glass cullet—including mixed cullet—in the state. In fact, they report that those looking to use glass for glassphalt or other applications will seldom find enough cullet for their projects.<sup>69</sup>

A report prepared in 2000 for New York City's Sanitation Department recommended the establishment of federal or state minimum-content standards for glass containers and

fiberglass, modeled in part on California's laws, as a way to create new markets and to enhance the cost-effectiveness of the city's recycling program.<sup>70</sup> Given the positive results in California, we urge the mayor and the City Council to press for the enactment of minimum-content standards for glass containers (and other materials) in Albany. Alternatively, we urge the mayor and the City Council to consider enacting local minimum-content laws—something the Sanitation Department's consultant also contemplated. Although enacting such legislation at the local level would present greater implementation problems, we believe the city has the legal authority to act on its own and sufficient purchasing power to create significant demand for glass.

## RECOMMENDATION 6

### UPDATE NEW YORK STATE'S BOTTLE BILL

New York State's Bottle Bill has been the most effective recycling and litter control program in the state's history. Since it was enacted in 1982, New Yorkers have returned a staggering 80 billion beer and soft drink containers for recycling.<sup>71</sup> Strengthening this law could play a critical role in making New York City's curbside program more cost-effective. Reforming the Bottle Bill could generate as much as \$75 million in new income for recycling in New York City. And the city could save more than \$10 million in recycling costs by diverting larger amounts of glass and plastic materials out of the recycling stream, for a total savings of close to \$85 million each year.

Under the Bottle Bill, officially known as the Returnable Container Act, a five-cent refundable deposit is placed on all carbonated beverages, beer, and wine coolers sold in the state. The Bottle Bill has averaged a 75 percent redemption rate over the 20-year period—a rate far higher than that achieved by any municipal recycling program in New York.<sup>72</sup> It has also led to reductions in litter and has resulted in safer, more attractive streets and public areas, while reducing municipal sanitation costs.

To build upon this successful record, a broad coalition of environmental, community, civic, and labor groups, as well as prominent elected officials including Attorney General Eliot Spitzer and New York City Comptroller William Thompson, are now pressing for several changes to the Bottle Bill. The majority of those seeking to update the Bottle Bill—including many of our organizations—are advancing three interrelated legislative changes.

**Expand the Reach of the Bottle Bill** The first reform would expand the Bottle Bill to include deposits on noncarbonated beverages, such as bottled water, fruit drinks, iced teas, and sport drinks. These so-called new-age beverages now make up more than 21 percent of the nonalcoholic, nondairy beverage container market in New York State, or 2.6 billion bottles and cans per year.<sup>73</sup> According to estimates prepared by the Container Recycling Institute, expanding the Bottle Bill could remove an additional 67,000 tons per year—or more than 220 tons per day—of material from the city's waste stream.<sup>74</sup> This reform could save the Sanitation Department more than \$10 million in collection and disposal costs.<sup>75</sup> California, Maine, and Hawaii bottle laws already cover these new-age beverage containers. (As discussed in Recommendation 5, expanding the scope of the Bottle Bill will also help create stronger markets for glass by producing higher-quality recyclable materials.)<sup>76</sup>

**Reclaim Millions of Dollars for Public Programs** A second proposed change to the Bottle Bill would allow New York City and other municipalities around the state to funnel the millions of dollars of unclaimed container deposits each year into recycling, waste prevention, and other environmental initiatives, further reducing New York City's waste disposal costs. Other states, including California, Michigan, Massachusetts, and Hawaii use unclaimed monies to fund recycling and other public projects.<sup>77</sup> In New York however, any deposits that are not redeemed by consumers are kept solely by the

*Reforming the Bottle Bill could generate as much as \$75 million in new income for recycling in New York City.*

beverage industry. According to reliable data, between \$85 million and \$140 million in unclaimed deposits are currently retained by New York's beverage industry each year, including almost \$60 million in unclaimed deposits generated by consumers in New York City alone.<sup>78</sup> Under an expanded Bottle Bill, these monies would total \$180 million statewide, including almost \$75 million from New York City.<sup>79</sup>

**Increase the Deposit to 10 Cents** A third reform would boost the current 5-cent deposit on containers to 10 cents. When accounting for inflation, the nickel deposit, imposed in 1982, represents only 2.8 cents today.<sup>80</sup> Data show that redemption rates around the state have dropped below 70 percent and 62.5 percent in New York City, due in some part to the declining value of the nickel.<sup>81</sup> Michigan, whose container law has a dime deposit, has a redemption rate of over 90 percent—the highest of any state bottle bill.<sup>82</sup> Raising the deposit would boost New York's sagging redemption rates, and thereby maximize the Bottle Bill's benefits for recycling and litter control.

In a report issued last year, the New York City Joint Recycling Task Force, composed of mayoral and City Council staff, endorsed expanding the Bottle Bill and requiring the beverage industry to return unclaimed deposits to the city and other municipalities.<sup>83</sup> And a recent statewide poll found widespread public support—across all geographic, socioeconomic, ethnic, and political lines—for updating the Bottle Bill.<sup>84</sup> Given this broad support and the potential economic and environmental benefits to New York City, we urge the mayor and the City Council to press the state legislature and the governor to strengthen and expand the Bottle Bill.

In addition to seeking these legislative changes, the city should initiate a public education campaign in concert with the New York State Department of Environmental Conservation—the agency responsible for overseeing the Bottle Bill program—to encourage residents to redeem their bottles and cans covered under the law. Although they will not be easy to locate, city officials should also seek to establish alternative redemption centers in order to boost return rates and to relieve overcrowding at some supermarkets and bodegas. Finally, the city should press the state for stronger enforcement of this program both at the supermarket and distributor levels.

## RECOMMENDATION 7

### RESTORE AND EXPAND COMPOSTING

Composting food and yard waste is perhaps the greatest untapped opportunity for expanding recycling in New York City. After wastepaper, the largest portion of New York’s residential waste—approximately 28 percent—is made up of leaves, grass, yard, food, and other organic waste, all of which have a beneficial use outside of the landfill or incinerator.<sup>85</sup> In the short term, New York City could save in excess of \$12 million per year by restoring and expanding composting programs. Long-term savings in this area promise to be substantially greater.

Composting is a natural process that can be accelerated by technology to convert organic matter into a fertilizer or mulch; it can be done either onsite (i.e., at the point it is generated) or at a centralized facility. Among its environmental benefits, composting reduces the uncontrolled release of harmful global warming gases by preventing its decay in landfills.<sup>86</sup> Processing food and yard waste through anaerobic digestion (an accelerated composting method) not only results in a fertilizer product but can also generate energy.

When the Sanitation Department launched the composting program in 1989, it started with just 1,000 tons of leaves. By 2001, the program had significantly expanded to include a food waste composting facility at Riker’s Island, educational initiatives conducted by the city’s four Botanical Gardens, and leaf collection in 35 of the city’s 59 sanitation districts. In total, 47,000 tons per year of organic material were composted in 2001.<sup>87</sup>

Despite this remarkable growth, all city-supported composting programs, except the Riker’s Island operation, were eliminated in the 2002 budgetary cutbacks. At the time, the Bloomberg administration claimed that scuttling these programs would save the city \$1.8 million per year.<sup>88</sup> The Sanitation Department, however, has not publicly provided any documentation of these budget savings. And our own analysis shows that the city’s composting programs can be cost-competitive with trash disposal. Thus, to lower disposal costs and maximize environmental benefits, we recommend that the city reinstate and strengthen its composting programs in three main areas.

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#### **LAUNCH A “LEAVE IT ON THE LAWN” PROGRAM FOR GRASS CLIPPINGS**

The Sanitation Department should immediately adopt rules requiring New Yorkers to leave grass clipping on their lawns to decompose, rather than putting them out for regular trash collection. Several communities on Long Island, such as Southampton and Huntington, have instituted a ban on collecting grass clippings and are instead encouraging residents to leave them on lawns or compost them at home.<sup>89</sup> In New York City, where homes and institutions generate an estimated 78,000 tons of grass clippings each year, a “leave in on the lawn” rule, when fully implemented, could save the city an estimated \$12 million per year.<sup>90</sup> The Sanitation Department itself proposed just such a requirement in 1994, but the regulation was never promulgated due to opposition from

Queens representatives who argued that a period of education was needed before imposing mandatory rules. After a decade of delay, New York should finally institute this long-overdue cost-saving and environmentally preferable measure.

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## **RESTORE AND STRENGTHEN LEAF COMPOSTING AND CHRISTMAS TREE MULCHING**

This fall, as required by local law, the city should restore residential leaf collection and composting in the 35 districts where the program had been previously operating.<sup>91</sup> By restoring and streamlining the program, we estimate that the city can gain a short-term savings of hundreds of thousands of dollars and greater savings as the program continues to grow.

As of 2001, the city was composting approximately 20,000 tons of leaves per year.<sup>92</sup> The Department of Sanitation has not publicly provided data on the cost of collecting these leaves. But sanitation officials have indicated that the cost of composting the leaves is approximately \$62/ton—less than the cost of disposing of this material as regular trash.<sup>93</sup> The city's leaf program produced, on average, \$350,000 per year worth of finished compost (based on current local pricing of \$10/cubic yard), which has been used by residents and by the Parks Department in its horticultural work citywide.<sup>94</sup> Thus, in contrast to simply burying or burning leaves, composting this material—with an efficient collection system—can create a savings for the city.<sup>95</sup>

Moreover, the city could significantly lower its leaf compost processing costs by requiring all residences to use rigid containers or recycled paper bags for collection of leaves—instead of using regular plastic trash bags. Instituting this reform could slash processing costs in half (from \$62/ton to roughly \$32/ton) and, based upon 2001 tonnage levels, generate an additional \$600,000 in annual savings for New York.<sup>96</sup> Indeed, because of their environmental and economic advantages in composting operations, paper bags are mandated in numerous municipalities around the country, including Albany.<sup>97</sup>

The city should also fully restore its Christmas tree collection program. By making this program an annual ritual and streamlining its collection, the city could make it more cost-effective. In restoring this popular service, the city can also avoid the logistical problems it has encountered when transporting and disposing trees at out-of-city incinerators and landfills.

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## **EXPAND FOOD WASTE PROGRAMS**

Food is one of the heaviest, and thus most expensive, components of trash removal. Studies suggest that the percentage of New York City's waste stream that is comprised of food scraps is nearly twice the national average, at 15 percent compared to 9 percent nationally.<sup>98</sup> This is why the city should expand its food composting programs in two specific ways. For large-city institutions, it should increase its use of onsite food waste composting, such as the current facility at Riker's Island. This state-of-the-art, fully enclosed facility handles 20 tons per day of kitchen and cafeteria waste at a cost of

*Food is one of the heaviest, and thus most expensive, components of trash removal.*



roughly \$50/ton, for a total annual savings of \$120,000.<sup>99</sup> The Sanitation Department, in conjunction with the city's Economic Development Corporation, is currently investigating the prospect for onsite food composting at the Hunts Point Market in the Bronx; this city-owned facility serves businesses that import and distribute all types of food products.<sup>100</sup> As part of this effort, the city should consider constructing smaller enclosed anaerobic digester units as a means of not only reducing disposal costs but also generating energy by capturing composting gases. Anaerobic digester plants have become increasingly common in Europe, with roughly 70 units in operation by 2002.<sup>101</sup>

Residential homes are another source of heavy food waste. The city could increase its savings by further experimenting with centralized composting for residential food scraps. The city should conduct new food waste pilot programs—similar to the two intensive recycling and food waste composting projects it launched in Brooklyn in the early 1990's—to test different collection methods. For example, in a low-density area of the city, officials could test a three-bin system whereby residents place trash in one bin, metal, glass, and plastic and paper in another bin, and food and yard waste in a third bin—an approach currently being followed in San Francisco. Alternatively, the city could study the feasibility of processing nonrecyclable garbage in order to compost its biodegradable contents (so-called mixed-waste composting).

## RECOMMENDATION 8

### STRENGTHEN THE PUBLIC EDUCATION PROGRAM

An independent poll of residents in all five boroughs conducted in 2001 revealed that residents remain significantly confused about what can be properly recycled under New York City's recycling program.<sup>102</sup> That confusion costs the city money. When recyclables are mistakenly added to trash or the wrong items are placed into recycling bins, this drives up the city's solid waste costs. A better-educated public will lead to a more successful recycling program, and, in turn, generate more savings for the city.

By more effectively teaching New Yorkers how and what to recycle, the city can save money in two key ways:

- Strong outreach increases participation and diversion rates, improving the city's mediocre collection efficiencies of its recycling trucks, and thereby cutting collection costs.
- Better education on what materials can be recycled will help the city decrease contamination rates, which in turn results in a reduction in processing costs for recycled material and higher market values for these items.

*A better-educated public will lead to a more successful recycling program, and, in turn, generate more savings for the city.*

Over the past decade, New York City's track record in this area has been mixed. To its credit, the department has taken many steps to educate residents on the basic elements of the city's recycling program. Among other things, the department has undertaken an extensive program of recycling information to individual households and building managers throughout the city, launched a recycling education program in the city's 1,100 public schools, and placed recycling education ads in newspapers and on radio and television.

Despite these considerable efforts, however, many concerns remain. For instance, the department's outreach program has not kept pace with the changing recycling rules. Nor have the Sanitation Department's recent television and poster ads provided specific enough information on what materials to recycle, or emphasized the need to clean containers before depositing them in recycling bins. The city has also failed to provide regular funding to continually reenforce the message of why New Yorkers should recycle. Some observers have pointed to the city's relatively high residue rate—approximately 36 percent for metal, glass, and plastic materials in 1999 (the last year for which complete data are available)—as evidence that better public education is needed.<sup>103</sup>

Examination of public education programs in other jurisdictions suggests that New York City's outreach could be significantly enhanced in several core areas:

**Use Targeted Outreach** New York is one of the most diverse cities in the world, with unique demographic characteristics and highly dense housing stock; a one-size-fits-all approach to education will not work for all of its many parts. The recycling program's outreach should be tailored to the needs of each community, especially in multifamily dwellings. San Francisco, for example, has instituted a number of community-based

approaches to recycling, such as holding neighborhood meetings in Chinese and Spanish to describe changes in the recycling program.<sup>104</sup>

**Identify Onsite Champions** City outreach efforts have failed to effectively educate residents of large multifamily dwellings and institutions. Data show participation rates in these types of buildings can be improved when an onsite champion (e.g., building tenant or superintendent) is identified to help educate other tenants, monitor contamination, and distribute and collect recycling bins.<sup>105</sup> In Upstate New York's Onondaga County, a recycling coordinator trains several key individuals who in turn teach apartment building managers on what and how to recycle in their buildings.<sup>106</sup> In New York City, an innovative community coordinators program run through INFORM and the Council on the Environment of New York City began this important outreach work; unfortunately, program funding was cut short in October 2003. More financial support, therefore, is required to better educate onsite allies in recycling.

**Launch Strategic Campaigns** The city has launched several print and television campaigns on recycling, but it is unclear whether these ads have increased diversion rates and reduced contamination levels—the two best indicators of successful outreach. Based upon the experiences of other cities, New York officials should undertake more strategic polling to shape its public education messages. After each campaign, it should assess whether or not it met the goals of increasing diversion and reducing contamination. For example, in a citywide poll conducted in 2002, the city of Philadelphia found that residents are most motivated to recycle when faced with a fine. The city then created a television commercial showing residents that they would not be ticketed if they recycled. According to Philadelphia officials, this media campaign, coupled with strong yet informative enforcement, resulted in an average 25 percent increase in the city's recycling rate from the previous year.<sup>107</sup>

**Use Better Enforcement** As the Philadelphia example illustrates, people take recycling seriously when the city takes it seriously. New York should follow the Waste Prevention Coalition's recent recommendation and triple the number of recycling enforcement agents, ensuring that households and businesses comply with recycling rules. It should also increase the size of recycling fines from \$25 to \$50—a change that could raise as much as \$11 million per year in city revenue.<sup>108</sup> However, we believe that any expanded enforcement crews should seek to educate New Yorkers in the first instance—answering questions from residents, helping to distribute literature, or even leaving notes for any initial infractions that explain why recyclables were not properly sorted.

**Supply Consistent Funding** None of the city's education efforts will ultimately be worthwhile if they are not consistently funded. As the U.S. EPA has noted, outreach and education efforts must be continuous, especially in areas of multifamily dwellings with a high rate of turnover.<sup>109</sup> Unfortunately, in part due to competing budgetary priorities beyond the Sanitation Department's control, the city's public education allocations over the past decade have fluctuated dramatically.<sup>110</sup> As was noted at the 2002 Recycling Roundtable in New York, data suggest that most cities with successful programs spend approximately \$1.00 per person on public education, in contrast to the roughly 77 cents per person New York City has spent over the last decade.<sup>111</sup>

**Remind and Reeducate** In implementing all of these recommendations, we urge the department to take particular care to ensure that New Yorkers are properly reeducated as full recycling returns to the city. Given the sudden suspension of these materials after more than a decade of their inclusion in the program, it is critical that residents be informed about how to properly recycle these materials.

## RECOMMENDATION 9

### PROVIDE MORE TRANSPARENT DATA

It is difficult to fully analyze the cost-effectiveness of New York City's recycling program, and how it can be streamlined, without a clear and complete accounting of the Sanitation Department's overall solid waste costs. Unfortunately, for years it has been hard to obtain comprehensive data on the city's recycling and garbage management expenses. At the same time, fiscal information that is made available often obscures the true costs of recycling in comparison to the alternative of trash disposal. As a result, the New York City Council, independent watchdog groups, the press, and the public have been handicapped in their efforts to properly evaluate the efficiency of the city's recycling program. We recommend that the Sanitation Department provide greater and more transparent information regarding its recycling and waste disposal costs.

There are three primary areas where full and accurate data have not been available or forthcoming.

**Missing Collection Information** There is limited information available to the public about the city's basic recycling and solid waste collection costs. For example, it is difficult to obtain data on how much it costs to run a sanitation truck each day to pick up recyclables or garbage (referred to as truck shift costs). There is also no clear, publicly available information on the additional costs of having a sanitation worker drive trash or recycling trucks to out-of-city incinerators and transfer facilities after the initial crew has completed its in-city collection route (known as relay costs). This information is essential in comparing the costs of collecting recyclables versus trash, and thus in evaluating the overall costs of recycling versus trash export. There is also a paucity of publicly available data on the amount of garbage and recyclables collected in individual truck routes around the city. Without detailed truck route information, it is hard for outside observers to make concrete recommendations on ways to improve the efficiency of the city's collection practices.<sup>112</sup>

**Misleading Recycling Cost Data** Official New York City data often distort the true costs of recycling in comparison to regular refuse costs. One persistent problem is that the city has historically factored certain nonrecycling costs (e.g., overhead and personnel expenses, solid waste planning costs, debt service costs) into the average-per-ton cost of recycling, even where these expenses would exist without any recycling program. This accounting approach, which the Sanitation Department presents in public documents as its "fully loaded" cost, unfairly inflates the per-ton cost of recycling.<sup>113</sup> For example, New York City Comptroller William Thompson recently found that of the \$36 million the department allocated in the city's FY'01 recycling budget to solid waste planning costs, \$26 million were improperly allocated to the recycling budget—inflating the costs of recycling by \$13 per ton.<sup>114</sup>

Another significant distortion of recycling costs was revealed during the 2002 budget debate. In arguing for a suspension of the metal, glass, and plastic program, the city asserted that the average cost of processing these materials would jump from roughly

\$58/ton to approximately \$120/ton under new bids from private vendors.<sup>115</sup> But independent analyses by both the comptroller's office and the environmental community have shown that, in fact, average processing costs would have increased by only \$24/ton—to \$82/ton.<sup>116</sup> The main reason for the city's inflated numbers is that they did not explain that under a revenue-sharing provision of the processing contracts, the department would have likely received a \$44 per-ton rebate after the vendors sold the collected recyclables in the marketplace.<sup>117</sup>

**Glossing Over Rising Export Costs** The city's garbage management costs are a third area where complete and transparent information is generally not made available, or is often presented in a misleading fashion. In particular, city data commonly obfuscate the escalating costs of exporting our trash to out-of-state landfills and incinerators. Over the last three years, the average citywide cost of exporting trash has increased by 46 percent, from \$72 per ton to \$105 per ton, and this number is expected to continue to escalate.<sup>118</sup> Although sanitation officials have discussed rising export costs in official planning documents, they frequently overlook these trends when discussing recycling costs in public forums or to the press. City officials often treat rising export costs as a separate fiscal problem facing the city, with little acknowledgement that recycling—especially as it has become cheaper over the past decade—is an economically viable alternative to trash disposal.

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#### **PROVIDE INCREMENTAL ACCOUNTING AND NECESSARY DATA**

In light of these problems, the city should significantly alter what type of recycling and waste disposal data is presented to the public. As a first step, the city should avoid using average-per-ton costs for comparing recycling versus trash disposal. Instead, city officials should provide to the public each year a so-called incremental analysis of the recycling program. Under an incremental analysis, the city would measure the total expenses actually incurred by the city in operating the recycling program (e.g., collection and processing costs), as well as credit the savings realized in other solid waste operations as a result of these programs (e.g., lower trash disposal costs, revenues from selling recyclables). Armed with these numbers, the city could then calculate the total net savings, or alternatively the additional costs, to the city from running its recycling program. Incremental accounting is a more accurate reflection of the true costs of recycling than simply comparing the average-per-ton costs of recycling versus trash disposal. Indeed, despite the Sanitation Department's reliance upon per-ton figures in public forums and with the press, the agency itself has previously argued that an incremental analysis is the best way to assess the city's true recycling costs.<sup>119</sup>

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#### **RELEASE MORE DATA**

In addition to completing an annual incremental analysis, the city should also release more comprehensive solid waste data to the public to allow for better evaluation of sanitation operations and productivity. Specifically, we recommend that city officials

annually provide to the public, at a minimum, the solid waste data listed below. For each of these categories, the city should provide separate information for recycling, composting, and regular trash disposal.<sup>120</sup> In addition, it should provide this information broken down by community districts.

- A listing of collection routes in the city, updated as these routes are modified
- The direct collection costs and number of truck shifts associated with collection or disposal/processing
- The costs of relay trips to transfer stations or other facilities, broken down by waste disposal and processing contracts
- Data on the average weekly amount of material collected in individual truck routes; for dual-bin truck routes, this data should reflect the different collection streams
- Data on average direct per-ton collection costs
- Data on average direct per-ton disposal/processing costs
- A complete breakdown of any fully loaded costs (e.g., overhead expenses, debt service, fringe benefits) put forward by the city and how these costs are allocated across programs
- An accounting of any overtime expenses incurred and how these costs are allocated across programs

As the events over the last two years have underscored, the lack of clear and full data on solid waste costs significantly hampers the city's budgetary and planning processes. The release of this additional city information is essential for a more honest and balanced discussion of our recycling and trash disposal expenses.

## RECOMMENDATION 10

### PRESERVE NEW YORK CITY'S LANDMARK RECYCLING LAW

It was the passage of the city's mandatory recycling law in 1989—and its enforcement in court over the past decade—that is primarily responsible for jump-starting recycling in New York City. Since the passage of this statute, the percentage of residential and institutional waste collected for recycling has climbed from less than 1 percent to roughly 20 percent in mid-2002, with some districts achieving diversion rates of over 30 percent.<sup>121</sup> To ensure that the city's recycling program continues to expand and save critical public funds, our final recommendation is that the administration and City Council proceed cautiously in seeking any amendments to this landmark law.

New York City's recycling law was enacted to develop “environmentally sound and economically desirable” ways to manage our trash.<sup>122</sup> The city's law—commonly referred to as Local Law 19—was carefully crafted after two years of debate, more than a half dozen public hearings, and at least four separate administration and council redrafts. When the City Council finally passed the statute, then-Speaker Peter Vallone called it “one of the most significant pieces of legislation in the history of the city.”<sup>123</sup>

One of the cornerstone provisions of the city's law required the Sanitation Department to meet annual tonnage levels for recycling residential and institutional waste that resulted in an approximately 25–30 percent recycling rate within five years, or 4,250 tons per day.<sup>124</sup> These mandatory recycling tonnage levels were selected in part to be consistent with New York State's recycling and waste reduction goal of 50 percent by 1997 (40 percent recycling; 8–10 percent waste reduction).<sup>125</sup> The law also requires the city, among other things, to establish leaf and yard waste collection programs, develop a comprehensive market development strategy, and prepare annual recycling reports.<sup>126</sup>

When the City Council passed Local Law 19, it did not seek to micromanage the city's Sanitation Department. Thus, the statute did not specify how the department should collect recyclables or achieve the tonnage requirements. But the decision to include annual, enforceable tonnage mandates for recycling stemmed from the belief that simply setting forth voluntary recycling goals would not provide a sufficient incentive for the city to develop a full-blown recycling program. The tonnage mandates were also intended to provide assurances to the private sector that the city would provide a steady stream of recycled materials, as a way to help attract new capital investments.

Recognizing the success of Local Law 19 to date and the passage of time since its enactment, it will soon be appropriate to consider updates to this statute. The core element of the law—the mandatory recycling tonnage requirements—must be retained. But the timeline for achieving the tonnage requirements, including the final 4,250 tons per day level, will need to be readjusted.

In assessing what legislative changes are needed, however, we believe that the Bloomberg administration and the City Council should act in concert with the city's overall solid waste planning efforts. For starters, any review of the statute should be

*It was the passage of the city's mandatory recycling law in 1989—and its enforcement in court over the past decade—that is primarily responsible for jump-starting recycling in New York City.*



integrated with the city's forthcoming revision of its state-mandated Solid Waste Management Plan (SWMP). The SWMP revision process, which is currently due to be completed by October 2004, provides an appropriate framework to begin evaluating how Local Law 19 should be modified and to ensure that recycling and waste reduction are the cornerstone of the city's long-term waste management strategy. Additionally, we believe that any statutory changes should be deferred until the city undertakes a new residential waste composition study—last completed more than a decade ago.

## APPENDIX: LISTING OF AUTHOR ORGANIZATIONS

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### **CITYWIDE RECYCLING ADVISORY BOARD**

The Citywide Recycling Advisory Board—established by Local Law 19, New York City’s landmark mandatory recycling law—is the principal means by which concerned citizens influence and advise the administration and the City Council on effective implementation of recycling and other progressive solid waste management initiatives.

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### **CONSUMER POLICY INSTITUTE/CONSUMERS UNION**

Established in 1979, the Consumer Policy Institute (CPI) addresses questions of concern to consumers, such as environmental quality, public health, and social equity. Current CPI projects address food safety and production, genetically engineered foods, eco-labeling, globalization, toxic air pollution in urban areas, waste management, energy, and environmental health. CPI often collaborates with Consumers Union’s three advocacy offices in Washington, D.C., Austin, and San Francisco.

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### **ENVIRONMENTAL DEFENSE**

Environmental Defense is a leading national nonprofit organization that since 1967 has linked science, economics, and law to create innovative, equitable, and cost-effective solutions to society’s most urgent environmental problems, and to protect the rights of all people. These include clean air and water, healthy and nourishing food, and a flourishing ecosystem. The Living Cities Program creates practical solutions to the ecological challenges facing urban areas.

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### **GRASSROOTS RECYCLING NETWORK**

GRRN is a North American network of recycling professionals and waste reduction activists using strategies of education, organizing, and advocacy to push corporate practice and public policy beyond recycling. Founded in 1995 by California Resource Recovery Association, Institute for Local Self-Reliance, and members of the Sierra Club’s Waste Committee, GRRN has become the leading advocate for zero waste in the United States and a central figure in grassroots producer responsibility campaigns.

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### **NATURAL RESOURCES DEFENSE COUNCIL**

The Natural Resources Defense Council is a national nonprofit environmental organization with more than 550,000 members. Since 1970, its lawyers, scientists, and other environmental specialists have been working to protect the world’s natural resources and improve the quality of the human environment. NRDC has offices in New York City, Washington, D.C., Los Angeles, and San Francisco.

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## **NEW YORK CITY ENVIRONMENTAL JUSTICE ALLIANCE**

The New York City Environmental Justice Alliance (NYCEJA) is a citywide network that links grassroots organizations in low-income neighborhoods and communities of color in their struggle against environmental racism. NYCEJA provides resources that enable its member organizations to engage in effective advocacy on behalf of grassroots communities that are disproportionately and adversely affected by environmental and health impacts of public and private actions and policies.

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## **NEW YORK LEAGUE OF CONSERVATION VOTERS**

The New York League of Conservation Voters (NYLCV) works to protect and improve the environment for all New Yorkers by educating elected officials and advancing the election of political candidates who make environmental protection a priority. NYLCV uses its power to give endorsements to inform voters and help put committed, pro-environment candidates into local, state, and federal office.

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## **NEW YORK PUBLIC INTEREST RESEARCH GROUP**

The New York Public Interest Research Group (NYPIRG) is New York's largest environmental, government reform, and consumer advocacy organization, with 24 offices across the state. Since 1973, NYPIRG's student leaders and professional staff have effectively used research, advocacy, and community organizing to advocate for recycling and waste prevention programs and campaigns against garbage incineration.

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## **ORGANIZATION OF WATERFRONT NEIGHBORHOODS**

The Organization of Waterfront Neighborhoods (OWN) is a citywide coalition of 20 community-based groups formed to address the common threat of solid waste transfer stations to New York City neighborhoods. OWN's members from the neighborhoods of Greenpoint/Williamsburg, South Bronx, East New York, Red Hook, Sunset Park, Southeast Queens, Washington Heights, and Harlem have united in an effort to find an equitable and environmentally sound solution to waste handling in New York City.

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## **THE WASTE PREVENTION COALITION**

The New York City Waste Prevention Coalition is a network of organizations and individuals dedicated to promoting waste prevention as the most responsible, environmentally sound, and cost-effective means of solving New York City's mounting solid waste problems.



## ENDNOTES

<sup>1</sup> Robert Haley, San Francisco Department of Environment, and Bob Besso, Sunset Scavenger Company, electronic communication, January 20, 2004.

<sup>2</sup> Recognizing the limitations of the Sanitation Department's recycling office, the New York City Council has advanced several proposals over the last decade to create a new independent recycling authority. Under the council's latest proposal, a new authority would oversee public education, market development, and waste reduction activities, among other tasks, but would continue to have recycling collections handled by the Sanitation Department. The council's recycling authority, which would require the passage of a new state law, would be funded in large measure through unclaimed Bottle Bill deposits in the city; see New York City Council, "Independent Recycling Authority," April 2002.

<sup>3</sup> See "Pay-as-you-throw- programs keep expanding rapidly," *Bicycle*, December 23, 2003, p.6.

<sup>4</sup> Tom Padia, Alameda County Source Reduction and Recycling Board, personal

communication, October 10, 2002.

<sup>5</sup> One report describing how the pay-as-you-throw (PAYT) could be implemented here is *Cutting New York City's Costs Through Pay-As-You-Throw* by Stephen A. Hammer (August 2002); available from [www.wastesaver.com/paytnyc.pdf](http://www.wastesaver.com/paytnyc.pdf). Some observers have suggested that PAYT could be financially difficult for low-income families, leading to an increase in illegal dumping. This issue, along with other legitimate concerns, would need to be addressed before the city could implement this approach.

<sup>6</sup> See Science Applications International Corporation, *Packaging Restrictions Research: Targeting Packaging for Reduction, Reuse, Recycling and Recycled Content*, prepared for the New York City Department of Sanitation, Spring 2000, pp.27-28.

<sup>7</sup> See Joe Triuni, "Producer Pays: Ontario Makes Manufacturers Fund Half of Curbside Program," *Waste News*, January 5, 2004, p.1. See also European Commission DGXI.E.3, *European Packaging Waste Management Systems Final Report*, February 2001, iii; available from <http://europa.eu.int/co>

[mm/environment/waste/studies/packaging/epwms\\_xsum.pdf](http://mm/environment/waste/studies/packaging/epwms_xsum.pdf).

<sup>8</sup> In 2002, the direct collection cost of recycling metal, glass, plastic, and paper was \$143/ton, while the overall processing cost was \$24/ton. Thus, collection costs represent 86% of the total recycling expenses. New York City Independent Budget Office Fiscal Brief, "Refuse and Recycling: Comparing the Costs," February 2004, p.3.

<sup>9</sup> New York City Department of Sanitation, "Cost Comparison: Refuse and Recycling, Fiscal Year 2002," presented to the Joint Task Force of the Mayor and City Council of the City of New York.

<sup>10</sup> Ibid. The city's Independent Budget Office recently reported that the collection efficiency for overall recycling in 2002 (paper and metal, glass, and plastic) was 6.3 tons/truck and for trash was 10.3 tons/truck; New York City Independent Budget Office Fiscal Brief, "Refuse and Recycling: Comparing the Costs," February 2004, p.3.

<sup>11</sup> This figure is a weighted average where trash represents 80 percent of collection, paper is 11 percent and metal, glass, and plastic is 9 percent. For tonnage

information, see New York City Department of Sanitation, "Cost Comparison: Refuse and Recycling, Fiscal Year 2002," presented to the Joint Task Force of the Mayor and City Council of the city of New York.

<sup>12</sup> Bob Besso, Sunset Scavenger Company, electronic communication, January, 22, 2002; Lawson Oates, City of Toronto, electronic communication, February 17, 2003.

<sup>13</sup> Elizabeth Franklin, Independent Budget Office, electronic communication, December 9, 2003. These numbers are for direct collection costs only and do not include overhead or disposal/processing costs.

<sup>14</sup> Claire E.Todd, *Technical and Economic Analysis of the New York City Recycling System*, Department of Earth and Environmental Engineering, Columbia University, May 2002; Erik H. Eenkema van Dijk, "Single Stream Recycling: The Future is Now," *Recycling Today Online*, July 3, 2001; available from <http://www.recyclingtoday.com/articles/article.asp?ID=2894&ArticleID=2894&Keyword=bollegraaf>.

<sup>15</sup> Kevin Roche, Broome County Deputy Commissioner of Public Works Solid Waste, personal

- communication, February 3, 2004.
- <sup>16</sup> Pieter R. J. Eenkema van Dijk, vice-president of Van Dyk Baler Corp, distributor of Bollegraaf Equipment, personal communication, February 9, 2004.
- <sup>17</sup> Because single-stream collection would likely eliminate one recycling truck in many neighborhoods, such a pilot could also provide an opportunity to experiment with sending out a separate truck to pick up food scraps and other organic materials—an approach now being rolled out in San Francisco. See composting discussion in Recommendation 7.
- <sup>18</sup> David Robinson, Philadelphia recycling coordinator, remarks at New York City Recycling Roundtable proceedings at Pace University, November 25, 2002.
- <sup>19</sup> The New York City Waste Prevention Coalition, *Why Waste the Future?* May 2002, p.8.
- <sup>20</sup> Bob Besso, Sunset Scavenger Company, electronic communication, January 21, 2004.
- <sup>21</sup> Lawson Oates, manager of strategic planning, Toronto, and David Robinson, Philadelphia recycling coordinator, remarks at New York City Recycling Roundtable proceedings at Pace University, November 26, 2002.
- <sup>22</sup> New York City Department of Sanitation, “Residential Recycling Diversion Report June, 2002,” September 27, 2002, at Table 2A. Twenty-five districts currently have three-times-per-week trash collection and 34 districts have two-times-per-week collection. See New York City Department of Sanitation, “Proposed Frequency Allocation” chart, faxed to NRDC May 8, 2003.
- <sup>23</sup> See Frank Lombardi, “City May Bag Trash Cuts,” *Daily News*, May 28, 2003. Jim Johnson, “NYC plans huge solid waste cuts,” *Waste News*, April 28, 2003. Committee on Sanitation and Solid Waste Management, “Fiscal 2004 Executive Budget Report,” May 2003.
- <sup>24</sup> Robert Lange, director, Bureau of Recycling, New York City Sanitation Department, comments at the citywide Recycling Advisory Board, July 31, 2003 (suggesting a roughly 10 percent decline in recycling diversion rates with every-other-week collections). See also New York Independent Budget Office, “Overview of the Waste Stream Managed by the NYC Department of Sanitation,” February 2001, (noting that historically an increase in the frequency of recycling collections in the city has contributed to increased diversion rates).
- <sup>25</sup> Anthony Giordano, regional marketing specialist for Giordano Recycling Corporation, personal communication, December 16, 2002.
- <sup>26</sup> See, *infra* note 116. Although the Sanitation Department claimed these processing costs would rise over \$120/ton in 2002, New York City Comptroller William Thompson documented that the average cost to the city would have been \$82/ton, which is a 40 percent increase from the 2001 processing costs (\$58/ton). “Comments of the New York City Comptroller William C. Thompson, Jr. to the Mayoral and City Council Task Force on Recycling,” December 2, 2002, p.2
- <sup>27</sup> David Robinson, Philadelphia recycling coordinator, personal communication, April 8, 2003, and January 20, 2004.
- <sup>28</sup> Kevin Roche, Broome County deputy commissioner of Public Works Solid Waste, personal communication, March 4, 2003.
- <sup>29</sup> Steve Tarani, Department of Environmental Facilities, Westchester County, personal communication, November 4, 2002.
- <sup>30</sup> Judy Goodstein, recycling manager for Visy Paper Mill, personal communication, November 8, 2002, and March 17, 2003.
- <sup>31</sup> The New York City Waste Prevention Coalition, *Why Waste the Future?* May 2002, p.14.
- <sup>32</sup> “Agreement by and between the city of New York and Visy Paper (N.Y.), Inc.,” December 28, 1995, p.18.
- <sup>33</sup> The City of New York Department of Sanitation Bureau of Waste Prevention, Reuse and Recycling, *Request for Proposals to Accept, Process and Market Recyclables*, September 10, 2003.
- <sup>34</sup> *Ibid.*, at p.10.
- <sup>35</sup> *Ibid.*, at pp.15–16.
- <sup>36</sup> These included the Department of Sanitation Market Research and Development Unit in 1990, and the creation of the Interagency Task Force and Advisory Council for Recycling Markets and Business in 1993.
- <sup>37</sup> Steve Engel, recycling market development coordinator, Metro Regional Environmental Management, personal communication, October 22, 2002.
- <sup>38</sup> Brenda Grober, Empire State Development Environmental Services Unit,

- electronic communication, January 26, 2004.
- <sup>39</sup> The City of New York Department of Sanitation Bureau of Waste Prevention, Reuse and Recycling, *Request for Proposals to Accept, Process and Market Recyclables*, September 10, 2003, p.16.
- <sup>40</sup> Office of the President, “Executive Order 12873—Federal Acquisition, Recycling and Waste Prevention,” October 20, 1993; Office of the President, “Executive Order 13101—Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition,” September 16, 1998.
- <sup>41</sup> Allen Hershkowitz, *Bronx Ecology: A Blueprint for a New Environmentalism*, (Washington: Island Press, 2002), p.38.
- <sup>42</sup> 40 C.F.R. Part 247, U.S. Environmental Protection Agency Office Of Solid Waste, *Consolidated Recovered Materials Advisory Notice (RMAN) for the Comprehensive Procurement Guideline (CPG)*, compiled December 1997, EPA530-R-02-017, ii; U.S. EPA Comprehensive Procurement Guidelines Frequently Asked Questions; available from <http://www.epa.gov/eпаoswer/non-hw/procure/faqs.htm>.
- <sup>43</sup> San Francisco Environment Code §§ 506, 507 (2003).
- <sup>44</sup> See New York City Mayoral Directive 93-2, “Procurement of Printing and Writing Paper with Recycled Content,” October 28, 1993; New York City Administrative Code §§ 6-122, 16-322; 55 Rules of the City of New York § 8-03; New York Municipal Law § 104-a.
- <sup>45</sup> The proposed legislation is available from [http://www.council.nyc.ny.us/pdf\\_files/bills/int0029-2002.htm](http://www.council.nyc.ny.us/pdf_files/bills/int0029-2002.htm).
- <sup>46</sup> See Science Applications International Corporation, *Packaging Restrictions Research: Targeting Packaging for Reduction, Reuse, Recycling and Recycled Content*, prepared for the New York City Department of Sanitation, Spring 2000, pp.97–102.
- <sup>47</sup> New York City Council Committee on Environmental Protection, “The Economics of Recycling,” February 15, 1994.
- <sup>48</sup> Brenda Grober, Empire State Development Environmental Services Unit, personal communication, November 8, 2002.
- <sup>49</sup> Local Law 50 of 2003, § 2.
- <sup>50</sup> U.S. Congress Office of Technology Assessment, *Facing America’s Trash: What Next for Municipal Solid Waste?* October, 1989, p.151.
- <sup>51</sup> Glass Packaging Institute, “GPI Environmental Policy,” available from <http://www.gpi.org/Envio.html> “Information on Glass Containers,” available from [http://www.gpi.org/Info\\_on.html](http://www.gpi.org/Info_on.html); Clean Washington Center, “Saving Energy with Cullet and Preheating,” November 1996, available from [http://www.cwc.org/g1\\_bp/gbp3-0104.htm](http://www.cwc.org/g1_bp/gbp3-0104.htm).
- <sup>52</sup> Panel on glass recycling, remarks at New York City Recycling Roundtable proceedings at Pace University, November 25, 2002; Kurt Bucey, executive vice president of strategic materials, personal communication, November 1, 2002.
- <sup>53</sup> The City of New York Department of Sanitation Bureau of Waste Prevention, Reuse and Recycling, *Request for Proposals to Accept, Process and Market Recyclables*, September 10, 2003, p.7.
- <sup>54</sup> New York City Office of the Comptroller, “Projected Cost of Collecting and Managing Residential Waste in Fiscal Year 2004 submitted to the Sanitation Committee of the New York City Council by the New York City Comptroller William Thompson, Jr.,” May 19, 2003, p.8.
- <sup>55</sup> Bill Richardson, Recycle America Alliance Waste Management, Inc, personal communication, May 12–13, 2003. See also, Amy Eddings, “Recyclers Ask What About Glass,” *WNYC*, aired March 10, 2003.
- <sup>56</sup> See, supra note 33.
- <sup>57</sup> See, supra note 35.
- <sup>58</sup> See, infra notes 74, 75 for further detail.
- <sup>59</sup> Kurt Bucey, executive vice president of strategic materials, personal communication, November 1, 2002.
- <sup>60</sup> Bruce Walker, Portland Office of Sustainable Development Solid Waste & Recycling, division manager, electronic communication, March 7, 2003.
- <sup>61</sup> Bob Besso, Sunset Scavenger Company, electronic communication, January 20, 2004, and January 23, 2003.
- <sup>62</sup> California Integrated Waste Management Board, “Market Status Report: Container and Plate Glass,” updated January 13, 2004; available from <http://www.ciwmb.ca.gov/Markets/StatusRpts/glass.htm>.
- <sup>63</sup> In New Hampshire, for example, glass that is used as road sub-base material has been shown to reduce the negative effects of freezing and thawing on roads; Marghie Seymour, New

Hampshire the Beautiful, Inc., remarks at New York City Recycling Roundtable proceedings at Pace University, November 25, 2002.

<sup>64</sup> Dino Ng, Department of Design and Construction, personal communication, March 5, 2003. Ultimately, however, the city's Department of Transportation stopped this practice apparently due to the need to reuse asphalt dug up in other city paving projects; Thomas Ciano, director of asphalt operations, New York City Department of Transportation, personal communication, February 6, 2003.

<sup>65</sup> Brenda Grober, remarks at New York City Recycling Roundtable proceedings at Pace University, November 26, 2003.

<sup>66</sup> Clean Washington Center, "Automated Color Sorting of Recycled Glass," November 1996; available from [http://www.cwc.org/g1\\_bp/gbp2-0403.htm](http://www.cwc.org/g1_bp/gbp2-0403.htm).

<sup>67</sup> Science Applications International Corporation, *Packaging Restrictions Research: Targeting Packaging for Reduction, Reuse, Recycling and Recycled Content*, prepared for the New York City Department of Sanitation, Spring 2000, pp.97–101.

<sup>68</sup> Under Oregon's laws, glass manufacturers in Oregon, or located within 750 miles of the state, must use a minimum of 35 percent recycled glass (50 percent after January 1, 2008) in food, drink, or beverage containers sold there: ORS 459A.550. Similarly, all glass manufacturers in California must use a minimum of at least 35 percent recycled glass in new food, drink, or beverage containers, or 25 percent recycled glass if the manufacturer uses at least 75 percent mixed-color cullet in its annual operations. Cal. Pub. Resources Code § 14549(b) (2004). In addition, California law requires all fiberglass producers to use at least 30 percent recycled cullet in fiberglass building insulation made or sold in the state. Fiberglass Recycled Content Act of 1991, Cal. Pub. Resources Code § 19511 (2004).

<sup>69</sup> California Integrated Waste Management Board, "Market Status Report: Container and Plate Glass," updated January 13, 2004; available from <http://www.ciwmb.ca.gov/Markets/StatusRpts/glass.htm>.

<sup>70</sup> Science Applications International Corporation, *Packaging Restrictions Research: Targeting Packaging for*

*Reduction, Reuse, Recycling and Recycled Content*, prepared for the New York City Department of Sanitation, Spring 2000, pp.9, 113.

<sup>71</sup> New York State Department of Environmental Conservation, Deposit and Redemption Statistics, December 2003.

<sup>72</sup> Ibid.

<sup>73</sup> Container Recycling Institute, "Estimated Unredeemed Deposits in New York State," January 2004.

<sup>74</sup> Jenny Gitlitz, Container Recycling Institute, electronic communication, January 12, 2003. The 220 tons-per-day figure is derived by dividing 76,000 annual tons by 305 city working days.

<sup>75</sup> This figure of \$10 million is derived by multiplying 67,000 annual tons of materials that would be removed from the city's waste stream under an expanded law by the current \$151/ton direct cost of collecting and disposing of these materials as refuse in 2002 (\$86/ton for collection and \$65/ton for disposal, IBO Fiscal Brief, February 2004, p.3).

<sup>76</sup> Businesses and Environmentalists Allied for Recycling (BEAR), *Understanding Beverage Container Recovery*, January 16, 2002, pp.ES-4, 3–4.

<sup>77</sup> Cal. Pub. Resources Code § 14580 (2004); Mich. Comp. Laws §§ 445.573(b), 445.573(d) (2003); Mass. Gen. Laws ch. 94, § 323(h) (2003); Haw. Rev. Stat. § 342G-104 (2003).

<sup>78</sup> The \$85 million figure comes from data compiled by the New York State Department of Environmental Conservation. The \$140 million figure comes from CRI, supra note 74.

<sup>79</sup> Container Recycling Institute, "Estimated Unredeemed Deposits in New York State," January 2004.

<sup>80</sup> Container Recycling Institute, "The Failure of the Deposit Value to Keep Pace with Inflation, 1983–2002."

<sup>81</sup> New York State Department of Environmental Conservation, "Beverage Container Deposit and Redemption Statistics for the period October 2000–September 2001." The statewide redemption rate during this period was 69.8 percent, but in New York City was 62.5 percent.

<sup>82</sup> Science Applications International Corporation, *Packaging Restrictions Research: Targeting Packaging for Reduction, Reuse, Recycling and Recycled Content*, prepared for the New York City Department of



Sanitation, Spring 2000, p.48.

<sup>83</sup> “Report of the Joint Task Force of the Mayor and City Council of the City of New York Established Pursuant to Local Law 11 of 2002 on New York City’s Recycling Program,” March 20, 2003, p.5.

<sup>84</sup> Seventy percent of the random statewide sample of 800 registered New York voters supported an expansion of the Bottle Bill to include noncarbonated beverages. Eighty-six percent of the respondents supported a transfer of unclaimed bottle deposits from beverage distributors to the state to fund environmental programs; Public Policy Associates, Incorporated, *Survey of New York Registered Voters: Attitudes Toward New York’s Bottle Bill and Proposed Reforms*, February 2004, pp.2, 4.

<sup>85</sup> The organic portion of New York City’s residential waste is composed of 4.8 percent yard waste, 14.5 percent food waste, and 8.9 percent miscellaneous organics. This excludes organics such as lumber, textiles, rubber, and diapers. New York City Department of Sanitation, *A Comprehensive Solid Waste Management Plan for New York City and Final Generic Environmental*

*Impact Statement, Appendix Volume 1.2, Waste Stream Data*, August 1992, pp.3–22.

<sup>86</sup> United State Environmental Protection Agency, *Solid Waste Management and Greenhouse Gases: A Life-cycle Assessment of Emissions and Sinks*, Second Edition, May 2002, p.114.

<sup>87</sup> New York City Department of Sanitation Bureau of Waste Prevention, Reuse and Recycling, *Composting in New York City: A Complete Program History*, August 2001, p.6.

<sup>88</sup> City of New York Office of Management and Budget, *The City of New York Executive Budget Fiscal Year 2004, Message of the Mayor*, April 17, 2002, p.165.

<sup>89</sup> Code of the Town of Southampton, NY § 205-3(Y); Southampton Town Recycling Office, “Recycling Program,” 5, available from <http://www.town.southampton.ny.us/DeptDirector/gallery/sanitation/recycling.pdf>; Code of the Town of Huntington, NY § 117-21 (2004); Town of Huntington Environmental Waste Mgmt., “Departments: Environmental Waste Mgmt., Questions,” available from [http://town.huntington.ny.us/department\\_details.cfm?ID=8#division](http://town.huntington.ny.us/department_details.cfm?ID=8#division).

<sup>90</sup> New York City Department of Sanitation Bureau of Waste Prevention, Reuse and Recycling, *Composting in New York City: A Complete Program History*, August 2001, p.46. The \$12 million savings reflects the avoided cost of collecting and disposing of these grass clippings at \$151/ton in direct costs. See supra note 75.

<sup>91</sup> Local Law 50 of 2003, Section 2; New York City Department of Sanitation Bureau of Waste Prevention, Reuse and Recycling, *Composting in New York City: A Complete Program History*, August 2001, p.9.

<sup>92</sup> New York City Department of Sanitation Bureau of Waste Prevention, Reuse and Recycling, *Composting in New York City: A Complete Program History*, August 2001, p.6.

<sup>93</sup> Thomas Outerbridge, CityGreen, personal communication, January 2004

<sup>94</sup> Ibid.

<sup>95</sup> Private landscapers should also be permitted to deliver yard debris at city-run compost facilities. This is currently permitted at the Fresh Kills compost facility, which receives 5,000 to 6,000 tons of landscaper debris a year, and charges a tipping fee of \$10/cubic yard. At

the same time, the city should enforce existing sanitation regulations that prohibit landscapers from leaving yard debris at the curb for trash collection. By allowing these landscapers access to all city facilities, and enforcing current sanitation rules, we estimate the city could divert another 5,000 to 10,000 tons/year of landscaper debris, generating additional revenue and saving the city even more in lower disposal costs. Thomas Outerbridge, CityGreen, electronic communication, May 31, 2003.

<sup>96</sup> This projection is based on discussions with operators of multiple municipal yard waste composting facilities, including facilities that receive leaves in plastic bags and those that do not; Thomas Outerbridge, CityGreen, personal communication, January 2004.

<sup>97</sup> City of Albany, New York, “Department of General Services, Leaf Collection,” available from [www.albanyny.org/government/departments/d\\_genserv16.asp](http://www.albanyny.org/government/departments/d_genserv16.asp)

<sup>98</sup> New York City Department of Sanitation, Bureau of Waste Prevention, Reuse and Recycling, *Recycling in Context: A Comprehensive Analysis of Recycling in Major U.S. Cities*, August 2001, p.21.

<sup>99</sup> This savings of \$120,000 reflects the

difference between operating costs for the Rikers Compost Facility (\$50/ton) and average export costs under the Queens “Interim Export Plan” contracts (\$69/ton). Thomas Outerbridge, CityGreen, electronic communication, January 15, 2004.

<sup>100</sup> Ibid.

<sup>101</sup> Gabriella Uhlar-Heffner, “Seattle Studies Anaerobic Solution for Source-Separated Food Residuals,” *Biocycle*, December 23, 2003, p.39.

<sup>102</sup> Marist College Institute for Public Opinion, on file with NRDC, June 2001.

<sup>103</sup> In 1999, the residues rate for all materials—paper, metal, glass, and plastic recycling combined—was 15 percent. This figure includes both waste that is unaccounted for and residue; the rate for paper alone was 9 percent and for metal, glass, and plastic was 36 percent. Office of the Comptroller, City of New York, *Audit of the New York City Department of Sanitation’s Recycling Program*, June 29, 2001, p.ES-3, ES-5.

<sup>104</sup> Mark Westlund, San Francisco environment public information officer, personal communication, October 21, 2002.

<sup>105</sup> Lisa A. Skumatz, “Reaching for recycling in multifamily housing,”

*Resource Recycling*, October 1999, p.46.

<sup>106</sup> Knowlton C. Foote, “Successful apartment recycling,” *Resource Recycling*, April 1999, pp.32–35.

<sup>107</sup> David Robinson, Philadelphia recycling coordinator, remarks at New York City Recycling Roundtable proceedings at Pace University, November 26, 2002; Becky Oliver, Philadelphia Recycling, electronic communication, March 25, 2003.

<sup>108</sup> The New York City Waste Prevention Coalition, *Why Waste the Future?* May 2002, pp.12, 18.

<sup>109</sup> Environmental Protection Agency, *Complex Recycling Issues: Strategies for Record-setting Waste Reduction in Multi-family Dwellings*, 1999.

<sup>110</sup> The City of New York Office of the Comptroller, Bureau of Management Audit, Alan G. Hevesi, *Audit of the New York City Department of Sanitation’s Recycling Program*, June 29, 2001, p.14.

<sup>111</sup> The \$1 figure comes from “Making Recycling Work: a Roundtable on the Future of Recycling in New York City,” draft proceedings report of the New York City Recycling Roundtable at Pace University, November 26, 2003, pp.7–8. The 77 cent figure is based upon

an average of Sanitation Department budgets for education and outreach from 1994, 1996–97, 1999, and 2002 (this data is contained in New York City Solid Waste Management Plan Updates and the IBO Fiscal Brief, February, 2002) and divides this figure by an average New York City population of 7.7 million over the last decade (based on U.S. Census data for New York City from 1990 and 2000).

<sup>112</sup> For example, detailed truck route information would better enable observers to make recommendations on where to expand the use of dual-bin trucks, which neighborhoods could potentially be served by one-person crews, or where additional waste pickups might be eliminated due to higher recycling rates.

<sup>113</sup> See, e.g., The City of New York Office of Operations, *Mayor’s Management Report Fiscal Year 2003*, September 2003, p.132.

<sup>114</sup> “Comments of the New York City Comptroller William C. Thompson, Jr. to the Mayoral and City Council Task Force on Recycling,” December 2, 2002, pp.1–2.

<sup>115</sup> Steve Lawitts, Deputy Commissioner, New York City Department of Sanitation, comments at the citywide

Recycling Advisory Board. February 28, 2002.

<sup>116</sup> The New York City Waste Prevention Coalition, *Why Waste the Future? Alternatives to the Mayor’s Proposed Waste Prevention, Composting and Recycling Cuts*, May 2002, p.4. See also supra note 114 at p.2.

<sup>117</sup> Ibid. Moreover, the city claimed it would save \$40 million from suspending glass and plastic recycling. However, these savings never materialized.

“Comments of the New York City Comptroller William C. Thompson, Jr. to the Mayoral and City Council Task Force on Recycling,” December 2, 2002; Internal NRDC analysis, February 20, 2004; see also Kirk Johnson, “Something Green in the Garbage? City Recycling May Pay After All,” *New York Times*, May 4, 2003.

<sup>118</sup> The City of New York Office of Operations, *Mayor’s Management Report Fiscal Year 2003*, September 2003, p.132. Recently, Governor Rendell of Pennsylvania, a state which imports New York City waste, announced his intention to charge trash haulers a \$5/ton surcharge on all waste in the state, which could further increase New York City export costs. See “Rendell Unveils Broad, \$23B Budget Plan,” *Pittsburgh*

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*Business Times*,  
February 3, 2004.

<sup>119</sup> See New York City Department of Sanitation, Comprehensive Solid Waste Management Plan, Final Update and Plan Modification, February 15, 1996, pp.3-11, 3-32; New York City Department of Sanitation, Comprehensive Solid Waste Management Plan, Draft Modification, April 3, 1998, pp.C-7, C-8. In a recent report, the New York City Independent Budget Office (IBO) undertook an incremental analysis of the city's recycling and refuse costs. The IBO report concluded that the incremental costs of recycling in the city have dropped 86 percent since 1994, paper recycling is already cheaper than export, and that the recycling of all materials in 2005 would cost \$39 more per-ton than trash disposal. New York City Independent Budget Office Fiscal Brief, "Refuse and Recycling: Comparing the Costs," February 2004, p.5. It appears that this study, which is based on data provided to the IBO by the Sanitation Department, may have inflated the costs of recycling and underestimated the costs of export—resulting in an overstated projection of the incremental costs for 2005.

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<sup>120</sup> In providing recycling cost data, the city should exclude monies spent on waste prevention efforts.

<sup>121</sup> New York City Department of Sanitation, "Residential Recycling Diversion Report for June 2002," September 27, 2002, at Table 2A.

<sup>122</sup> Local Law 19 of 1989, "Declaration of Legislative intent and findings."

<sup>123</sup> Arnold H. Lubasch, "Recycling Plan Gains Final Approval," *New York Times*, March 29, 1989.

<sup>124</sup> New York City Administrative Code § 16-305(a).

<sup>125</sup> New York State Department of Environmental Conservation (NYSDEC), *New York State Solid Waste Management Plan*, March 31, 1987, pp.vi, 100.

<sup>126</sup> New York City Administrative Code §§ 16-308, 16-313, 16-316.