

CHAPTER VI

EDUCATION

A successful recycling program requires active and willing participation on the part of the public. In New York City that public is amazingly diverse – in terms of nationality, ethnicity, language, and customs. To educate this diverse population requires knowledge about these differences. In addition, City's population resides in a large variety of building types, with an infinite variety of waste management systems.

The 19 White Paper, *New York City Recycling Strategy*, while noting that "New Yorkers are willing to change their behavior to help recycling succeed," went on to warn: "Strong public participation cannot be taken for granted." We do not take public participation for granted, nor can we assume that an entire urban population is capable of changing its waste disposal attitudes and behavior in the space of a year. Realistically, the changes we are seeking will take years to be fully accepted.

Through our education program we must teach people and reinforce the idea that recycling and waste prevention are better than "throwing it away." Equally important, we must carefully teach building residents, superintendents, owners, and managers *how* to recycle. While our education campaign to date has clearly generated results, we still have much to learn. At times our materials were not as clear as they could be. Moreover, we are conscious that we are competing with limited resources for seconds of attention span in the media and advertising capital of the world.

Components of the Educational Program

Outreach

The initial education program for each district we enter begins with meetings with community board leaders to design an outreach program for local residents. Decisions are made about languages to publish materials in; databases for civic associations and community groups are shared; the schedule is confirmed. Outreach workers then begin to pound the pavement, speak before any audience that will listen, and pursue building superintendents and managers to answer questions and explain their roles and obligations in implementing the program.

The implementation schedule (see Exhibit V.1) is ambitious and allows the outreach team approximately 45 person days of on-site education and outreach. Every effort is made to reach the leaders of the community, educate them, and motivate them to actively support recycling at their club and civic association meetings and with their neighbors. Church groups, street fairs, picnics and rallies, any place that a group gathers becomes a forum to talk about recycling, its importance and its mechanics.

Internal Education

Every uniformed Sanitation worker is a representative of the Department, so a significant, additional strategy for education has been the orientation and training of the uniformed workforce.

Recycling, as a subject, has been integrated into the Department's formal training curricula. All new sanitation workers and supervisors receive a half-day orientation including an overview of recycling history, its introduction to the Department and

New York City, and the roles and responsibilities involved in recycling operations. All new supervisors also receive a self-study guide which includes instruction on "managing change" and information and instruction as to the supervisor's role in internal and external communications.

As new districts join the recycling program, the Sanitation officers in the district participate in a full-day training program that includes: orientation and instruction as to the operational procedures for recycling in the specific district; an orientation to the role that enforcement plays in recycling; change management, and the training and motivation of Sanitation workers; and a review of the self-study training program, "Representing the Department."

Mass Mail/Mass Distribution of Literature

Originally community district-specific informational brochures in at least Spanish and English were mailed to building owners, managers, and residents before the residential recycling program began and whenever new materials were added. Direct mail materials were also used to announce such other recycling programs as the bulk program. Over 2,600,000 direct mailings were sent in FY 90.

The direct mail campaigns are expensive (approximately \$1 per household) and complete, accurate mailing lists are difficult to obtain. The highest percentage of tonnage diverted has been in low density/medium-to-high income areas such as Staten Island and parts of Queens and Brooklyn, and in high density/medium-to-high-income areas such as the Upper East and West Sides of Manhattan. The lowest diversion rates have been in low income/high density areas, such as Manhattan districts 10 and 11 (East and Central Harlem).

Low diversion rates in these districts may be due in part to any number of design factors, including the failure of direct mail as a medium, the content and design of the brochure, or the inadequacy of the mailing lists. However, there clearly are additional factors which contribute to low diversion rates in these districts. These include pre-existing waste collection issues, such as inadequate storage facilities, a relative lack of awareness of the program message and most obviously, the pervasive socio-economic problems which frustrate change at all levels. Alternative strategies that might be utilized are key issues in the research we will be undertaking in FY 91, which is described later in this chapter.

Because direct mail lists are incomplete in high density and low income areas, a change in strategy was made earlier this year. Instead of direct mail to tenants, we are now mailing an informational package to building owners. Under Local Law 19 it is landlords who are responsible for educating their tenants about recycling, and it is management that determines the recycling collection methodology within a particular apartment house. Through this mailing we are enlisting the cooperation of landlords in distributing literature to each of their tenants. Direct mail campaigns to residents will continue only in low density districts.

Brochures are also inserted in blue recycling containers when the Department distributes them for the storage of household metal, glass, and plastics. In addition, brochures are distributed in quantity by outreach staff to schools, places of worship, civic and community organizations, and at outdoor events.

Posters and Flyers

Multilingual posters and flyers, produced for the residential programs as well as for the Institutional and City Agency recycling programs, are distributed by outreach staff to local businesses, civic groups, and apartment buildings. More than 500,000 posters and flyers were produced in FY 90.

Media Placement and Coverage

Extensive press coverage is vital to the success of recycling. The Bureau of Public Affairs promotes recycling in three basic ways: a press release goes out to relevant community papers on each new program; significant milestones – the surpassing of tonnage goals – are announced in releases; program news events and the beginning of enforcement, are released to the citywide press; and daily responses to inquiries from the press are utilized to promote the program.

The Bureau of Public Affairs has publicized recycling through the City's print and electronic media, taking advantage of the City Hall press corps as well as developing strong working relationships with a growing number of reporters who cover the environmental beat. In FY 90, the Department's recycling program was the subject of major stories in the *Daily News*, the *New York Times*, *New York Newsday* and *The Staten Island Advance*. In addition, the program received editorial support from these daily papers and the *New York Post*. The Bureau also negotiated for the repeated placement of a half-page "house ad" in *New York Newsday*, listing the schedule for the Department's Mobile Drop-Off program. New York City's recycling program has also been singled out for recognition in national magazines such as *National Geographic* and *Garbage Magazine* and trade publications like *Waste Age*, and *World Wastes*.

Recycling stories have been featured on all the major television and cable networks and local television and cable stations, and New York City's major news radio stations have also covered the progress of the recycling program. Press officers have also worked extensively with the public affairs divisions of various radio stations, including two of the City's Spanish stations – WKDM and WSKQ. These efforts resulted in Department representatives appearing on a number of public affairs talk programs and the placement of several radio public-service announcements in Spanish and English.

Coverage in the major daily newspapers and on TV and radio puts the need to recycle in a Citywide context, whereas the City's many community papers are critical in informing residents exactly when the program will be starting in their areas, and how it works. Local press is contacted and a media event arranged to kickoff the Curbside program as it begins in each community district. Community papers stay in touch with the Bureau of Public Affairs and generally continue to monitor the progress of the program.

The Bureau of Public Affairs has also placed stories and had editorial board meetings with the staff of *El Diario* and the *Amsterdam News*, in addition to cultivating contacts with the City's Asian-American press, which has covered the introduction of recycling in Manhattan's Chinatown and the Flushing section of Queens. Outreach to the City's various ethnic communities through the ethnic press will be essential to the success and viability of recycling as it is implemented throughout New York City.

Advertising

Local Law 19 and Sanitation recycling programs have been advertised by the Department in the following ways:

- Full-page ads in daily newspapers, including the *Daily News*, the *Post*, *Newsday* and the *Staten Island Advance*.
- Full-page ads in foreign language and ethnic newspapers, including *El Diario*, *Noticias del Mundo*, the *Amsterdam News*, *The City Sun*, and papers reaching the Korean, Chinese, Indian, and West Indian communities.
- Full-page ads in community newspapers, including the *Queens Chronicle*, the *Brooklyn Paper*, the *Bronx Press Review*.
- Paid and public service announcements on 20 radio stations reaching diversified audiences and featuring such celebrities as comedians Jerry Stiller and Anne Meara, salsa musician Johnny Colon, and jazz disc jockey Ray White.
- Transit posters about the New York City recycling law were placed on all subway lines. Posters were placed on both the interior and exterior of New York City buses in every borough except Staten Island during FY 89 and FY 90.
- Posters were placed on the Staten Island side of the Verrazano and Goethals bridges and on the Staten Island ferry.

Advertising professionals would advise that one of the best means of affecting public attitudes and changing behavior is through television advertising. Putting aside the expense of this medium, the Department has not pursued this strategy to date because recycling had not reached a sufficient number of households in the City to make television a prudent investment. As the program's penetration increases, we intend to explore opportunities for televised public service announcements.

Recycling "Fact-Paks" and General Recycling Information

The Department is in constant receipt of calls and letters requesting information about recycling. The staff has developed a recycling "Fact-Pak," which includes brochures and fact sheets on all Sanitation recycling programs. The Sanitation Action Center, whose telephone number (212-334-8590) is included in our recycling advertising campaigns and direct mail literature, handles most of the requests and responds to general public inquiries regarding recycling. Complex questions are referred to the Recycling Division of the Department.

We do *not* assume that our education effort, as implemented to date, is as effective as it can or should be. We need to continue evaluating the strengths and weaknesses of our strategies. In the context of the City's budget difficulties, we will not have the staff or financial resources to implement the kind of program we would like. As a result, the challenge will be to use what limited resources we have in the most effective ways.

New Education Initiatives in Fiscal Year 91

Research

In FY 91, the Department will contract with a market survey firm to explore – through surveys and focus groups – the most effective ways to motivate citizens to recycle. With the benefit of hindsight we now recognize that such research should have been conducted from the program's inception, both to pre-test strategies and to provide a means to track changes in attitude over time. We want to learn how best to reach landlords, managers, building superintendents, tenants, and home or co-op owners, as well as to explore the attitudes of the standard demographic groups of ethnicity, income level, age, and geographic location.

Because recycling education must compete for attention with sophisticated advertising by every other good cause, service, product, and entertainment, we need the best tools available if we are to be successful in capturing the public's attention for recycling. The study's findings, combined with the recommendations of a professional advertising agency, will help us shape that program.

This year the Department will contract with a full-service advertising agency to assist both with design and unit media selection and placement. Limited funds will allow for only modest advertising compared to industry standards so the Department is seeking both pro-bono assistance from advertising agencies and additional public service media time.

Seminars

Experience has taught us that recycling is effective in large apartment buildings *only* when maintenance staff is committed to making it work. To try to build that commitment, the Department will co-sponsor, with unions and/or housing associations, a series of seminars to educate the owners, managers, and superintendents of residential buildings about their roles in recycling programs. The seminars will be offered citywide to provide a forum for sharing specific information regarding tenant education and internal collection systems.

Publications

In FY 91 and beyond we plan to publish, distribute, and advertise free handbooks on implementing recycling in residential and commercial buildings and on waste-reduction at home, in the office, and in the marketplace. Recent budget cuts have delayed publication of some of these handbooks.

Activities with Schools

In FY 90 the Sanitation Speakers Bureau presented approximately a thousand assembly programs reaching close to 200,000 children. That effort, directed to new recycling districts and those with low participation levels, will be continued this year. The Department participates as a member of the Environmental Task Force that the Board of Education has created to integrate issues like recycling and waste management into the curriculum. But the challenge of capturing our school children's commitment to recycling requires a greater effort than we have yet been able to make. We anticipate investing significant energy this year into planning that effort with the Board of Education.

Volunteers

As noted above, the community's leadership is instrumental in building support and participation for recycling. Volunteers from a neighborhood can extend staff outreach and may be better able to motivate neighbors and friends to recycle. But finding volunteers, training them, and ensuring that they have the materials and support they need takes substantial commitment of staff time. Utilization of the informal networks in communities has the potential for building stronger grassroots support for recycling and is therefore worth the investment of resources. The Department is reallocating staff to assign a Volunteer Coordinator to foster the growth of the volunteer effort. That person will recruit both individuals and organizations to help with speaking dates, tabling in areas with high pedestrian traffic, literature distribution, participation surveys, and other activities.

In the FY 91 Executive Budget, the Department has been provided an additional \$1.4 million to the base of \$2.8 million for recycling education. In addition, as noted in Chapter V, "Residential Recycling" the Department will reassign 25 Sanitation police to work with the outreach staff. But also we need the assistance of the private sector -- to supplement this effort with pro-bono expertise and support as well. The challenge of changing the way trash is handled in three million households will continue to demand our imagination and energy -- to leverage limited public dollars with private and not-for-profit dollars and to mobilize community leaders to spread the message of recycling to their neighborhoods.

CHAPTER VII

INSTITUTIONAL RECYCLING

Under the recently promulgated City Agency/Institution regulations, all city agencies/institutions receiving either Department waste collection service or free dump privileges at Department facilities will be required to source-separate up to nine categories of materials: the six designated curbside materials plus bulk items, yard waste, and office paper (which will continue to be collected under a contract with a private recycling firm). In addition to city agencies, institutions covered by the new regulations include voluntary hospitals, schools, and public transportation agencies. Enforcement will begin in early January 1991, following a three month warning period. Compliance with these regulations will in some cases be costly and/or burdensome to affected agencies and institutions.

Issues Affecting All Agencies

The Office Paper Collection program -- currently active in 380 buildings -- has helped us to anticipate some of the problems that agencies will encounter. Of the two major obstacles encountered, the foremost is lack of space. Because most of these facilities receive five- or six-day-a-week collection service from the Department, the space allocated for waste disposal is limited to the storage capacity of one day's worth of garbage.

The present limit for the pick-up of recyclable material is once a week for each category. This level of service requires buildings to store recyclables for up to a week at a time. In the case of lower Manhattan, where most sites serviced by the Department are office buildings whose waste streams are composed of over 50 percent recyclable paper, this schedule poses a critical storage problem. The Department will continue to monitor the costs of modifying storage areas and will consider the alternative of reducing trash collection and providing more frequent recycling collection service.

The second obstacle to date in most locations participating voluntarily is that recycling is not supported by maintenance or custodial staffs. Lack of custodial involvement leads to lower capture rates as well as to a problem of storing recycling bins in public areas. Custodial participation would facilitate storing recyclables, together with regular waste, in central collection areas rather than in offices or hallways.

When recycling is mandatory, city agencies and not-for-profit institutions must begin incorporating compliance with Local Law 19's regulations into their management plans and their daily operating policies and procedures. Each agency must appoint a recycling coordinator to manage the development and implementation of an agency specific recycling plan. Three agencies -- Parks, Health & Hospitals Corporation, and Corrections -- have already made their appointments and are making significant headway in developing their plans. The Department of Sanitation will provide some technical assistance, as well as the collection service, but it will be up to individual agencies and institutions to see that their personnel fully comply with the law. In order to help them, Sanitation will provide a periodic forum for recycling coordinators to exchange information and ideas.

Agency-Specific Problems

Bulk Disposal

Agencies like the Transit Authority, Transportation, and the Board of Education, with large maintenance shops, have a significant challenge in meeting the requirement that bulk materials be recycled -- failure to do so will result in the withdrawal of free dump privileges. It is clear that new logistical problems will have to be solved and inter-agency procedures developed if this program is to work effectively.

Department of General Services (DGS) As Landlord

DGS serves as the building manager for most city-owned buildings and, as such, will be critical to the recycling program's success. The collection of recyclables needs to be built into the agency's daily routine; maintenance staffs need to be trained and monitored; union issues caused by changed job descriptions may need to be resolved; and, in some cases, additional collection equipment may need to be purchased.

Major Generators

Exhibit II.4 in Chapter II, "Waste Composition" displays the composition of the institutional waste stream collected by Sanitation. Sixty percent of it is generated in schools and hospitals, and as a result these institutions deserve particular attention.

Board of Education

The data from the waste composition study indicate that 36 percent of the waste stream in public schools is targeted recyclable materials. That 36 percent makes up over one-third of the recyclable city collected institutional waste stream. It is essential that every effort is made to capture this tonnage if the Department is to reach its mandated goals.

Since Spring 1989, the Institutional Recycling program has been actively working with representatives from the Board of Education's School Food and Nutritional Services to institute recycling programs in public school kitchens. By this Fall, all public and parochial schools in Staten Island will be recycling newspapers, magazines, corrugated cardboard, and metal and glass food and beverage containers. By the close of FY 91 collection of bottles, cans, newspapers, magazines, and corrugated cardboard will be expanded to all remaining public schools in mandatory recycling areas.

The Department will continue to work with representatives from the Board of Education to develop a comprehensive plan for multi-material recycling and recycling education at public schools throughout the city. But effective recycling programs for public school classrooms present particular and complex problems. Teachers must be trained to implement and monitor classroom recycling programs. As with all training programs, costs will include compensation for professional time, consultation fees, curriculum development, and the production of education materials. An effective recycling program in the classroom requires special equipment for collecting and storing recyclable materials. This equipment must be manufactured in compliance with applicable codes, maintained, and replaced as necessary and, as discussed above, in-classroom recycling will require custodial support.

Health and Hospitals Corporation (HHC) and

Member Hospitals of the Greater New York Hospital Association (GNYHA)

The Department has been actively working with representatives from HHC and GNYHA over the last year to incorporate recycling into the daily waste-handling operations of both the HHC's various facilities and those of nonprofit hospitals. Both the Corporation and GNYHA have been active in implementing office paper recycling programs at their member facilities.

The major impediment to future expansion of recycling at HHC and other hospitals receiving Department collection has been administrative code provisions which authorize the suspension of all Department service if regulated medical waste is found in Department waste containers. The Department recently determined that in such cases recycling service will not be suspended automatically along with other Department service. Recycling service will be treated as independent from waste removal and will be suspended only when regulated medical waste is found in the recycling dumpsters.

Because hospitals are the second largest institutional generators of potentially recyclable material, efforts will be made to begin recycling at the majority of these sites in FY 91. However, proper waste management procedures in the patient care areas in hospitals are extremely complicated and are being studied for the Solid Waste Management Plan. They are excluded from recycling requirements in the current regulations and, as a result, a significant portion of potentially targeted recyclables will be lost. Appropriate revisions to recycling regulations pertaining to patient care areas will be promulgated based upon the findings of the Solid Waste Management Plan.

Other Generators

Department of Corrections and Human Resources Administration (HRA)

Two agencies, the Department of Corrections and HRA, have successfully implemented programs under adverse circumstances.

Over half of the Department of Correction's facilities have instituted recycling programs. The Rikers Island correctional facility was the forerunner in voluntary recycling, instituting a full-scale program in November 1988. The Human Resources Administration began recycling programs in 1989. The Central Men's Shelter in Manhattan was the first HRA location to institute a recycling program; since then most HRA shelters have started programs. Both agencies are continuing to expand their programs to their administrative offices; as well as; to the remainder of their facilities. They serve as excellent role models for agencies by proving so clearly that with commitment and leadership any facility can recycle.

Recycling in Public Spaces

Pedestrian traffic in public spaces generates a significant amount of waste. Recycling programs designed to capture newspapers and beverage containers in parks, on subway platforms and street corners provide an opportunity to educate the public about waste and litter, reinforce participation in recycling at home, and divert more tons from the landfill. All transportation agencies, Sanitation and Parks, are each responsible for waste collection from some public spaces.

Over the next year Sanitation will spearhead a joint task force to pool the expertise from all the appropriate agencies to design a recycling system applicable to pedestrian areas. It will then be possible to consider a uniform public education program to

encourage people to deposit their recyclables in special containers. This campaign would promote both recycling and litter control.

The task force will build on the pioneering efforts of Metro-North at Grand Central Terminal. This Fall posters and conductor announcements will encourage commuters to take their papers with them for deposit in special recycling baskets on each platform.

Parks Department

Local Law 19 specifically requires the Parks Department to recycle its organic material; therefore, Parks will not be allowed to bring loads of organic material to disposal facilities after January 1991. The agency has been moving ahead in its planning effort and expects to begin a number of small composting programs this Fall.

City agencies participating in the City's Office Paper program and other institutions that have been recycling voluntarily have demonstrated that the obstacles to recycling can be overcome and that significant tonnage can be diverted. Local Law 19 will, however, require perseverance and leadership on the part of agency heads and managers, and the cooperation of employees to make recycling work citywide. Though some agencies will indeed confront difficult problems, the experience gained in ongoing programs should provide agencies with a strong foundation upon which to build.

CHAPTER VIII

COMMERCIAL RECYCLING

Local Law 19 requires that commercial businesses, which account for some 40 percent of the City's waste, and private carters participate in recycling. As explained below, the issuance of regulations governing these activities has been delayed; they are now expected to become effective in early 1991. Input has been solicited from both the business community and the solid waste industry, but we fully realize that these regulations are likely to create some concern and controversy when they are implemented.

Our limited analysis, reported in Chapter II, "Waste Composition", suggests that 50 to 57 percent of the commercial waste stream is potentially recyclable, but facts about the current state of commercial recycling are difficult to document. Nevertheless, we estimate that a significant portion of the commercial waste stream currently is recycled, particularly from large generators such as department stores, office buildings, supermarkets, and the construction industry.

The most commonly recycled materials are office paper, corrugated cardboard, construction and demolition materials, and scrap metal. These recycling efforts predate the City's involvement in recycling, and reflect market-based decisions, both about the value of particular recyclable materials as well as the avoided disposal costs.

Because state and city regulatory agencies do not now fully collect and report detailed information on private carter activities and operations, Sanitation is confronted with a new dilemma: the Department will be promulgating recycling regulations to increase recycling rates for a sector about which it has limited information, and whose garbage is collected by private carters regulated by the Department of Consumer Affairs, and recycled through transfer stations over which Sanitation has only recently gained regulatory authority.

Because of that dilemma, the commercial recycling regulations, drafted in separate parts by Sanitation and the Department of Consumer Affairs, have been difficult to develop. They will be issued for public comment in September 1990, six months after the date by which the law required their implementation.

In addition, questions have been raised as to whether the post-collection separation option for commercial establishments contained in Local Law 19 is consistent with the recycling mandates in the 1988 Solid Waste Management Act. (The latter requires source separation in some circumstances.) If the two provisions of law are indeed in conflict, the Department will have to pursue a legislative resolution. The Department will seek to maintain some flexibility for businesses as to the method of separation. Obviously, resolution of this issue may greatly impact recycling requirements for the commercial sector.

What the Regulations Will Require

The Department's regulations, based on Local Law 19, designate the materials to be recycled. The law and regulations, as drafted, require that all businesses either source-separate designated materials prior to collection, or arrange for post-collection separation through their private carters. The law mandates that at least 50 percent of all commercially-generated solid waste be designated as recyclable. Significantly, the commercial sector will be required to separate recyclables without regard to the cost

effectiveness of such separation. This will entail a fundamental shift in commercial establishment and private carter waste management practices. The implications of this shift are not fully understood by the Department or by many of the businesses themselves.

The draft regulations propose a year long phase-in schedule for recycling the designated materials, which include office paper, corrugated cardboard, newspapers, magazines, metal, glass and plastic containers, aluminum foil products, construction and demolition debris, and bulk waste. Generators will be expected to recycle any material found in significant quantities in their waste stream. Regulations to be issued by the Department of Consumer Affairs will require private carters to document what kinds and amounts of material they collect, and how it is disposed of, including what portions are recycled.

Enforcement

Department penalties for noncompliance with the commercial regulations are the same under Local Law 19 as those for violations of the residential regulations -- which may not be sufficient to deter violations by commercial establishments, private carters, or transfer stations. Summonses issued by Sanitation enforcement may well be treated as another cost of doing business; we believe that the penalty schedules will require revision.

The Department's new regulatory authority over all transfer stations will allow for additional enforcement powers over transfer stations that now receive but do not recycle source-separated material, or that do not now provide post-collection separation services. Violation of these requirements could result in the closing of facilities and suspension of permits, in addition to any fines authorized under the Department's transfer station regulations.

It is important to note that commercial firms will not be required to submit recycling plans, nor would the Department have the resources to review them if plans were required. We will instead rely on information supplied through the Private Carter Registry, through which carters must supply detailed information on their customers to the Department of Consumer Affairs, and through Department inspections of solid waste transfer stations, which provide post-collection separation services or process designated recyclable materials.

Given the Department's "distance" from commercial businesses and private carters, most of whom currently export the waste they collect beyond city limits, it is extremely important for us to communicate information about commercial recycling regulations and options to businesses and carters.

Businesses will face significant difficulties in their attempts to comply with the regulations. For businesses which attempt source-separation, employees will have to learn how to recycle, recycling bins must be purchased, and new collection arrangements made. For businesses which generate large volumes of recyclables and source-separate, some of the new costs may be offset by reduced carting fees or revenue from recyclable materials.

For small-and moderate-size businesses, the cost of garbage collection may increase. Some businesses may face space constraints in storing recyclables prior to collection, if they choose to source-separate.

Private carters will seek to include additional collection and processing costs into their regulated pricing systems. The Department of Consumer Affairs will be required to

review costs and potential savings to the private carters in establishing a rate structure that takes into account the nature of the altered waste streams and services provided. This is expected to take place in late 1991.

These impacts, individually and collectively, will be difficult but important to monitor, both to assess the success and potential difficulties of commercial recycling as well as to understand the changes this will cause in existing relationships and fee structures.

The Department's Role

Within budgeted resources, the Department hopes to provide educational help to commercial businesses, primarily through a commercial recycling handbook and seminars co-sponsored with industry and trade associations. The State Environmental Facilities Corporation is planning an audit service for commercial waste recycling, similar to energy conservation audits, which should prove useful to firms. However, this resource may not be sufficient for the number of businesses who may seek the service once commercial recycling is mandatory.

With the onset of expanded commercial recycling, the ability of transfer stations to process recyclables will become more important, capacities will expand, and enforcement will be necessary to ensure adherence to both the regulations and new contractual arrangements between businesses and their carters. The growth of the transfer station industry has been a source of considerable concern to affected neighborhoods, and the development of this industry -- which represents a byproduct of both recycling and waste export -- was not well understood at the time Local Law 19 was enacted. We expect the neighborhood impacts of this developing industry to be an increasing problem for the City as recycling expands. (The evolving role of transfer stations in processing recyclables is discussed further in Chapter X, "Processing".)

At this point, the Department's lack of direct experience with and knowledge of commercial waste makes projecting future needs and problems associated with commercial recycling a challenging undertaking. Until we develop our new role in regulating all transfer stations, it may, in fact, be easier to describe a future scenario for commercial recycling than to describe the complex series of changes, dislocations and opportunities which will occur in the short term.

Ten years from now, for example, it is plausible to envision most businesses source-separating their waste, and transfer stations will have turned into full-fledged recycling centers recycling more material than they dispose. But how New York City's 150,000 businesses will adapt to recycling (and what the additional costs will be), how transfer stations or recycling centers will be sited and permitted, how collection systems will change, and how the export of solid waste will be inhibited (or even prohibited) over the next decade is impossible to predict.

CHAPTER IX

MARKET DEVELOPMENT

Recycling is not just about collecting waste materials in different ways. As we discuss in this chapter and the next, recycling is also about how those materials are processed and delivered for use to end markets, the point at which what truly can be called "recycling" occurs. The development of these markets is critical to the success of the City's recycling program. The Department has spent considerable time and resources in studying markets for each material we collect or might propose to collect. Market specifications, conditions, and prospects for each material are detailed in Appendix III, Market Development. This chapter focuses on the overriding market-related issues facing the Department and private recyclers.

Local Law 19 mandated that this report contain a five-year strategy for marketing and selling recyclable materials. Realistically, no such strategy can be put forward at this time because we still lack the information necessary to do so. We can, however, summarize the issues facing the Department and our current approaches to addressing them, beginning with some general observations:

- The tonnage requirements contained in Local Law 19 which drive New York City's recycling program were established without regard to market demand. We now collect newspaper, magazines and corrugated cardboard and pay up to \$43.00 a ton to contractors to process and market it, mainly to paper markets overseas. While we receive payments for glass, metals, and other materials, the funds received pay only a small fraction of the processing and collection costs. The more substantial payoff from recycling though is not material sales profit, but rather avoided disposal costs. Unfortunately, such incremental costs of collecting and processing recyclables are current city budget costs and we are not yet diverting sufficient quantities of material to have a substantial affect on our waste disposal system operations. Furthermore, avoided disposal costs in terms of extended landfill life have no immediate budgetary benefit.
- Our investments in new collection and processing systems -- to the extent they exceed avoided disposal costs -- represent a public subsidy for the reuse of recyclable materials. This subsidy is implicitly intended to make recyclables competitive on a cost basis with virgin materials. Without focusing here on the preferential treatment accorded some virgin materials by particular tax code provisions, neither the Department nor more knowledgeable industry expertise is yet certain about the cost structure of utilizing certain recyclables versus virgin raw materials. (This is not the case in mature recycling industries.) As many recycling manufacturing initiatives, particularly for plastics, are still in the research and development stage, there are no definitive answers with regard to relative cost structures.
- The underlying premise of many public recycling programs -- including New York City's -- has been that if a supply of recyclables is created, investment dollars will flow to manufacturing facilities and processes that utilize recyclables. While the validity of this premise is a function of comparative manufacturing costs and values generated, it is clear that for several materials there will

be a substantial time lag -- several years, in some cases -- between success in our collection programs and the development of facilities that make productive use of recyclables. As New York's collection programs expand dramatically, and other area localities do likewise, the problem of limited demand and consequent additional costs will be exacerbated.

- To the extent that the use of recyclables is or becomes competitive with virgin materials, New York City may at some point possess its own competitive advantage in marketing its materials. As the City is probably the single largest supplier of recyclable commodities in the region, increasingly it will command significant leverage in negotiating contracts for the processing and marketing of those materials. When used effectively, this leverage can stimulate significant local investment by providing stable and predictable sources of raw material in close proximity to major consumer markets.

The Department has identified the following key approaches to guide its near-term market development efforts:

Longer Term Contracts

Because of the Department's lack of familiarity with recycling markets, prudence dictated that initial contracts be of a short-term nature. However, for businesses to invest in plant and equipment, a steady supply of recyclable material must be assured over a long period of time. Future contracts will provide opportunity for vendors to bid for long-term supply contracts.

Stimulate Local Demand

Local demand for the City's recyclables must be stimulated through aggressive procurement strategies and practices. Local Law 19 gives the Department of General Services (DGS) the lead in using the City's own procurements to leverage opportunities for the use of products made with recycled content. To date, DGS has adopted purchasing procedures which include a ten percent price preference for paper products utilizing significant recycled content. DGS also is revising all contract specifications to permit goods with recycled content to be purchased by the City.

Sanitation also has a role in this process, by promoting procurement of such products by the private sector, in assuring consistency among the specifications used by other government agencies within the state and region, and by identifying opportunities for the use of locally generated recyclables as a source for manufacturing.

Work Cooperatively with City and State Economic Development Agencies

Increasingly, the Department works with public economic development agencies to bring expertise to bear on efforts to develop the recycling industry. The City's Financial Services Corporation has facilitated tax exempt financing for a number of firms engaged in solid waste management and recycling, including projects involving the mechanized recycling of construction and demolition wastes. The Office of Business Development has worked with local recyclers to maintain and promote markets. For example, major local consumers of scrap plastic and waste wood have been linked with potential suppliers of these materials.

Sanitation has defined the development of newspaper de-inking capacity as its highest market development priority. Discussions have and will take place with firms that

have expressed interest in locating such a facility within the five boroughs or in the region. In this area, the New York State Department of Economic Development's Office of Recycling Market Development has provided leadership on a statewide level. In addition, Sanitation will seek development of other specific recycling facilities in the processing and manufacturing of paper products, tin cans and plastics.

Analyze and Seek Changes to Market Incentives

Although much more can be done with the City's economic development tools, there is little we can do to change the fact that recyclable commodities compete in the context of national and international markets that give preference to virgin materials. Understanding the nature of the underlying industrial "materials policy" for recyclable commodities will be critical to shaping our long-range plans, particularly in the legislative arena.

Market incentives -- through tax policy, price preferences, investment credits, and packaging regulations -- can be created through legislation at the federal, state, and city levels, but in order to insure lasting success, all levels must actively participate in making the appropriate policy decisions. The Department intends to act as a vigorous advocate in the various policy arenas in which decisions are made affecting the fundamentals of recycling economics.

The approaches summarized in this chapter must be brought to bear on a myriad of discrete individual decisions the Department must make on a material-by-material basis, and sometimes on a vendor-by-vendor basis. However, whatever we do will not change the fact that recyclables are commodities, subject to supply and demand, or that factors affecting the market for one material are not the same as those affecting others. In some cases, such as steel, aluminum and glass, markets are relatively mature, demand is strong, and future conditions appear stable, even for the increasing volumes of material which the city will be collecting.

In other cases, markets are relatively immature or are evolving quickly. Plastics, for example, are in the process of development; although there is an increasingly steady demand for certain plastic resins (e.g., HDPE, PET), markets that can accept large volumes of other resins, such as polystyrene or mixed plastics, from collection programs have yet to develop.

A key market undergoing substantial evolution is that for newspapers and magazines. As noted previously, most of the City's collection of those materials is exported at a high cost to the City. But several domestic paper mills using new de-inking technology will come on-line in three to five years and generate substantial demand for those materials collected by the Department.

Development of increased demand for household mixed paper, as collected in the Intensive Recycling project, is in a very immature stage; this market is dependent on the use of other recycled papers and virgin substitutes. To date, the private sector has not pursued research and development nor made a substantial capital investment which would allow us to absorb the potential supply of mixed paper the City could collect.

Department strategies for developing various markets must take this complexity into account. With mature markets, for example, the prime tactics might be to attract to the City, wherever possible, manufacturers capable of taking advantage of a ready source of raw material.

For immature markets, procurement of products with minimum post-consumer content is the most important tool the City has to stimulate market growth. For example, identifying products made of post-consumer plastic or mixed paper which could be purchased in large quantities by the City, would help those segments of the industry to grow, become stable, and achieve cost efficiencies which would improve their ability to compete with products made from virgin material.

Waiting for markets to mature and stabilize for all recyclable commodities will challenge the City's patience and financial resources. That patience, supplemented by aggressive efforts to develop markets, will be necessary to achieve the long-term success of the Department's recycling programs.

Finally, to the extent that market development efforts can focus on the creation or expansion of the recycling industry within the five boroughs, not only will the Department's recycling programs be strengthened but also the entire City will benefit from economic activity which recycling generates.

CHAPTER X

PROCESSING

Even when recyclables are source-separated -- and as this report has already explained, source-separation is not always feasible -- they rarely meet industry standards for reuse in manufacturing. They first must be processed to separate the commingled material into its component parts, cleaned of any contaminants, and condensed for efficient shipping.

For example, before recycling can occur, corrugated cardboard must be separated out from loads of newspapers and magazines -- and any plastic bags and other contaminants removed -- before these materials are baled for shipping. In order to meet market specifications, mixed glass must be sorted by color and crushed, and then screened to remove contaminants. Metals also must be sorted by type, then crushed or shredded. Processing, then, is essential to convert potentially recyclable material into usable new materials.

Local Law 19 requires the Department to ensure that sufficient capacity exists to process all the material it collects. Some of that capacity already exists, but most has yet to be developed. Regrettably, the legal mandate of sufficient capacity is not accompanied by available sites, regulatory approvals, or proven engineering designs. Recognizing these constraints, our objective is to develop or facilitate a mix of city-owned and privately-owned facilities sufficient to handle tonnages collected over the next five years.

The City will need as many as ten large-scale processing facilities to accommodate the tonnage of our expanding recycling programs, which by 1996, could come to more than 4,000 tpd. The onset of mandatory commercial recycling also will increase the demand for processing capacity. It is by no means certain that this processing capacity can be developed within the time frame available. And clearly it will not be prudent to collect recyclables if they cannot be processed.

Siting, developing and permitting these processing centers is a major challenge. The permitting process is complex and lengthy. Communities frequently oppose the siting of processing centers because of previous experiences with transfer stations, or the perceived existence of too many existing Sanitation facilities in their neighborhoods, or the attendant truck traffic that may come with such facilities. But from the Department's perspective, these facilities need to be located throughout the City to minimize transportation time for delivery by collection trucks. Available land that meets the basic requirements of manufacturing zoning and is five to ten acres in size is also scarce.

As a general matter, we believe that it will be easier for the Department to satisfy its processing needs in the next several years by contracting for private capacity; while public facilities will take longer to come on-line, they too should be pursued in order to meet capacity requirements three or more years from now and to provide us with an independent assessment of the costs of processing.

The Department's needs for processing capacity, and plans to develop it, fall into three categories: Intermediate Processing Centers (IPCS) for metal, glass, and plastic containers, and paper; bulk processing centers for wood, dirt, scrap metal, and other large items; and composting facilities for leaf, yard, and (potentially) food waste. Each is discussed below.

IPCs for Metal, Glass and Plastic Containers, and Paper

To process metal, glass and plastics, the Department currently uses one Department-owned IPC located in East Harlem and has under contract two private processors, one located in Newark, New Jersey, and the other in Westbury, Long Island. Together they currently handle over 150 tpd.

These facilities do not handle newspapers, magazines, or corrugated cardboard. These materials are collected in separate trucks and processed under contract with the Department by privately owned paper dealers.

The operators of each facility, including the East Harlem IPC which is managed under contract to the Department, also are responsible for marketing and shipping processed material to end-users. In the case of East Harlem, the Department pays all operating costs and the City receives the revenue from marketing of the materials; in the other cases, the Department's contract with the facility provides one fee for their services.

The East Harlem IPC has been our mainstay. Initially projected to handle less than 50 tpd, at its peak this past summer it handled over 125 tpd. Continuing equipment improvements have made that possible; retrofits scheduled this year include new processing lines for plastic containers and an improved extraction system for tin cans. The IPC's residue rate (the percentage of material received which is not recycled) has hovered around five percent, well below the rate reported by other municipal processing facilities.

Large-scale IPCs, able to handle 300 tons per shift (or 500 to 600 tpd), are in the development stage. Negotiations are under way with respondents to the original request for proposals to design, build, and operate the first such facility slated for a site at the Fresh Kills landfill in Staten Island. These IPCs will handle all six materials collected by the Department's Curbside and Containerized Collection programs, as well as have the capacity for additional materials in the future.

Future plans for facility siting will emerge from the solid waste management planning process. That process will identify siting criteria, assess siting opportunities in the overall context of the City's solid waste facility needs, and examine a full range of implementation issues, such as financing, ownership, contracting, and institutional arrangements.

The major design issue associated with these large-scale IPCs is their ability to accept and sort to standards of marketability all six materials if they were to be collected and delivered in the same truck. (We refer to this as "single-stream" collection.) An IPC able to handle all six recyclables collected in a single-stream would allow the Department to reduce the increased collection costs associated with its current curbside program.

For single-stream collection to be feasible we must ensure that broken glass and certain liquids do not contaminate the newspapers. Another option which will be tested -- and one that IPCs may have to cope with -- is the collection of glass, metal and plastic containers in plastic bags which have been collected in the same truck as the wastepaper. We anticipate that continuing improvements in collection and processing technology should allow single-stream collection to become the norm for the Department's programs without hampering our efforts to build a reputation for quality recyclable commodities.

Three or more years will be needed for these large-scale IPCs commissioned by the Department to open. Therefore, the Department is also beginning an aggressive push

to encourage the private sector to move quickly to develop processing capacity for which the Department could contract.

In addition, the Department is developing a second IPC inside the former Hamilton Avenue incinerator in Brooklyn. The Hamilton Avenue IPC is slated to begin operation in January 1991, as an interim facility until larger IPCs are developed. It is now projected to handle 50 tpd of metal, glass, and plastic containers, with all of its glass processed and delivered to the next door Department of Transportation's asphalt plant for use in glassphalt. The Department is considering increasing the capacity of this facility to 100 tpd by operating a second shift.

The Department is also assessing the feasibility and the potential economic advantages of developing Department-owned facilities dedicated to processing wastepaper. It is possible, though by no means certain, that the Department's current high costs for recycling wastepaper could be reduced by processing and directly marketing paper ourselves rather than contracting for this service with paper dealers.

Bulk Processing Facilities

The Department requires processing for the bulk material it collects from residential collections, lot cleaning operations, self help disposal sites, and institutions. In some cases (e.g., self help sites, institutions, and some lot cleaning), the Department separates the material into wood and metal items prior to delivery for further processing. In other cases, bulk material is delivered to private contractors who extract the wood, metal, dirt, and large plastic items suitable for recycling.

The Department relies on private contractors (primarily transfer stations that handle construction and demolition material) for this service because Sanitation currently lacks its own facilities. To reduce costs, the Department is now purchasing equipment for chipping wood at several self help sites.

Recovery rates for bulk materials differ, depending on composition and source. Mixed metals (primarily appliances) are nearly 100 percent recoverable; mixed wood (much of it pre-sorted at self help and lot cleaning sites) is approximately 85 percent recoverable; and mixed bulk (from residential collections) is approximately 50 percent recoverable. Contractors are required to conduct regular tests of these recovery rates, both to verify their services and to provide us with information about these materials.

The key concern at present is the limited number of private processors capable, permitted, and willing to handle the Department's bulk processing needs. This shortage of private processing capacity could seriously impair the success of this program. As in other areas, we are actively exploring the possibility of developing city-owned capacity.

Composting Facilities

Leaves and other yard wastes -- which compose approximately 4.5 percent of the Department-collected waste stream -- also require processing, otherwise called "composting". Composting reduces the volume of organic wastes by nearly 80 percent through an organic process that requires several months to complete. Depending on its initial composition, the finished product can be a horticultural-grade soil additive with some market value or a compost potentially suitable for use as landfill cover.

Facilities to turn yard waste into compost are necessary because the volume of leaf and yard waste the Department expects to collect is substantial -- as much as 600,000 cubic

yards per year. Last year's pilot program collected 1100 tons of leaves from Queens District 13 and composted them at the Edgemere landfill. From that pilot, we learned to properly manage the process to control odors and remove contaminants to produce a quality product.

The Department is constructing its first large-scale composting facility at Fresh Kills -- a 40 acre 200,000 cubic yard facility that will accommodate leaves and yard waste from four districts this fall, and from 33 districts by Fall 1992, as required by Local Law 19. Construction began in July 1990 and the facility is expected to be operational this fall.

Additional sites for composting facilities will be difficult to identify, acquire, and develop, primarily because of the amount of open space required. Possibilities include the Edgemere landfill and various closed landfills under the Department's jurisdiction.

The food waste collected this year in the intensive recycling pilot (described in Chapter V, Residential Recycling) will be mixed with leaves and woodchips for composting. Should the collection of food waste prove feasible in the pilot, we will test a completely closed "in-vessel" process utilized successfully in many parts of the world to compost larger quantities.

In summary, the Department has plans in place to construct and/or contract for the processing capacity required over the next year. Processing capacity thereafter is not certain and depends on a number of factors, many outside the Department's control. Time frames in Local Law 19 require that we move to build that capacity before our first design, to be constructed at Fresh Kills, is brought on-line and proven.

CHAPTER XI

LEGISLATION

Solutions to some of the most serious problems impeding the long-term success of our waste prevention and recycling programs lie outside the jurisdiction of the Department and the executive branch of city government. In order to address these problems and to further goals regarding waste prevention and recycling policy, the Department is developing a comprehensive legislative agenda. As part of that agenda, the Department formulates, supports, and comments upon federal, state, and local legislation and rules and regulations. The Department also opposes legislative and regulatory proposals that it believes to be misguided efforts at reaching these goals.

To date, much of the Department's effort has been in reaction to legislation proposed by others. In the next year, however, the Department will be particularly concerned with devising its own approaches to waste prevention and recycling legislation.

Legislative Approaches

In general, legislative approaches to achieving waste prevention and recycling fall into three categories: product or material bans, economic incentives and disincentives, and mandated goals. The methods by which the Department evaluates proposals in each of these categories are described below:

Bans are relatively easy to develop because they focus on particular products or materials. Bans can target materials or products that pose a danger to human health and/or the environment, and that are, in light of current technology, difficult or impossible to recycle. In addition, given adequate resources (i.e. enforcement personnel), it is relatively easy to detect noncompliance.

In considering whether to propound or support a proposed ban, the Department takes into consideration whether a rational basis exists for the ban -- i.e. whether the product or material is harmful and/or not being recycled, whether a ban will prevent the development of a reasonable recycling system for the banned material or product, whether any potential substitutes for the material or product are as bad or worse for the environment, if the ban is directed at packaging, whether the packaging material serves little to no utilitarian or consumer purpose, and whether the ban will pose an economic hardship to consumers or business.

Economic incentives and disincentives include taxes, surcharges, deposits, grants, credits, and loans. Taxes and credits can encourage consumers to change their purchasing habits and producers to change their manufacturing practices or force them to assume the costs of disposal. A surcharge is an additional or excessive charge placed on an item that is already taxed and serves a similar purpose to a tax. Credits reward consumers and producers for making environmentally sound decisions such as choosing recycled over virgin materials.

Deposits are useful tools to force products back into the marketplace to be reused or recycled, and to thereby keep these products out of the municipal solid waste stream and reduce municipal collection costs. In addition, the aggregation of materials may help to build markets for materials not previously recycled.

In evaluating whether to propose or support legislative proposals for economic incentives and disincentives, the Department considers whether the true cost of the proposal

has been established. It considers whether the public subsidy is efficiently utilized and allocated fairly, whether the deposit is high enough to ensure that the product will be returned, whether the tax or credit is high enough to shift behavior, and whether the funds collected will be commensurate with disposal costs for the product at issue.

Mandated goals set through legislation or regulations require higher percentages of recycling, minimum percentages of recycling, or minimum percentages of recycled materials to be used in manufacture. The Department evaluates goal proposals by examining whether these proposals are reasonable or are unnecessarily restrictive of government or private sector attempts to develop the best possible solutions to problems, and whether they allow for developments in technology or information.

Implementation Options

Waste prevention and recycling initiatives would be most effective if enacted at the federal level. The market for the materials sought to be regulated is a national one, and restrictions will be most effective if set at that level. The overall effect of locally instituted bans and economic incentives/disincentives may be negligible on the national economy, and, locally, may create negative effects by causing consumers to shop and businesses to locate elsewhere.

For the last decade, however, the federal government has deferred most solid waste management decisions to state and local governments. The Northeast states, faced with severe waste disposal crises, have responded to the federal legislative vacuum by considering various proposals; however, the actual enactment of significant initiatives has been limited.

In order to reach regional solutions to solid waste problems, Northeast states, including New York, have in certain instances banded together in regional coalitions to pass identical legislation or, informally, have utilized each other's legislation. During 1989/90, the Department was active in two regional efforts: the Northeast Recycling Coalition (NERC) and the Source Reduction Council of the Coalition of Northeastern Governors (CONEG-SRC).

NERC addresses key recycling issues facing the Northeast states. It serves as an information exchange and a task force to develop consistent standards and definitions. The CONEG-SRC was established in Fall 1989 to develop: (a) model legislation for reducing toxics in packaging; (b) standards for reducing packaging at the source; and (c) an educational program on source reduction in packaging. The Recycling Programs and Planning Division of the Department became an associate member of the Source Reduction Council this fiscal year and is involved in the establishment of packaging industry guidelines.

For some issues, local action can be effective despite the global nature of the problems. For example, as a step toward the development of markets for secondary materials, New York City can exert its purchasing power and purchase products manufactured largely from recycled materials. As mandated by Local Law 19, the City's Department of General Services (DGS) has been revising its procurement standards to encourage the purchase of recycled products. A separate report to the City Council has been prepared by DGS detailing the progress it has made in this area. Moreover, even the simple introduction of a proposal may effect change by causing industry to adopt a voluntary solution. For example, in response to legislative proposals to ban polystyrene, the plastics industry began to experiment with polystyrene foam ("Styrofoam") recycling; newspaper publishers agreed to phase-in the use of recycled content; and manufacturers of battery-powered products agreed to make products with separable

battery packs, while the battery industry began to develop batteries with lower levels of mercury.

FY 90 Legislative Activity & Our FY 91 Agenda

During FY 90, the Department has actively worked to further our policy goals through legislation and regulation at local, state, and federal levels. The Department's specific responses to particular initiatives are described in Exhibit XI.I, and are summarized below.

Federal

Federal action in particular is needed to spur waste prevention (including curtailment of excess packaging or packaging which is not readily recyclable) and market development. To be truly effective, waste prevention and market development efforts must have a geographic reach well beyond the boundaries of New York City.

In FY 90, the Department supported the National Recyclable Commodities Act, introduced by Senator Albert Gore, Jr. We are concerned that the Bush administration does not support this important measure, and we are working actively with Senator Gore's staff. This Act would be a step toward addressing a major obstacle to recycling at the local level -- the fragmented and unpredictable nature of markets for the commodities we collect -- by establishing national recycling standards and encouraging markets for secondary materials. In addition, we reviewed other federal proposals related to waste prevention and recycling, such as a proposed Virgin Materials Excise Tax, Newsprint Recycling Incentives Act, a National Bottle Bill, and proposed amendments to, and regulations for, the Clean Air Act and proposed amendments to the Resource Conservation and Recovery Act.

State

The Department works closely with the New York State Legislative Commission on Solid Waste Management and with the Senate and Assembly Environmental Conservation Committees to provide comments on a variety of waste reduction and recycling initiatives. This year, we evaluated proposals to remove batteries and tires from the waste stream, to require newspaper publishers to use a minimum amount of recycled newsprint; to establish the 1990 Environmental Quality Bond Act, which would provide funding for municipal recycling programs, including demonstration projects; to create packaging restrictions and product bans; to permit local enforcement of the Bottle Bill; and to remove siting restrictions for recycling and composting facilities.

Among the proposals to reduce unsound packaging and disposable products reviewed by the Department were taxes to discourage the use of environmentally unsound packages, and review boards to evaluate products and packages. The Department supported efforts to reduce excess packaging, encourage reusable and refillable packages and products, create recyclable packages, and make packages out of recycled materials.

In addition to legislation, the Department also commented on regulations drafted by the New York State Department of Environmental Conservation (DEC) regarding the design of a waste reduction and recycling emblem. Labeling, coupled with a strong education campaign, can complement or replace legislation restricting product and packaging design by providing the public with a way to identify products and packaging that are readily recyclable and/or contain recycled content. Thus, labels

can help the public avoid products and packaging designed for disposal and promote those designed with an eye toward source reduction and recycling.

The DEC was mandated under the 1988 Solid Waste Management Act to propose a design and standards for the voluntary use by manufacturers of an emblem on containers and products to indicate their recyclability, recycled content, and reusability. The first draft of the emblem regulations was released by the DEC in November 1989. The Department submitted extensive critical comments. In December 1989, the DEC withdrew its first draft. In March 1990, it reissued a substantially revised draft that reflected many of our comments. The regulations are expected to become final by the end of 1990.

Legislation to address concerns about the disposal of specific wastes, including tires, batteries, and used oil, in incinerators or landfills, was introduced this year and evaluated by the Department. Two bills were introduced this past year to address the problem of tire disposal. One bill (A.6543) proposed a refundable \$5 deposit on all tires sold in the state. The other bill (A.5412-B) would levy a \$2 surcharge per tire on vehicles sold in the state and would require retailers to accept waste tires.

The Department does not endorse a deposit system on tires. First, a deposit does not address the tires already on roadsides and vacant lots or those purchased prior to the deposit. Second, due to the long life of tires, consumers are unlikely to return them for their deposit years after their initial purchase. Third, a \$5 deposit per tire could encourage theft. The Department is, however, supportive of a conditional surcharge as an effective mechanism for getting used tires back to the retailers or manufacturers. We favor a surcharge on all tires sold in the state unless a waste tire is exchanged for a new one at or within 30 days of the time of purchase. We believe that this creates an immediate incentive for customers to return used tires, which cannot be accomplished by a deposit.

Two bills were also introduced this session to remove batteries from the waste stream -- one levied a deposit on dry cell (household) batteries, the other placed a conditional surcharge on lead-acid (automotive) batteries. The Department supported both of these proposals, with some amendments. The auto battery surcharge bill was signed into law this session; the household battery deposit bill was not.

In FY 91 the Department will continue to work for the passage of the household battery deposit and the tire surcharge bill. Although Local Law 19 requires the Department to initiate its own battery and tire legislation or programs by January 1991, we urge the Council to re-evaluate these requirements. We believe the State Legislature and Congress should be given more time to enact legislation directed at these problems. State and federal legislation should be more effective than local initiatives, and local initiatives could conflict with these more far-reaching measures.

In the coming year we also will continue to press for amendments to the "Bottle Bill" to obtain co-enforcement authority with the state, increase the deposit, expand the scope of the legislation to include wine and liquor bottles, and shift the deposit initiation to the manufacturer. The Department will continue to work with the state to develop effective packaging legislation and market development initiatives.

City

This year the Department intends to suggest several amendments to Local Law 19, including an amendment strengthening the Department's ability to enforce commer-

cial recycling requirements and, as stated above, an amendment extending the date by which the City must initiate battery and tire legislation or programs.

The Department supports the concepts embodied in several waste prevention and recycling bills that were considered by the City Council this year. The Department is working with the City Council to develop a sound approach to the issue of polystyrene foam products. At this time, the Department is evaluating an approach which would include a conditional ban on Styrofoam food and beverage containers unless a phased-in recycling rate for these products were achieved. At the same time, however, we are developing a comprehensive approach to waste prevention and recycling through the mechanism of the Solid Waste Management Plan, which will be developed in the form of an Environmental Impact Statement, and will continue to work for state or federal waste prevention and recycling measures.

Also this past year, the Administration, including the Department, worked with the Council to obtain the passage of Local Law 40, which regulates solid waste transfer stations. These stations' role in recycling will continue to grow as mandatory commercial recycling becomes effective. This new legislation balances the City's need for transfer stations to handle and separate solid waste into its component parts with its need to ensure that these stations are operated soundly.

Conclusion

In the coming years, the Department will continue to develop and comment upon strategies at the federal, state, and local levels to reduce and simplify the waste stream and to stimulate markets for recyclables. The Department recognizes, however, that while local legislative action is important in encouraging recycling and waste prevention, local governments such as New York City's have a limited ability to effect national markets and industry standards. Unfortunately, the federal government is only beginning to demonstrate an interest in localities' difficulties in establishing solid waste management alternatives as they reach landfill capacity, and, as a result, serious and effective federal waste prevention and recycling legislation has not yet been enacted.

Nevertheless, the Department will be vigorously pursuing a number of initiatives with the hope that our efforts, along with the efforts of legislators, consumer and environmental advocates, and responsible business leaders, will ultimately result in legislative action at the appropriate level of government as well as greater voluntary efforts by industry to prevent waste and to recycle. A strategy that combines open discussion with industry, and regional, if not national, collaboration on issues will prove to be the most effective approach to achieving our policy objectives.

EXHIBIT XI.1**FY 90 Department of Sanitation Legislative and Regulatory Activity**

BILL / SPONSOR	STATUS	SUMMARY	COMMENTS
1. National Recyclable Commodities Act, S. 1884, Sen. Gore	Senate Commerce Committee	Authorizes the Department of Commerce to create markets for secondary materials by undertaking activities to promote the use of recycled materials in domestic and international trade and manufacturing including: determination of waste generation and recycling rates for various materials; developing standards for recycling capacity analyses; promulgating regulations on labelling of non-durable goods; development of procurement guidelines for federal agencies; promotion of export markets for recycled goods; funding for recycling research centers; federal office source-separation program.	The Department supports the bill's effort to develop markets for secondary materials; bring national uniformity to recycled content standards, and establish a national symbol for recycled and recyclable products. The Department made several specific recommendations for amendments to strengthen the bill: include provisions for expanding domestic markets; include responsibilities for EPA in the regulatory development mandated by the bill; review and reduce subsidies that favor virgin materials over secondary materials; indicate pre- and post-consumer materials; and strengthen the standards for using "recyclable" labels on products.
2. Virgin Materials Excise Tax, H.R. 3737, Rep. Luken	Referred to House Subcommittee on Transportation and Hazardous Waste and House Ways and Means. No activity.	Imposes \$7.50 per ton phased-in tax on virgin materials, and establishes an assistance and planning fund.	The Department supports the concept of the bill.

BILL / SPONSOR	STATUS	SUMMARY	COMMENTS
3. Newsprint Recycling Incentives Act, S. 1763, Sen. Heinz	In Senate Committee on the Environment and Public Works. No referral to subcommittee.	Requires newsprint importers and producers to recycle an increasing percentage of newsprint each year. The minimum recycling rate is determined by multiplying the newsprint produced or imported in a given year by the recycling percentage established each year by the EPA Administrator. The recycling rate is required to increase by 2% each year until the year 1999. Establishes credit system under which credits can be created and purchased by producers and importers of newsprint.	The Department has not submitted formal comments. In determining whether to support the bill, the following factors will be considered: ensuring that all types of virgin materials are taxed while not taxing some materials more than once; whether the law would tax product or virgin material manufacturers; and the basis for selecting the amount of the tax. The recycled newsprint content requirements are too low. The bill should adopt N.Y. State Task Force recommendations [See State Section Number 7]. The Department is evaluating the advisability of a credit system.
4. Clean Air Act, S. 1630	Passed in Senate April 1990; House/Senate Conference Committee scheduled for fall.	Authorizes EPA to promulgate regulations for recycling applicable to jurisdictions serviced by a municipal incinerator. Prior to receiving a federal incinerator permit, requires each such jurisdiction to comply with RCRA solid waste planning requirements, and to have an approved plan for such planning which will achieve at least a 25% recycling rate of MSW generated in the area serviced by that incinerator. 25% does not include construction debris. 10% cap on yard waste credited towards recycling goal. Prohibits disposal or combustion of lead-acid batteries.	The Department provided extensive comments and recommendations including: compliance with the 25% recycling requirement should be achievable by the whole municipality, rather than the area serviced by a municipal incinerator; a 5% cap on the amount of construction waste which should be credited toward the 25% requirement; municipal enforcement of state or local laws or programs which are designed to divert lead-acid batteries from the MSW stream should be deemed to constitute compliance with the lead-acid battery provision.

BILL / SPONSOR	STATUS	SUMMARY	COMMENTS
5. (a) Clean Air Act Proposed Rules for New Municipal Combustors	U.S. EPA is reviewing comments and is scheduled to issue final proposed rules by December 1990. However, the municipal incineration provisions in S.1630 may have an impact on these rules (e.g., necessitate redrafting) and delay their final issuance.	Requires municipal incinerators to achieve 25% or greater reduction by weight (annual average) through separation for recovery of specified recoverable materials. Prohibits combustion of vehicle batteries (more than 11 pounds); requires program for removing household batteries. Source-separation program must be implemented at initial start-up for municipal incinerators constructed after the rules are promulgated and on and after 12/31/92 or on and after the date of initial start-up, whichever is later, for municipal incinerators under construction. Compliance with source-separation is required at the end of the second full calendar year after date of initial start-up for municipal incinerators constructed after rules are promulgated, and at the end of the second full calendar year after initial start-up, or the end of calendar year 1994, whichever is later, for municipal incinerators under construction.	[The Department commented on EPA Draft Rules prior to commenting on the most recent version of S. 1630.] Comments include recommendation that 25% source-separation requirement on an incinerator by incinerator basis is impractical -- a citywide requirement would be more realistic. The Department suggests the definition of recoverable materials is too restrictive and credit should be granted for additional materials recovered. The Department supports the goal of removing household batteries, but wants proposal to reflect obstacles such as recycling markets.
5. (b) Clean Air Act Guidelines for Existing Municipal Waste Combustors		U.S. EPA is reviewing comments and is scheduled to issue final proposed rules by December 1990. However, the municipal incineration provisions in S. 1630 may have an impact on these rules (e.g., necessitate redrafting) and delay their final issuance.	Same requirements as for new combustors, except separation systems must be implemented by 12/31/92 and compliance with source-separation is required by 12/31/94. Comments are the same as for new combustor rules.

BILL / SPONSOR	STATUS	SUMMARY	COMMENT
6. RCRA, H.R. 3735, Rep. Luken	In House Energy & Commerce Committee, Subcommittee on Transportation and Hazardous Materials; not expected to move this session.	Provisions include: definitions; national policy on materials management; used oil management and recycling requirements; state solid waste management plan guidelines; landfill requirements; incinerator requirements; model recycling programs; storage tank requirements; establishes federal agency waste reduction and a waste reduction clearinghouse.	The Department is preparing final comments. The Department supports the underlying policy objectives of the recycling provisions in the bill and is directing its comments at areas where the amendments lack teeth necessary for achieving intended solid waste management goals.

STATE:

BILL / SPONSOR	STATUS	SUMMARY	COMMENTS
1. Lead-Acid Battery Recycling, A. 3946-C, Assemb. Hinchey; S. 2855-C, Sen. Daly and Spano	Signed into law (Chapter 152) and becomes effective Jan. 1, 1991.	This bill prohibits the disposal of lead-acid batteries in mixed municipal solid waste. The bill also requires retailers accept a maximum of two batteries per month from consumers at no charge. Additionally, consumers will pay a refundable surcharge of \$5 per lead-acid battery when a new purchase is made without returning a used battery. The consumer then has 30 days to return his old battery to receive the \$5 refund.	The Department supported this bill.
2. Household Battery Deposit, A. 3945-D, Assemb. Hinchey	Died in Assembly Ways and Means at end of session.	This bill establishes a deposit system on household batteries (\$0.10 for button-size batteries; \$0.25 for all other household batteries) in order to divert them from the municipal solid waste stream.	The Department supported this concept and recommended revisions to expand the scope of the bill, including: i) a requirement that all consumer products containing a rechargeable battery be designed so that the battery can be removed from the product for safe disposal and product reuse; ii) adding rechargeable batteries to the list of redeemable batteries which would carry a deposit value of \$0.10; and iii) requiring all retailers who offer for sale any household batteries to accept from a consumer any used battery.
3. Waste Tires, A. 5412-B, Assemb. Hinchey,	Died in Assembly Ways and Means at end of session.	This bill requires retailers to accept waste tires equal to the number of tires sold. The bill also imposes a \$2 surcharge per tire affixed to new vehicles sold in the state which would be deposited into a fund for waste tire site cleanup and waste tire recycling. Finally, this bill prohibits the disposal of tires in municipal landfills.	The Department supported this concept and recommended revisions including: i) requiring retailers to accept up to 6 tires per customer; ii) extending the surcharge to new tire purchases when customer does not return old tires; and iii) requiring retailers to post a notice that they accept waste tires at no charge.

BILL / SPONSOR	STATUS	SUMMARY	COMMENTS
4. Waste Tires, A. 6543, Assemb. Straniero	Died in Assembly Env. Conservation Committee at end of session.	This bill establishes a refundable \$5 deposit on all tires sold in the state; requires all dealers to accept tires of the brand they sell; and requires collectors and processors of 50 or more waste tires at a time to obtain a permit from the DEC. Permit monies would be deposited into a waste tire management fund.	The Department does not endorse a deposit system. A surcharge is preferred because a deposit system will not address tires already on roadsides and in vacant lots, or tires purchased prior to the imposition of the deposit. Additionally, there is no system to recapture unredeemed deposits, and retailers would hold and earn interest on deposits for several years before the first tires are returned.
5. Recycled Newsprint, S. 4504, Sen. Spano*	Reported from Senate Env. Con Committee to Consumer Protection on 1/3/90. Died in Consumer Protection Committee at end of session.	This bill requires that after 1/1/91, every newspaper offered for sale in this state must contain newsprint with at least 10% recycled content.	The Department supports this concept, but would prefer that a larger percentage of recycled content be required.
6. Recycled Newsprint, A. 9043-A, Assemb. Parola*	Bill died in Assembly Env. Con Committee at end of session.	This bill defines recycled newsprint as containing at least 40% post-consumer recycled paper and requires newspapers to use recycled newsprint whose in-state average daily circulation is 40,000 or more. By 12/31/93, such newspaper publishers must use recycled newsprint equal to 20% of the amount of newsprint <u>used in 1992</u> ; by 12/31/94, use of recycled newsprint must equal 30% of the amount of newsprint <u>used in 1993</u> . By 12/31/98 and every year thereafter, the amount of recycled newsprint used would be increased to 90% of the amount of newsprint used in the previous year.	The Department supports this concept, but the bill as drafted may not be effective in meeting aggressive recycling goals. The definition of "newsprint with recycled content" is newsprint with at least 40% post-consumer recycled paper. The bill should instead focus on total percentages of recycled content in all newsprint used by publisher rather than the percentage of 40% recycled content newsprint used.

BILL / SPONSOR	STATUS	SUMMARY	COMMENTS
7. Recycled Newsprint, A. 10712-A, Assemb. Pataki*	Died in Assembly En Con Committee at end of session.	This bill requires New York State newspaper publishers with a daily circulation of 40,000 or more to use newsprint containing at least 11% recycled fiber by 1/1/95; 31% recycled fiber by 1/1/98; and 40% recycled fiber by 1/1/2000.	The Department fully endorses this concept and considers this the best of the three "recycled-content newsprint" bills. To ensure markets are created, there should be no exemptions based on unreasonable cost of obtaining recycled fiber or unavailability of recycled fiber. Moreover all users of newsprint should be included, not just newspapers with large circulations. The goals of this bill closely mirror the recommendations of the N.Y. State Task Force report.

***NOTE:** On December 12, 1989, the New York Newspaper Publishers Association (NYNPA) entered into an agreement with the New York State Departments of Economic Development (DED) and Environmental Conservation (DEC) to increase the recycling of old newspapers generated in New York State. An ambitious goal of 65% by the year 2000 has been set under this agreement. NYNPA has also voluntarily undertaken to encourage its members to reserve a portion of their annual newsprint purchases for recycled newsprint which is available at a competitive price and quality. The goals are deliberately set in terms of the percentage of publishers' annual fiber consumption, represented by post-industrial fiber, to give both publishers and manufacturers flexibility in integrating newsprint made entirely or partially from recycled fibers with their existing operations. This voluntary agreement was intended to be formalized into legislation during the 1990 legislative session, but did not occur.

8.Environmental Quality Bond Act (EQBA), A. 11576; S. 8193	Signed by the Governor on May 14, 1990 (Chapter 146). Goes before the voters in November.	Under the \$1.975 billion EQBA, \$525 million has been earmarked for local solid waste management programs. This includes \$175 million for non-hazardous municipal landfill closure, \$50 million for regulated medical waste management projects, and \$300 million for recycling programs. The \$300 million includes \$20 million for regional innovative demonstration projects, \$140 million for municipal recycling projects, and \$160 million for secondary materials regional marketing projects.	The Department supported the EQBA with several recommendations to clarify provisions and to allow more flexibility in developing programs to be funded. Specifically, the Department suggested that waste prevention/reduction demonstration projects be eligible for funding independently of recycling.
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BILL / SPONSOR	STATUS	SUMMARY	COMMENTS
9. Solid Waste Reduction and Packaging Tax, A. 5582, Assemb. Hinchey	Reported out of Assembly Environmental Conservation Committee; died in Ways and Means at end of Session.	This bill addresses waste reduction and recycling. The bill provides a packaging tax of \$0.03 to be levied against the manufacturer or distributor of each non-recyclable or non-reusable package in New York State. This bill also provides a tax credit for the purchase of recycling equipment and a waste reduction tax credit for the purchase of secondary materials utilized as a raw material in the manufacturing process.	The Department has consistently supported a statewide packaging tax as a means of encouraging waste reduction; however, the definition of "recyclable" contained in this bill requires refinement, and the tax structure proposed should be more clearly delineated.
10. Multi-material Packaging Ban, A. 11524-A, Assemb. Hinchey	Amended to "B" version and recommitted to Assembly Rules Committee 5/30/90. No Senate companion, but similar bill (S.7981) was introduced to Senate En Con Committee on 4/17/90. Both bills died in their respective committees.	This bill bans the use of certain multi-material packages, plastic cans, bimetal cans, and aseptic beverage containers; authorizes DEC Commissioner to promulgate regulations to obtain information from industry to identify non-recyclable, non-recycled, and non-reusable packaging and components of packaging that interfere with recycling; and authorizes the Commissioner to restrict the use of containers or materials, after a public hearing, when readily available and preferable substitutes exist.	The Department supports this concept, and also favors authorizing DEC to promulgate regulations beyond the specific bans mentioned in this bill.
11. Hazardous Packaging Ban, A. 9485-A, Assemb. Hinchey; S. 7104-A, Sen. Johnson	Signed by the Governor on 6/25/90 as Chapter 286.	The purpose of this bill is to reduce the amount of toxics in packaging. Specific materials targeted include lead, cadmium, mercury, and hexavalent chromium. The bill also establishes maximum allowable concentration levels.	This bill is modeled loosely on CONEG's proposed toxics reduction legislation introduced in all nine northeastern states this year. The Department urged the legislature to amend the bill to make it entirely consistent with the CONEG proposal to ensure consistency among the Northeast states.

BILL / SPONSOR	STATUS	SUMMARY	COMMENTS
12. Planning Date Extension, A.11856-B, Assemb. Hinchey; S.7787-B, Senators Spano and Johnson	Signed by the Governor on 7/22/90 as Chapter 742.	This bill extends the deadline for submission of a solid waste management plan to 4/1/91 and includes a provision that as a permit condition, a proposed solid waste management facility shall not accept solid waste from a municipality after 4/1/92 if the municipality does not have in effect an approved local solid waste management plan.	The Department supported this legislation.
13. Removal of Siting Restrictions, A. 8784-B, Assemb. Vitalliano; S. 6589-A, Sen. Marchi	Signed by the Governor on 7/22/90 as Chapter 715.	This bill removes the siting restrictions contained in Section 120-W of the General Municipal Law for recycling facilities.	The Department supported this legislation.
14. PVC Materials Packaging Ban, A. 5578-A, Assemb. Hinchey.	Died in Assembly on third reading. No Senate companion bill.	This bill would prohibit the distribution and sale of any food product contained in a package made of PVC.	The Department supports this bill.
15. Creation of Packaging Review Board, A. 5345, Assemb. Stranieri; S. 4770, Sen. Marchi	Bill died in committee.	This bill creates a packaging review board to review the environmental impact of certain packaging.	The Department favors the concept of this bill.

BILL / SPONSOR	STATUS	SUMMARY	COMMENTS
16. Waste Reduction and Recycling Emblem Regulations; NYS DEC.	First draft of regulations released November 1989; withdrawn December 1989; redrafted and re-released March 1990; final regulations expected by December 1990.	1988 Solid Waste Management Act mandates DEC to design and propose standards for voluntary use by manufacturers of an emblem on containers and products to indicate recyclability, recycled content, and reusability	The Department had significant problems with the first draft. Proposed design (an outline of N.Y. State) would have limited the use of the emblem by other states and complicated the labeling process for manufacturers. The Department recommended that DEC regulations be model regulations that could be adopted by other states to develop uniform labeling standards. It also recommended that the secondary material content standards be increased to conform with EPA's established standards. [These comments were reflected in the redrafted regulations.] Also recommended that a separate emblem be established for "reusable" products to promote waste prevention. In addition the use of the term "reusable" should be broadened to not only include products that must be returned for refills.

LOCAL:

BILL / SPONSOR	STATUS	SUMMARY	COMMENTS
1. Intro. 323, Council-member Leffler	City Council Environmental Protection Committee	Prohibits the use of polystyrene food packaging.	The Department and the Law Department are drafting a proposal which imposes a ban on certain polystyrene foam products unless a phased-in recycling rate is achieved.
2. Intro. 228, Council-member Leffler	City Council Environmental Protection Committee	Prohibits packaging that is not recyclable or biodegradable.	The Department has expressed concern regarding the broad definitions of "recyclable" and "biodegradable," which enable non-expert suppliers of packaging to determine whether an item can be recycled or biodegraded. Enforcement provisions require further refinement.
3. Intro. 284, Council-member Spligner	City Council Environmental Protection Committee	Prohibits restaurants from providing disposable service articles for on-premises eating and drinking use.	The Department supports the policy underlying this bill. However we are concerned about the economic impact the bill may have on retail food establishments.
4. Intro. 308, Council-member DeMarco	City Council Environmental Protection Committee	Prohibits distribution of certain nondegradable packaging materials and utensils by retail food service establishments in proximity to waterfront areas.	The Department favors efforts to protect City waterfronts. However, the application of this bill only to establishments within 300 feet of New York waterways ignores other causes of water pollution. We are also concerned with the economic impact the bill may have on retail food establishments.

CHAPTER XII

COST OF RECYCLING

When the Department first presented plans for a citywide recycling program in the 1988 White Paper, *New York City Recycling Strategy*, little was known about the cost of implementing mandatory recycling in a city the size of New York. Based on what we knew and what we assumed, the Department projected that, once the recycling program was implemented, it could cost as little as \$65 per ton to recycle. Experience has demonstrated, however, that the program is significantly more expensive than we had anticipated. When the program is operating citywide, and assuming the current multiple-truck collection system is continued, we estimate that the cost of recycling will range from \$198 per ton to \$273 per ton. (Current costs are much higher.) The uncertainty in our estimation is a function of differing estimates of the diversion rate, that is, the amount of material actually removed from the waste stream as a percentage of the pool of targeted materials. The higher cost per ton figure assumes a 30 percent diversion rate; the lower figure assumes a 60 percent diversion rate.

The 1988 White Paper and the Department's original recycling budget assumed that diversion rates for the six materials targeted for the curbside/containerized programs would climb over a three-year period from 30 to 50 to 75 percent. Based on experience in operating these programs, the Department now believes that steady-state budget estimates for the near term should be based on a 30 percent diversion rate. The basis of this assumption -- which is most definitely not the limit of our aspirations -- is described in Chapter III, Tonnage Goals. Because this lower diversion rate results in less tonnage collected, the efficiency of collection routes and relays is decreased even further, and in turn, results in a higher cost per ton for collection.

All components of the recycling program -- collection, support, processing, facility construction and equipment purchase -- are higher than originally envisioned. Projections of the number of recycling collection routes required to cover the city have increased. Support costs for vehicle maintenance are larger because of the larger fleet required for collection. The increase in processing fees is the result of limited competition for the Department's contracts, and, in some cases, dramatic drops in market prices for processed recyclables. Capital costs are higher because the price of constructing efficient processing facilities is now known to be significantly higher.

These changes have caused the cost of recycling to increase significantly relative to original estimates. By FY 96, the program, as originally conceived, could cost \$195 million, requiring substantial new investment of funds. However, since this investment will put in place a collection and processing system that could absorb additional tonnage at relatively low cost, efforts to improve participation could reduce greatly the cost per ton of recycling. The challenge for the Department, therefore, is to find effective means for increasing participation and diverting as much material as possible.

Cost Estimates

Since the curbside program has yet to reach more than half the city, any projections regarding costs must be based on certain assumptions about how efficient the program will become. Nevertheless, we believe that the knowledge we have gained since the program's inception enables us to reevaluate the program's original assumptions and

develop more accurate projections of the collection, processing, support and capital costs of recycling. Those projections though are also subject to change as each new experience provides better information about long-term prospects. Consequently, the Department expects to re-examine current assumptions and programmatic issues through the development of the Solid Waste Management Plan and before submitting the final recycling report.

Collection

Collection costs include salaries for collection crews, supervisors and "relays" who transport loads of recyclables to processing facilities. Also incorporated in the collection component is the cost of uniformed support personnel, such as those who deliver containers for the curbside and containerized programs. In FY 90, the collection component of the recycling program totalled \$27 million or \$153 per-ton. By FY 96, the collection costs could reach \$76 million, or \$108 per ton in current-dollars.

Projections for collection costs assume that the Department will continue current operations in which paper materials are collected in one truck and metal, glass and plastic containers are collected in a separate truck. If the new large-scale processing facilities are able to accept, sort and produce marketable end-products from all six materials collected together and delivered in the same truck (single stream collection), the Department's collection costs would be greatly reduced.

The number of curbside and containerized collection crews required to service the city is based upon the constraints put on the length of collection routes by the capacity of collection trucks and by the amount of time required to complete a route. Given these constraints, as well as those imposed by collecting paper products separately from metal, glass and plastic, the Department now estimates that trucks on recycling collection routes will be able to collect less than half as much tonnage as trucks on regular collection routes. As a result, the Department has started to experiment with ways to reduce the number of routes, such as switching to every-other-week recycling collection in some districts. In any event, basic collection costs will be much higher than planned.

The public and private facilities required to accommodate the tonnage of the expanding recycling programs must be located strategically throughout the city in order to minimize transportation time for relaying recyclables by collection trucks. Given the difficulties in developing waste disposal facilities, the Department does not believe that the number of facilities needed will be on line in an optimum configuration as quickly as anticipated. The number of relay trucks required to transport materials to processing facilities is therefore greater than originally planned.

Processing

Expenditures attributed to processing include the cost of processing carried out by Department personnel, such as in the self-help bulk program, the cost of contracting for private processing services, the operating costs of city-owned IPCs, and the cost of "selling" materials, such as paper, to private vendors. Any revenues gained from the sale of recyclables, such as metal recovered in the bulk programs, have been used in this analysis to offset processing costs.

The fees charged for processing have been significantly higher than originally expected. For example, the Department had expected that the market price for newspapers would be high enough to cover the processing costs of paper dealers and

still generate revenue for the city. The dramatic drop in this market now requires the Department to both pay for the processing of newspaper and forego revenue. This analysis of future costs assumes that the fees currently paid to private vendors both for processing services (such as for bulk materials) and for the sale of materials (such as for paper) will remain stable. As discussed in previous chapters, a number of factors influence these costs (in both directions) and changes may occur. The FY 90 cost for processing totalled \$19 million, or \$52 a ton. Due to the uncertainties of market development, the Department believes that basing costs on the FY 91 level is the most reasonable projection to be made at this time. Given this assumption, FY 96 processing costs would total \$37 million and add \$53 a ton to the cost of recycling. It should be understood, however, that processing cost projections are the most speculative numbers over the long run.

Support

Support costs include salaries for civilian personnel who develop recycling programs in the Recycling Programs and Planning Division and in the Operations Management Division, mechanics who repair recycling vehicles, and officers who enforce recycling regulations. Support also includes estimates of costs for public education materials and motor equipment parts.

These costs are smaller than the cost of collection and processing but still are estimated to be substantial, totalling \$13 million in FY 90 (or \$73 per ton). However, much of the investment in support is at the beginning of the program; administrative, mechanic and enforcement personnel will grow only slightly as the program expands. By FY 96, support costs are estimated to be \$15 million, adding just \$22 to the cost per ton.

Capital

Capital funds are required for the construction of recycling facilities, such as Intermediate Processing Centers and composting sites, and for the purchase of equipment. The Department found that the cost of constructing IPCs may be significantly higher than planned, with costs rising from \$5 to perhaps \$15 million per facility (exclusive of land costs). In addition, experience has shown that more and different types of equipment for both collection and processing are required, resulting in higher than anticipated capital costs. It is possible that the increase in vehicle fleet as a consequence of recycling will ultimately require some garage facility expansion. Because our planning in this area is undeveloped, we have not included this potential cost item. Supporting the level of capital commitments currently anticipated will require an average outlay of debt service of about \$16 million annually from FY 90 to FY 96. Over the lifetime of the capital investment, debt service will add \$30 dollars to the cost per ton of the program.

Savings

While this analysis specifically outlines only the costs of running the New York City recycling program, it must be noted that the program will allow the Department to reduce costs by significant amounts in other areas. For example, savings in the Bureau of Waste Disposal will be achieved as more tonnage is diverted through recycling and the amount of waste moving through the Department's marine transfer stations and the Fresh Kills landfill is reduced. In addition, operational improvements such as extending existing Department collection routes or eliminating one regular collection day per week to reflect the reduced tonnage caused by the diversion of recyclables

could also provide savings. Finally, as tonnage is diverted from the Fresh Kills landfill, the city will be able to extend the life of the landfill and reduce future dependence on export and other available disposal options. An extensive cost analysis of recycling, including its impact on the cost of other Department services, and its comparison to other disposal methods, including resource recovery, will be developed in the Solid Waste Management Plan.

EXHIBIT XII.1
ESTIMATED COST OF RECYCLING (in \$ million)

	Based on 30% Diversion						60% Diversion	
	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY96
Collection	\$27.4	\$54.9	\$69.5	\$84.0	\$82.1	\$75.6	\$75.6	\$90.5
Processing								
Cost	10.0	23.7	30.4	36.3	38.5	40.3	41.3	\$63.2
Revenue	(0.8)	(1.5)	(1.8)	(2.3)	(3.2)	(3.9)	(4.3)	(\$7.6)
Support								
Cost	13.0	19.2	22.7	24.0	23.4	22.1	21.2	22.3
Revenue	0.0	(3.9)	(5.3)	(5.8)	(5.8)	(5.8)	(5.8)	(2.9)
DOS TOTAL	\$49.6	\$92.4	\$115.5	\$136.3	\$135.0	\$128.3	\$128.0	\$165.5
Fringe**	13.9	27.1	37.1	44.7	44.2	41.6	41.5	\$46.8
Debt Service								
Equipment	2.9	6.8	11.2	14.4	16.1	17.0	18.0	20.3
Facilities	0.5	0.9	2.1	3.9	6.0	7.3	7.6	7.6
GRAND	\$66.9	\$127.2	\$165.9	\$199.3	\$201.3	\$194.2	\$195.1	\$240.2
TOTAL								
COST PER TON OF RECYCLING								

	Based on 30% Diversion						60% Diversion	
	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY96
Annual Ton-	178,803	370,980	535,659	684,581	693,640	694,640	694,640	1,205,786
nage								
Collection	\$153	\$148	\$130	\$122	\$118	\$108	\$108	\$75
Processing								
Cost	\$56	\$64	\$57	\$53	\$56	\$58	\$59	\$52
Revenue	(\$4)	(\$4)	(\$3)	(\$3)	(\$5)	(\$6)	(\$6)	(\$5)
Support								
Cost	\$73	\$52	\$42	\$35	\$34	\$32	\$30	\$19
Revenue	\$0	(\$10)	(\$9)	(\$8)	(\$8)	(\$8)	(\$8)	(\$2)
DOS TOTAL	\$278	\$250	\$217	\$199	\$195	\$184	\$183	\$139
Fringe**	\$78	\$73	\$69	\$65	\$64	\$60	\$60	\$39
Debt Ser-								
vice***								
Equipment	23	23	23	23	23	23	23	16
Facilities	7	7	7	7	7	7	7	4
GRAND	\$386	\$353	\$316	\$294	\$289	\$274	\$273	\$198
TOTAL								

* The estimated cost of recycling does not reflect the amount of funding provided for the recycling program nor the amount of funding required for the program. Rather it estimates the cost of providing recycling services given current operating procedures and unit costs. It does not include inflation costs or operational savings caused in other areas of the Department.

** Fringe captures the estimated cost of benefits for Civilian and Uniformed recycling personnel.

*** Debt service cost per ton is calculated as the total investment divided by the total tonnage supported over the lifetime of the investment.

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CHAPTER XIII

ISSUES IMPACTING PROGRAM SUCCESS

In the preceding chapters we have detailed the individual programs that comprise New York City's recycling plan. We have attempted to balance cautious optimism about the receptivity of the City's diverse populations to the demands of recycling with a candid appraisal of the issues affecting, and frequently impeding, program success.

Although recycling is the *Law*, much effort must be exerted and considerable time must elapse before recycling becomes a fully accepted way of life. For a public hungry for recycling success stories, there must be a realistic understanding of the problems to be solved, the issues to be confronted, and the cooperation still needed in order for that success to come about.

This chapter summarizes the current status of the issues effecting recycling program success, and suggests possible strategies for overcoming the problems and building on the achievements.

Tonnage Goals

Local Law 19 mandates that the Department meet annual tonnage goals for FY 90, 91, 92, 93, and 94. While the Department met the FY 90 goal, our analysis suggests that, with the exception of FY 91 and possibly FY 92, we cannot meet the remainder of the mandated goals without significant changes to programs (adding new materials and substantially increasing participation rates).

To increase the number of tons diverted will require a re-evaluation of the Department's collection strategies. For example, we are considering the wisdom of adding new materials to the list of recyclables currently collected and whether to use a different collection system -- a possibility is the two bin system. Such a system would separate the entire residential waste stream into two categories -- wet and dry. The operational, technical, and cost implications of adopting different collection strategies are being examined in the context of the Solid Waste Management Plan.

Tonnage goals also will be affected by our ability to solve certain collection problems, such as: the difficulties of enforcing recycling regulations in multi-unit buildings the reluctance of some building superintendents to comply with recycling rules and regulations; and the conflict between Fire Codes and the need to store recyclables for collection.

Education Issues

Regardless of the collection strategy employed, there is a substantial need for additional targeted outreach and education if we are to motivate those groups either not now participating in the program, or participating at less than optimal levels.

The message of recycling is broadcast to a diverse and fragmented population; one which has varying degrees of awareness, interest, and comprehension as to its roles and responsibilities in recycling. Further, this is an audience bombarded by messages promoting consumption and its byproduct, waste.

To compete with these contending messages, professional market research is required; research which will allow us to evaluate our current educational strategies and pinpoint where change is needed. In addition, advertising expertise is needed to translate that knowledge into educational campaigns designed to reach the City's various publics. Because success to date largely has been with groups already conscious of the need to recycle, it is apparent that the original tonnage goals projected in Local Law 19 were based on unrealistic expectations of quick behavioral change and program participation.

In FY 91 the Department will issue a Request for Proposal (RFP) for an advertising firm and will start research in the area of consumer attitudes. The Department will also assess the early results of enforcement programs and the degree to which enforcement can be used as a method of public education.

Perhaps more importantly, it will engage in greater efforts to mobilize community leadership in building support and participation for recycling. A network of committed community leaders could extend the Department's limited outreach staff and is likely to be better able than the Department to provide communities with the motivation to recycle. To that end, the Department is assigning a Volunteer Coordinator to foster the growth of this effort.

Operations Management and Labor Issues

Operationally, recycling has forced the Department to undergo dramatic changes because the final destination of materials is no longer a fixed Department-controlled site. The collection of recyclables is becoming a customized service based on generation, composition, participation, seasonality, materials, and day of collection. Recyclable materials are delivered to a changing array of both City-owned and privately-owned processing centers. Consequently, staffing and equipment requirements have changed.

The scope of planning, evaluation, and control of the everyday operation of the Department has increased dramatically. Audits must be conducted of private recycling vendors. Surveys are needed to evaluate such operational improvements as route extension, one worker crews, and commingled collection, and the results of these surveys require difficult analysis for which we have sometimes lacked resources.

We are cognizant of the difficulty in allocating resources to a new program when existing programs are being cut. However, we do note here that for a new program to succeed, the formation of a management infrastructure - - whether from reallocating current funding or securing new funding - - is required to support it.

But the successful implementation of the improvements we wish to make requires more than detailed and extensive analysis. Equally important is cooperation from Local 831, the Sanitation Workers Union, as well as from unions at other City agencies. Without union cooperation, the expansion of New York's recycling program will be seriously impeded, and the following operational improvements delayed:

- *Route extension*, the extension of existing Department solid waste collection routes to reflect the tonnage resulting from the diversion of recyclables from regular collection routes;
- *Substitution*, a move from twice-a-week collection of solid waste to once-a-week collection of solid waste along with once-a-week collection of recyclables; and

- Review and consideration of a move, where appropriate, to one worker collection crews, to commingled collection of recyclable materials, and to redistribution of waste and recycling truckshifts based on changing participation levels and reductions in the volume of waste.

An example of where cooperation is needed from unions at other city agencies is the revision of job descriptions to accommodate the handling of recyclables. At many Housing Authority sites the union contends that recyclables are different from trash and need not be handled by their members.

In summary, for recycling to become truly integrated into our daily habits, the active support of the unions involved will be required.

Inter-agency Cooperation

Implementing so basic a change in the way our waste stream is handled also calls for cooperation and joint initiatives from a variety of agencies. In Chapter VII, "Institutional Recycling", we discussed the role agencies must play in the context of the City Agency/Institution Regulations. Appendix V summarizes the issues involved. These issues range from ensuring that all future City construction includes space for the collection and storage of recyclables to using the City's purchasing powers to develop markets for recyclable materials.

While most agencies have made a good faith effort to cooperate, problems remain. The implementation of the City Agency/Institution Regulations will require each agency to have a recycling coordinator and to develop its own specific plan. Troublesome union issues relating to the handling of recyclables will have to be resolved before this program can be successful. In addition, employees will have to be trained and monitored, and space problems resolved. This will create new burdens for many city agencies, requiring at least the reallocation of managerial resources and perhaps as some funding.

Processing Capacity

Processing capacity is a critical component of recycling. If capacity is not available when needed, then the implementation of the program will be seriously impaired.

To meet the requirements of Local Law 19, ten public and/or private processing facilities, or equivalent capacity, must be built. These facilities require parcels of at least five acres at sites which minimize truck travel time from catchment areas.

The identification, acquisition and development of these sites is difficult at best. Apart from the clear dearth of available sites, the process is complicated by neighborhood concerns about the community impact of the facilities.

Regulation

Processing and other recycling facilities require active governmental regulation. These facilities raise a host of environmental issues about which the government has a proper concern. However, these regulations can act to inhibit new firms from entering the field and to discourage existing firms from expanding their services.

There is a general frustration on the part of the affected industry with the process of acquiring permits from various city and state agencies. The applications require

volumes of information and multiple layers of review, and they often subject the applicant to duplicate, overlapping, and sometimes contradictory requirements. The permit process is also complicated by a public climate that demands a tighter regulation of solid waste programs while at the same time demanding that more attention and resources be devoted to recycling.

The result is that competition is reduced and the cost of processing services is driven up. If continued, the situation may easily result in insufficient processing capacity, both for the materials projected to be collected by the Department and for those collected by private carters.

For a fuller description of this issue, see Chapter X, "Processing." Suffice it to say that the Department plans to continue to explore inter-agency cooperation in the review and granting of permits for recycling facilities. In that process, the Department will balance its role as a customer with the critical requirements for proper review and enforcement.

Markets and Contracts

Recycling cannot succeed without the development of adequate markets for our recycled products. Unfortunately, the development of those markets entails long-term strategies at the federal, state, and local levels, in terms of tax measures, legislative mandates, and economic development policies. The City has only limited ability to effect actions in many of these areas. Nevertheless, there is at least one area in which the Department is able to facilitate market development -- the structuring of contracts to market recyclables.

In FY 90, complex city contracting procedures inhibited the Department's ability to adjust quickly to the rapid turnaround time required and the many variables involved in the processing and marketing of recycled materials. Compounding this problem, we underestimated the lead time necessary to let contracts and the accounting systems needed to monitor them, as well as the staffing required to deal with the enormous volume of paperwork generated by deliveries of material to private recyclers. These difficulties resulted in fewer vendors and higher prices.

We have made some progress in solving these start-up problems. One step we have taken is to acquire the necessary staff expertise and support to handle the estimated 100,000 delivery receipts expected this year. In addition, we will again seek funding for a computerized accounting system and the upgrading of the recycling program's management information systems.

Critical to contractual relationships with private vendors are the length and the nature of contracts (fee for service or negotiated/co-venture), risk-sharing to cushion against market fluctuations, and the requirements of contract administration.

Long-term contracts are the best solution to ensure adequate capacity and to promote opportunities for economic development. However, when a new material was added to the recycling program, the Department initially preferred short-term contracts because they afforded the flexibility necessary both to learn about the various markets and to assess the benefits and disadvantages of working with private recyclers; they also buffered the Department from fluctuating markets.

For those reasons, contracts were most often offered for six months or less in FY 90. As a result, firms receiving contracts were vendors already in the business rather than those wishing to enter the industry. Having now tested the response of the recycling industry, we have been able to refine our bid specifications. Contracts for processing

services in FY 91 will run for a full year. In addition, we will provide bid options for some materials to permit contracts for longer than one year.

Local Law 19

In order for commercial recycling to work more effectively, it probably will be necessary to amend the penalty schedule for commercial waste recycling rules in Local Law 19.

The Department will have co-enforcement authority with the Department of Consumer Affairs (DCA) over violations of the commercial waste recycling rules committed by private carters. At present, the Department of Consumer Affairs may issue summonses to private carters carrying penalties of up to \$1,000 for violations of their rules relating to commercial refuse collection and removal, including DCA's commercial recycling rules once they are in place. Under Local Law 19, summonses issued by the Department for the same commercial recycling violations will carry penalties starting at \$25 for the first violation and increasing to \$10,000. The fines for commercial recycling violations should be redefined so that summonses carry an appropriate and significant penalty, regardless of whether the summons is issued by Consumer Affairs or the Department.

Another important issue effecting the success of commercial recycling is whether the post-collection separation option contained in Local Law 19 for commercial generators is acceptable under state law. Clarification of this issue may require legislative action, either through amendments to Local Law 19 or amendments to State solid waste management laws.

Funding

At least for the foreseeable future, funding for new and continuing recycling programs is likely to be restricted by the significant financial problems experienced at all levels of government. As a result, the Department must consistently seek creative and imaginative ways to meet our mandated goals and to leverage the maximum value from the resources which are made available to us.

Recycling will not, however, become a reality in New York City without cost. Our experience also tells us that those costs are much higher than anticipated when the program was first formulated. However, the costs of recycling must be evaluated within the broader context of other waste disposal strategies, and measured not only against their costs but against their environmental impacts as well. The City's Solid Waste Management Plan, which is slated for completion in mid-1991, will provide just such an evaluation. With that information in hand, the Department's final recycling report will provide more definitive information on the projected costs of recycling under a variety of integrated waste management scenarios.

