Integrated Municipal Solid Waste Planning and Decision-Making in New York City: The Citizens' Alternative Plan

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The 1988 Solid Waste Management Act of New York State requires that all localities prepare a 10-year integrated solid waste management plan in order for solid waste facilities of any kind to be permitted in the state. In response to this, the New York City Department of Sanitation has been overseeing the preparation of a 20-year plan since late 1990. The plan was originally conceived to include all aspects of the integrated municipal solid waste (MSW) hierarchy, in priority order: prevention, recycling/composting, waste-to-energy/ash management, and landfilling. The Department of Sanitation held biweekly meetings with members of the Citywide Recycling Advisory Board (CRAB), a body of citizens duly appointed by the five Borough Presidents, Mayor, and City Council to ensure public participation in the solid waste planning and decision-making process. However, the cooperative tenor of the relationship changed when the City announced its intention to incorporate incineration of 68 percent of its municipal and institutional solid waste and recycle only 25 percent with 7 percent source reduction.

This plan would have violated the New York State Solid Waste Management Act's intent, which prioritizes source reduction, then recycling and composting before incineration. Also, the Act's goal for recycling and reduction is 50 percent by 1997 for all jurisdictions. As a result, members of CRAB began work on an alternative 20-year plan which would satisfy the State's requirements. The alternative plan details an implementation schedule for a comprehensive program of prevention, recycling and composting initiatives. It also provides justification for it vis-a-vis the projected lifespan of the City's only landfill at Fresh Kills and its proposed incineration program. This paper describes the features of the alternative plan, the impetus for its creation, the process followed in creating, revising and garnering public support for it, and the results achieved by CRAB to promote long-term, integrated MSW planning for New York City.

This paper describes the solid waste planning process in New York City, as perceived from the perspective of the New York City Citywide Recycling Advisory Board (CRAB), the official body appointed by local government statute to contribute the public's point-of-view. The origin of CRAB and other solid waste advisory boards, their operations, successes and frustrations are discussed as are the features of the City's solid waste management plan, CRAB's alternative plan, the impetus for its creation, the process followed in creating, revising and garnering public support for it, and the results achieved by CRAB to promote long-term, integrated municipal solid waste (MSW) planning for New York City. It is the goal of this paper to show how citizens' advisory boards can be effective in working with government to provide meaningful improvements to the design and effective implementation of integrated municipal solid waste management in all localities, using New York City as a case study.

NIMBY and the Public's Desires for Waste Management

The NIMBY syndrome is not, by any means, a new phenomenon. Social NIMBY has been around for some time (no one really *likes* to have a prison next door). In the solid waste field, NIMBY has been developing steadily, at roughly the same rate as the build-up of the solid waste crisis. At the root of the problem is the citizen's distrust of government officials and vice versa. With increasing frequency, as the capacity for solid waste in existing landfills has dwindled and the necessity for siting alternatives has grown, the intensity of the NIMBY attitude has also escalated. A growing number of grassroots organizations, upset by the often righteous attitude of the proponents, have generated more information which counters that provided by proponents of specific projects. Too often this has led to an adversarial situation where the under-funded environmentalists and community activists are pitted against extremely well-funded vendors, solid waste departments, and their consultants in a series of pitched battles, where the prime purpose is to defeat the other side, rather than reach consensus. These confrontations sometimes lead to lawsuits. The frequent result is that a resource recovery plant, a single element of what should be an integrated, long-range plan consisting of a mix of waste management facilities and initiatives, becomes the narrow focus of discussion. The consequence of this is often that the individual facility is delayed, no integrated solution is agreed upon, and the solid waste crisis is intensified. The current situation cries out for greater cooperation and involvement of the public in decision-making.

It is often said that the public's interest in the solid waste issue goes no farther than their own curb. With the Mobro garbage barge and accounts of backhauling trash in empty food trucks in recent years, the public has become aware of the worsening solid waste crisis. In those communities facing closure of major disposal facilities, the siting of new ones inevitably draws the public's attention. Generally speaking,

the public's desires are not unreasonable. They want to be assured that government agencies responsible for waste management will research and prioritize methods of waste prevention and management, and will choose those methods that represent the state-of-the-art and are safe for humans and the environment, both now and in the long term. In addition, the public wants to see that these alternatives are structured into a well thought out, integrated plan and implemented efficiently, cost-effectively and in due time. The public also insists that the agencies involved obey both the spirit and the letter of environmental and waste management laws. Specifically, the public is largely in agreement with New York State's and EPA's hierarchy for waste management, but it also wants:

- Assurances that all environmental standards are being met at all times. Regulatory enforcement is seen as chronically and severely under-funded, allowing polluters to make a mockery of environmental laws. Even the usually cautious development by regulators of adequate standards requiring the most up-to-date technologies is seen as underfunded, inadequate and long overdue.
- The minimum amount of toxicity in stack emissions from MSW incineration, if that avenue of management is chosen at all.
- Regular household hazardous waste pickups and special handling, disposal and reuse of such waste.
- Prioritization and a much higher level of governmental commitment (i.e., funding, staffing) to research planning, and implementation of innovative waste prevention (including toxic and volume source reduction and reuse), recycling and composting measures.
- Sufficient, dependable commitment to learning from the successes of others and to develop expertise in adapting and devising efficacious implementation of initiatives which promote the upper two tiers of the hierarchy: waste prevention and recycling.
- Increased worker training, certification and safety procedures at incinerators and other waste management facilities and effective monitoring of same by regulatory authorities.

The potential is great for arriving at a result that can be supported by the public when care is given to early and frequent communication of the decision-making process with the public until the process is complete, and active solicitation and genuine consideration of the views of informed members of the public, balancing the interests of all concerned parties.

History of Public Participation in New York City

During recent years in New York City and other localities the citizens advisory committee (CAC) has come on the scene, formed and funded by various local governmental entities, usually to advise environmental, transportation, or sanitation departments. CACs are comprised of a mix of interested members of the public, representatives of environmental organizations having technical knowledge and experience as well as people representing different constituencies, including representatives of community boards and the City Council. CACs are usually appointed and authorized to become informed about and evaluate the merits of specific projects. They critique facility plans and environmental impact statements (EISs), and overall solid waste management plans and/or policies, and have their input seriously considered by government. CACs are also often funded by the local government to hire consultants to assist them in these tasks.

The first Sanitation Department CAC, for the Brooklyn Navy Yard waste-to-energy plant, was established jointly by the Brooklyn Borough President and the Sanitation Department (DOS) in the early 1980s and was given funding to hire a consultant. It was successful in making the initial proposals to redesign the facility in order to improve its aesthetic appeal, require controls to achieve optimum burning efficiency, and include scrubbers, a baghouse and continuous emissions monitors. All of these additions have unquestionably improved the acceptability of the plant.

In 1988 the other borough presidents established CACs to monitor and advise the DOS regarding four more proposed resource recovery plants for the other boroughs. All were funded with $100,000 for the purpose of hiring consultants. Immediately, the Manhattan CAC, with members from several major environmental organizations, broadened the stipulated outlook to all aspects of the solid waste hierarchy. Subcommittees on source reduction, recycling, incineration, ash management and landfilling were initially established.

With this integrated approach in mind, the Manhattan CAC then hired a consulting firm from Boston to investigate, for a portion of the consultant monies available, the specific contribution that could be made to waste management capacity by implementing alternative solid waste management and prevention techniques. This consultant agreed in its proposal to the CAC to produce a number of work products, including a set of recommendations regarding "types of waste reduction programs, recycling programs, composting programs, and their implications for the size of the Manhattan waste-to-energy facility."[1] Instead it produced a report which "is not a solid waste plan for the city; rather it is a preliminary survey of issues and options which we believe should be considered in the process of drafting a new plan."[2] Recognizing this discrepancy, the report was received with disappointment by many CAC members. Soon after the delivery of this report, the CAC's consultants then changed their name and were hired by DOS to assist its long-range planning effort.

Since then the Manhattan CAC has helped develop the mandatory recycling law, Local Law 19, passed in 1989, and the ensuing municipal recycling regulations. It also originated a proposal (which was funded for two years) for DOS to undertake pilot programs to study and experiment with methods of intensive recycling and waste prevention education. A citywide CAC established solely to oversee the intensive recycling and waste prevention research zones recommended research and budgetary priorities for over a year.

Establishment of Solid Waste Advisory Boards in New York City

Under New York City's Local Law 19, the mandatory recycling law, the creation of Citizens Solid Waste Advisory Boards (SWABs) in each of the five Borough Presidents' offices was mandated.[3] In addition to requiring 25 percent recycling by 1994, Local Law 19 in essence renamed the five borough-wide CACs as SWABs, expanded the membership to include a wider diversity of citizens, and made them responsible for advising the Borough Presidents and DOS on recycling matters in addition to incineration. In addition, a Citywide Recycling Advi-

Along with the success stories there have been many frustrations. Some groups within the governmental departments have been more receptive to new ideas than others. Although a SWAB committee was of the understanding that the DOS would seek out its input before announcing a major new initiative, this did not always occur. For example, a new DOS Waste Prevention Partnership with Business and a subway and bus advertising campaign were a complete surprise to the SWAB Waste Prevention Committee, which would have wanted to contribute ideas to improve these initiatives. Other frustrations have resulted when DOS has not responded to certain requests or suggestions. For example, repeated efforts have been made to motivate DOS to respond to the SWAB's written comments on the City's 1990 recycling report (a 50-page critique with recommendations).

Integrated Citywide Waste Planning: The DOS 20-Year Plan

Contained in the New York State Solid Waste Management Act of 1988 is a requirement that all planning entities in the state (usually municipalities) are required to prepare a 10-year integrated solid waste management plan, designed to meet the state's 1997 goal of 50 percent reduction, recycling and composting, and 50 percent waste-to-energy. A limited amount of state grants to assist localities in the development of such plans was to be administered by the New York State Department of Environmental Conservation (DEC). The local plans were originally to be submitted to DEC by January 1, 1990; this allowed communities one and a half years to comply with the requirement. As a result of protests by DOS and others, the time limit was subsequently extended to April 1, 1991, and since that time, any community without an approved plan has received no solid waste permits. The extension did permit DOS to circumvent the integrated planning requirements and complete its application for permits for a new waste-to-energy facility, the Brooklyn Navy Yard, and a new ashfill, prior to April 1991.

In the case of New York City, the specter of a freeze on additional new solid waste facilities was a frightening possibility, since much of the 27,000 tons per day generated by the City is now deposited at Fresh Kills, a single landfill located on Staten Island. The DOS had, for some time, recognized that the capacity of Fresh Kills would probably be exhausted soon after the year 2000, and that the need had arrived for developing new sites for incinerators and ashfills, materials recovery facilities, intermediate processing facilities, composting sites and transfer stations. Recognizing the consequences of delay, but unable to comply with the deadline, the DOS asked for and received an extension to receive $2 million in planning grant funding if DOS were to receive approval on its plan by October 31, 1992.

Work on what has become an integrated 20-year plan began in earnest in the latter half of 1990, and DOS raced through the next year and a half to meet the deadline. In all, DOS employed 12 consulting firms on various tasks, including preparation of such studies as intensive materials-based waste characterization, statistical profiles of the City, waste export, incinerator emissions, reports on various technologies including types of Materials Recovery Facilities (MRFs), composting facilities, and incinerators, waste prevention techniques, trucking and transportation, and waste generation rates. Coordinating the information garnered from these studies for DOS is the former consulting firm from Boston which had originally been the technical consultant for the Manhattan CAC. After switching allegiances in the middle of the consultant contract with the CAC/SWAB, this firm has contributed considerably to the City's plan by adapting its Waste Plan computer software to the City's needs.

Technical Working Group

To address the massive integrated waste planning effort being undertaken by HHC, DOS, and the NYC Department of Environmental Protection (for sewage sludge management), the latest development in New York City's CAC activities has been the new Citywide CACs. There have been several citywide CACs advising various departments of City government on issues of integrated waste management, sludge, combined sewer overflows and medical waste. CRAB, though mandated by the 1989 Local Law 19, was not formally established until 1990 due to delays in appointing members. CRAB originally consisted of members of the borough SWABs, citywide sludge CAC, medical waste CAC, but it has narrowed its focus to MSW. All the CACs oversaw the development of and reviewed and critiqued the interagency effort to characterize the City's medical, sludge, and solid waste streams and prepare a comprehensive, 20-year, integrated management plan according to the solid waste hierarchy, maximizing source reduction and recycling in all media, as required by the State DEC.

As part of the effort to produce its 20-year plan, DOS organized regular meetings with a subcommittee of CRAB consisting of members of the SWABs and other interested citizens, to inform them of developments in the plan and listen to comments and suggestions. These Technical Working Group (TWiG) meetings began in January 1991 and continued until August 1991. As with the case of the HHC public participation process, an effort was made to proceed in an organized fashion with earlier meetings encompassing the overall structure and assumptions to be used in developing the plan, with succeeding meetings focusing on refinement of assumptions and narrowing of the field of choices, based mainly on such criteria as cost and tonnage diverted. Although lists of emissions and effluents produced by each form and system of waste management were presented, and the original planning process structure included a role for total environmental impacts vis-a-vis the narrowing of alternatives, this vital step was not integrated into the process, at least during the time that the TWiG met with DOS.

Though the goals in this public participation process were similar to those implemented by HHC the year before, the DOS/TWiG meetings and the overall process differed significantly from the HHC counterpart, to the detriment of the DOS process. The latter effort was several times larger than that of HHC, in terms of waste stream to be managed and consultant effort, and DOS was initially attempting to complete the entire process of creating a first draft report within five months, probably due to the fact that the DOS effort began a year after the HHC process. Thus, the three-hour TWiG meetings occurred twice as often as the HHC meetings (every two weeks), and the amount of materials given to the TWiG members for review at each meeting was roughly three to four times that provided by HHC's consultants. In addition, the meetings were always held on weekday mornings, which limited the number of potential participants. The numerous handouts (typically on the order of ten) were usually given out on the same day that the comments on them were to be discussed. Though minutes of the meetings were often taken, their preparation and distribution were frequently de-

sory Board (CRAB) consisting of members appointed from the five SWABs was mandated. The purpose of these bodies is to provide oversight of the implementation of Local Law 19, and to provide oversight and input into various aspects of the solid waste management planning process for the City, including review of the DOS annual recycling plan.

The SWABs and CRAB interact with such public and private agencies such as the City Departments of Sanitation, City Planning, and Consumer Affairs, the State Department of Environmental Conservation (DEC), the Mayor and City Council among others. The purview of the SWABs and CRAB has grown to include review and response to the appropriate agencies regarding new and existing programs, research pilots, policies and budget matters. Representatives of these governmental bodies routinely address the SWABs and CRAB regarding the status of programs and budget matters, and have listened to comments by the members. On many occasions, the Boards and their committees have been proactive by preparing recommendations on certain issues (e.g., recycling and waste prevention-related procurement, the design of waste composition studies, needed research programs, etc.). Committees of the Manhattan SWAB have recommended new directions and initiatives for DOS's nascent waste prevention program, and new educational practices and priorities to improve the effectiveness of its recycling programs by convening forums to explore market-related issues. On other occasions, the Boards have held educational forums on various topics of concern (e.g., incineration and ash management, procurement and recycling market development). These have been quite successful in attracting large audiences.

Members of each SWAB are citizens who live or work in each respective borough (Manhattan, Brooklyn, Queens, Bronx and Staten Island), and who have been appointed by the Borough President and City Council. Members serve for one year, attending SWAB meetings every month or two plus subcommittee meetings, and provide their services free of charge. Local Law 19 requires that the SWABs consist of citizens with a variety of affiliations such as environmental and community groups, Community Planning Boards (there are 59 in the City), tenant and real estate management associations, private waste collection and recycling firms, retail organizations, and economic development corporations. Though balance is an important criterion in the establishment of a cooperative advisory or standard development committee, it is clear that the *process* by which a policy is developed is also of critical importance to the nature and eventual wide acceptance of the result.

In order to organize the work of the SWABs, the Manhattan SWAB, as one example, has established several committees, some of which include members of the other SWABs. At present, standing committees address the following issues: waste prevention (an InterSWAB committee), residential recycling, commercial recycling, institutional recycling, markets and economic development (an InterSWAB committee), long range waste planning and oversight, facility siting, building design (to accommodate recycling), communications and legislation/lobbying. Issues addressed by these committees and the Board as a whole include maximizing the efficiency of collection, composting systems, education and enforcement policies, interagency cooperation and solid waste disposal options. A steering committee consisting of committee chairs, vice chairs and other members who wish to attend the monthly meetings sets the direction for the SWAB.

In late 1989 members of the borough SWABs and others were invited to form a new CAC to review and provide input into the New York City Health and Hospitals Corporation's (HHC) portion of the City's long-range integrated solid waste plan. During monthly meetings which took place in the evenings in 1990 and early 1991, HHC and their consultants (Waste Tech and Konheim & Ketcham) presented research in a clear, logical sequence, providing opportunity for response, and recording the reactions and alternative proposals. Minutes of each meeting included the contributor of each idea, and which ideas were and were not adopted along with respective explanations. Participants were able to discuss pertinent ideas directly with the consultants between meetings. The research process was repeatedly refined as a result of this public participation process. Each new written draft was proposed, usually well in advance of the meeting at which it was to be discussed, generally allowing participants sufficient time to review the information and prepare their responses.

Although not all the ideas put forward by the public were adopted, the final report's emphasis on volume waste prevention measures was probably increased due to the clear mandate from the participants. In addition, a new section on "fuel cleaning", or toxic waste prevention measures, was added as a direct result of public input into this process. Most of the participants did not come away with the perception that the results were an unreasonable product of the process or that they had been railroaded.

Having continuous public input into decision-making in solid waste is important not only because the public can ultimately affect a planned facility siting adversely, but also because the public is in a unique position to affect the ultimate success of source reduction and source separation efforts by influencing participation. CACs are useful not only in providing the public's viewpoint on these issues, but they can also help design local solid waste programs to be more effective, and even create siting criteria acceptable to a larger cross-section of the public. Government agencies would be prudent to pay heed to a CAC's view because of these points.

Success Stories/Frustrations

Among the success stories of the SWABs and their predecessor committees are the development and implementation by the Department of Sanitation (DOS) of several pilot research programs. Over the last few years intensive recycling collections (including mixed paper, mixed plastic, food waste, and household hazardous waste, as well as newspapers, magazines, corrugated, metals, glass, and plastic containers) have been studied in the Park Slope neighborhood of Brooklyn. Many of the recommendations made by the Commercial Recycling committee were included in the City's final commercial recycling regulations, implemented starting November 1991. DOS educational brochures on waste prevention and residential and commercial recycling have included recommendations from the SWABs. To increase recycling participation in a fairer, more effective manner, a recommendation was made in a recent budget year by the SWABs/CRAB and adopted by the City, which resulted in a decrease in funding for recycling enforcement personnel with a concomitant increase in recycling educational staff. As a result of this recommendation, the DOS requested dozens fewer recycling enforcement personnel for Fiscal Year 1991 and instead requested more recycling education staff.

tons per day of new recycling capacity.[5] To generate this quantity of recyclables, DOS targeted 45 percent of the waste stream, despite their own waste composition study that determined 75 percent of New York City's waste stream consisted of recyclable and compostable materials as defined by DOS' current curbside and proposed intensive recycling programs. DOS further assumed that only slightly more than 50 percent of the recyclables targeted would be collected, resulting in a 25 percent recycling rate. In addition, an 8 percent waste prevention figure was mentioned. More significantly, the DOS plan was to include new waste-to-energy capacity amounting to 10,000 tons per day, or 68 percent of the total waste stream plus additional landfilling of ash.

Citizen's Alterative Plan

Plan Preparation

It was the decision to announce, at this stage in the development of the DOS plan (i.e., before all the ramifications of the alternative scenarios had been explored), that the scenario with the highest amount of incineration and the lowest amount of recycling/composting would be chosen, which generated swift outrage by most members of the TWiG. Thus, a day after the Sanitation Commissioner's announcement, members of the TWiG began preparing an alternative integrated solid waste plan that would achieve the New York State goal of at least 50 percent reduction, recycling, and composting by 1997. Concurrently, a lawsuit against DOS for past failure to meet the City's mandatory recycling goals and requirements was launched by CRAB, the Natural Resources Defense Council, and others.

Using the alternative scenario developed by the chair of CRAB as a basis, the TWiG committee immediately began to decide on a unifying philosophy and flesh out the details of the alternative plan. The diverse groups represented in the working group included environmental groups opposed to any incineration under any circumstances and those not so categorically opposed, as well as Borough Presidents' office liaisons, consultants, and other SWAB members. Despite the differences, the group came to accord early regarding the shape of the alternative plan. It was agreed that the group would formulate a plan by which the City would quickly, over the next four to five years, establish an aggressive, integrated program of many waste prevention initiatives, intensive recycling and composting, addressing wastes from all types of generators. The alternative plan would specify not only the details of this integrated program, but also a detailed timetable of milestones over each fiscal year until 1996. It was reasoned that if incineration were to be planned as part of the program at the outset, it would limit the potential for intensive prevention, recycling, and composting, since incinerators must be fed wastes at the rated capacity or they will not be economically viable.

In the three-month discussions leading up to completion of the draft, the proposed integrated system evolved considerably. The draft recommended an expanded effort into designing and implementing waste prevention legislation and economic incentives, expansion of recycling to include many more materials than was then done in New York into all districts, and implementation of food and yard waste composting. Much increased emphasis was placed in the areas of market development, particularly in the New York City area, for recycled and composted products, a much more targeted public education program, government procurement of recycled products and more durable products, and a research program to study methods of increasing the amounts of waste diverted due to waste prevention, recycling and composting. Discussions concerning the alternative plan also produced agreement that at the end of FY 1996, assuming the intensive non-incineration program was implemented as aggressively as planned, the progress (i.e., participation and diversion rates, marketing of materials, potential for further diversion, etc.) should be evaluated to determine if disposal options would be necessary. Since the City's only landfill, Fresh Kills, may be filled within ten to 15 years, and the export option is likely to be blocked soon due to federal legislation, the incineration option might become necessary for a portion of the waste stream.

The first draft of the alternative plan, a 60-page report eventually called "Recycle First," was completed in December 1991 and immediately endorsed by over 40 public officials from New York City. At the completion of this first draft, the Recycle First committee, which had been exclusively en-

Table III.

PRINCIPLES OF WASTE MANAGEMENT

New York City "Recycle First" Plan

A. Prevent Production of Waste
   1. Prevent Waste Up Front
   2. Halt Production of Co-Mingled Trash
   3. Facilitate the Reduction of Difficult-to-Recycle Items and the Reduction, Recovery and Proper Disposal of Toxic Components

B. Maximize the Quantity of Recycling and Expand the Program Citywide
   1. Operate Reduction, Reuse and Recycling Programs Citywide with Stable, Predictable Budgetary Support
   2. Build Improvement in Reduction, Reuse and Recycling Over Time into the Management Plan
   3. Target the Maximum Quantity of Recyclable Material in the Waste Stream
   4. Separate Recyclables at the Source so as to Facilitate Marketing and Household Participation and Minimize Inconvenience
   5. Design the Waste Management Program to Minimize Costs
   6. Site Recycling Facilities Expeditiously and While Minimizing Environmental Impact

C. Pursue an Aggressive Market and Economic Development Program
   1. Take Steps to Enlarge the Regional Market for Recycled Materials to Assure Success of a Comprehensive Recycling Program in New York City
   2. Structure the Waste Management Program to Support Local Economic Development

D. Use the City's Remaining Landfill Space Prudently and Defer Decisions About Investments in Incineration
   1. Defer Decisions on Incineration until the City has Fully Implemented a Comprehensive Reduction, Reuse, Recycling, and Composting Program
   2. Reduce Waste Going to Fresh Kills Landfill
   3. Phase Out Exporting the City's Trash Problem to Somewhere Else

Table I. DOS waste management scenarios as of July 1991.

	Waste Management Scenario	# Trucks
1.	High Quality Recyclables Collection/Refuse for WTE	2 trucks
2.	Wet/Dry Collections with WTE	1 truck, 1
3.	High Quality/Organics/Refuse/WTE	3 trucks compartment(s)
4.	Wet/Dry	1 truck, 1
5.	High Quality/Refuse with MWP	2 trucks compartment(s)
6.	Wet/Dry/WTE	1 truck, 2 compartment(s)
7.	High Quality/Organics/Refuse	3 trucks
8.	High Quality/Wet/Dry/WTE	2 trucks
9.	Wet/Dry/WTE	2 trucks
10.	Wet/Dry	1 truck, 2 compartment(s)
11.	High Quality/Wet/Dry	2 trucks
12.	Wet/Dry	2 trucks

layed by weeks, and little attempt was made by DOS or its consultants to address each recommendation specifically, and in writing as had HHC's consultants. This occurred despite repeated requests from the TWiG members for more meaningful feedback. Thus, the commentary by the participants had to be instantaneous, and based on a cursory review of the handouts and a hurried discussion of only a few of the handouts by the consultants.

Because the materials were so much more voluminous, and the time provided to digest them so much shorter than that provided in the HHC process, it was ensured from the beginning that a less thorough review by the participants would be possible. The TWiG members were invited to submit comments in writing subsequent to the initial discussion date for a particular topic, but as most of the participants were volunteers with other job responsibilities, such written responses were relatively few. But, as with the case of the oral comments provided by TWiG members, most of the written comments were not answered. Though data on the costs of incinerators provided by a TWiG member were accepted by DOS and used in subsequent calculations, most of the other written comments prepared by TWiG members were never answered, despite frequent reminders. In one case, a detailed alternative scenario prepared by the then Chair of both the Manhattan SWAB and CRAB, and submitted beginning in February 1991, and resubmitted several times with revisions, was not seriously addressed to the satisfaction of the TWiG members.

In contrast to the HHC process, where the participants not only knew who all the City's consultants were, but were also able to discuss issues of concern directly with them, the TWiG members were repeatedly denied a list of the 12 consulting firms and to which research/planning tasks they had been assigned. Since DOS' main consultant made almost all of the presentations, even when the materials being discussed were not written by them, interaction between the TWiG and the other consultants was nonexistent. In addition, TWiG members asked several times for a schedule of meeting agendas; this was also denied on several occasions.

Impetus for an Alternative Plan[4]

By July 1991 after seven months of these intensive meetings with DOS there were 12 possible solid waste system scenarios being discussed. These are depicted in Table I. For each scenario the number of tons per day, number and acreage of facilities needed, criteria emissions produced (plus HCl), system costs per ton, collection costs per ton, facilities cost per ton, total cost, and percentages recycled, composted, burned, and landfilled were presented. Half of these scenarios involved construction of 2250 tons per day of waste-to-energy capacity (WTE) and ash landfilling for 1000 tons per day along with non-incineration recycling and composting alternative means of waste management. The other six involved various combinations of MRFs, mixed waste processing facilities (MWP), in-vessel composting facilities (IVC), and landfills. Though this is a large group of scenarios, most of which had been selected by the consultants, at least two scenarios that members of the TWiG had proposed were missing: (1) High Quality Recyclables, Organics, MWP and (2) High Quality Recyclables, Organics, MWP, and WTE. The system costs for each of the 12 scenarios, most of which fell in a range from $200 to $300 per ton were presented as ranges usually varying within a range of $40 to $50 per ton for each scenario. Thus, many of the cost ranges for each scenario overlapped, making selection of the most inexpensive alternatives less obvious.

From all of the many waste prevention initiatives available (including a large number mentioned in the initial 50-page report by DOS' consultants), DOS decided that only four waste prevention programs were worthy of implementation. This was despite the consultant's estimate that the waste prevention program was, by far, the most economical part of a solid waste management system, costing only $26 per ton MSW prevented. In June, the Manhattan SWAB's waste prevention committee produced several dozen waste prevention initiatives for DOS' consultants to evaluate, but DOS chose not to respond to the committee on this issue. The waste prevention target was originally 8.25 percent, and then subsequently reduced to 7.5 percent in July, and then to 7.3 percent in October 1991 without substantive explanation.

Though the reasoning behind the narrowing of the selection had not been clear to everyone, and efforts continued to have DOS' consultants analyze the missing two scenarios, by later in the summer of 1991 the list of 12 scenarios had been narrowed to five possibilities corresponding to scenarios 1 to 5 in Table I. These, and the percentage of the waste stream expected to be handled by waste prevention, recycling, composting, incineration and landfilling are described in Table II. As with the 12 scenarios listed in Table I, the cost ranges for each of these scenarios overlapped considerably.

On September 5, 1991 the Commissioner of the Department of Sanitation announced at a hearing of the New York State Legislative Commission on Solid Waste Management that the City's plan would propose 3,000

Table II. DOS scenarios as of August 1991.*

	1(%)	2(%)	3(%)	4(%)	5(%)
WTE	67	38	54	0	0
Recycled	22	15	22	15	31
Composted	0	25	13	25	32
Landfilled	16	22	16	52	29
Waste Prev.	7.5	7.5	7.5	7.5	7.5

* The first three columns sum to over 100% because of the extra generated by incineration.

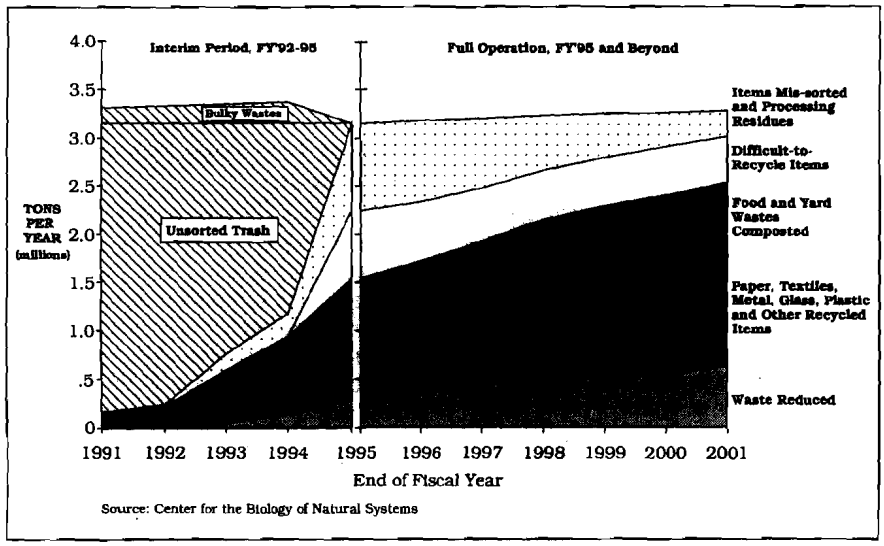

Figure 1. Recycle First Waste Management System developed over time.

gaged in writing up to this point, diversified into two groups. The active part of Recycle First was now a new lobbying arm, consisting of representatives from many large grassroots environmental organizations, which met every few weeks to design and implement the campaign to persuade government officials to adopt the Recycle First Plan. The original group of authors met in April and May 1992 to amend Recycle First to include new information prepared by consultants to the Manhattan SWAB and to make changes necessitated by the City's first draft Plan.

Details of the Recycle First Plan

The Recycle First Plan features the following basic principles of waste management (see Table III): an analysis of the impact of delaying implementation of incineration on Fresh Kills capacity; sections on waste stream composition; education; markets for recyclables and compostables; commercial sector and alternative collection methods and processing technologies; a description of the components of a comprehensive waste prevention, recycling, and composting plan; and a description of the incineration philosophy. Among the many tables and graphs in the report is Figure 1, which illustrates the evolution of integrated solid waste management in New York City over the next ten to 15 years, assuming the Recycle First Plan is followed. The Recycle First Plan ends with an extensive, point-by-point implementation schedule for the waste prevention, recycling and composting programs, facilities, legislation, and other initiatives through FY 1996.

The waste prevention program envisions an ambitious combination of local, state and national initiatives to be carried out by a new, separate office of waste prevention at DOS. Such strategies would include legislative initiatives, economic incentives, government procurement requirements and other government policies to encourage the manufacture and purchase of more durable products and less packaging. Because packaging, nondurables, durables and compostables constitute nearly 100 percent of the waste stream, and all of these components can be addressed by waste prevention initiatives, waste prevention is the first level in the Recycle First Plan. The recommended goal for waste prevention is 15 to 20 percent. To accomplish this goal, aggressive consumer education programs, directed at residential and commercial sector target items, and designed to change product purchasing, product maintenance, and reuse habits to minimize residential waste generation would be developed. Measures to reduce toxic substances in the waste stream (e.g., metals, chlorine, fluorine, sulfur, and nitrogen, which become air and water pollutants upon disposal of MSW) are also included in Recycle First's recommendations. In addition, significant reductions in the manufacturing and purchase of packaging and disposable products such as disposable diapers, which account for over 3 percent of New York City's waste stream, would be pursued. To foster the development of additional techniques for minimizing waste generation, Recycle First proposes a comprehensive waste prevention research program including a new product/packaging-oriented waste characterization study and pilot tests to determine the efficacy of various educational programs designed to reduce waste generation.

The intensive source separation program is based on a four-container system for: (1) paper products such as corrugated, newspaper, and magazines; (2) other high quality recyclables such as metals, glass, and plastic containers; (3) food and yard wastes for composting; and (4) dry residue. One truck with two compartments would collect the first two recyclables groups, which would be brought to an intermediate processing center for further separation into individual recyclable categories; another truck with two compartments would collect the rest. The compostables in the second truck would be brought to a composting facility, and the dry residue, including any unseparated refuse, would be brought to a mixed waste processing facility. Household hazardous wastes would be picked up and managed separately.

Based on the DOS' ambitious materials-oriented waste characterization study conducted in 1989, the target waste stream for these materials includes at least 75 percent of the New York City waste stream.[6] Though the plan assumes initially high rates of contamination in the first years of the four-container separation system, gradual improvements in the efficiency of source separation would be expected over time, diminishing contamination to a small quantity by 2001 (see Figure 1).

Manhattan SWAB'S Technical Consultant Report

The Recycle First plan was prepared in a short time (three months) by citizens and environmental professionals, most of whom were volunteering considerable amounts of time. Because there was insufficient time to undertake the research necessary to search the country and world for case studies which would endow the study with an appendix of supporting evidence and documentation, the Manhattan SWAB resolved in November 1991 to expend up to $15,000 of its remaining $30,000 to hire a technical consultant to provide this technical support to strengthen the plan and enhance its feasibility in the eyes of DOS and DEC. Since it was expected that DOS' first draft would be completed by the end of March, the SWAB's consultants' timeframe was to be short, and the

SWAB moved to expedite the hiring process.

Though the SWAB's technical consultant committee submitted a brief draft RFP to DOS by December 20, DOS delayed its comments until almost three weeks later. Another delay of almost two weeks by DOS in initiating a contract between SWAB and the new consultant, Resource Recycling Systems, occurred. This occurred due to the unusual DOS-proposed subcontracting arrangement through DOS' current consultant (the SWAB's original consultant). As DOS began transmitting certain appendices to its plan in February 1992 and completed the plan submission by March 31, efforts were made by the SWAB to persuade DEC to schedule a review of the Recycle First Plan and its supporting documentation concurrent with the City's plan, in spite of the DOS-induced delays to the SWAB's report.

Issued in April 1992, the 125-page consultant's report has dozens of case studies which describe existing municipal programs, legislation, and other initiatives in six areas: waste prevention, public education, recyclables collection and processing, composting and market development. The case studies likely to be most applicable to an urban setting such as New York were chosen. Detailed information regarding waste diversion rates, program costs, methods and ease of implementation, problems, and successes demonstrate the validity of the case study initiatives. Though the original intention had been to use the report as supporting documentation for Recycle First, the materials contained therein were also used to support comments by CRAB and SWABs targeting deficiencies in the DOS plan.

CRAB/NRDC Lawsuit Against NYCDOS

Entering into and shaping, or complicating, the solid waste planning process (depending on whose viewpoint you subscribe to) has been the CRAB/NRDC lawsuit. CRAB had standing in the suit because it has the duty to review DOS' recycling program annually under Local Law 19. As a result of the City's decision to cut back on funding for the recycling program during FY 1991 and 1992 due to a general fiscal crisis, DOS failed to meet a number of requirements mandated by Local Law 19, including that the City:

- Recycle 1400 tons per day by April 1991, and higher recycling levels through 1994. (As of mid-1992, only 1000 tons/day was recycled.)
- Site a minimum of ten buy-back centers with some in each borough. (By that time only one facility had been sited.)
- Produce a citywide recycling plan. (The City produced a preliminary report in 1990, but not a plan.)
- Implement citywide deposit or reclamation programs for dry-cell batteries and tires. (The City has done nothing in this area.)

In order to meet Local Law 19's requirements over the next few years, the City would have had to expand recycling from the 29 districts it served then to all of the total 59, and from the three to six materials currently collected at curbside to more than six materials. That the recycling program was nearly terminated entirely in June 1991 and only restored to partial funding caused these failures in recycling implementation.

According to the decision by a Manhattan State Supreme Court justice, filed February 6, 1992, the City did violate Local Law 19 because the law states 23 items which the City "shall" include in its recycling plan, and numerous other instances in which the statutory language is unambiguous in its requirements. Therefore, the court issued an order of mandamus, directing the DOS Commissioner to comply with the provisions of the law within a reasonable time.[7]

Role of the City Council

A new player in the solid waste planning arena has been the City Council. Though the Council had always had an effect on planning via appropriations for the Sanitation Department's budget, and in fact nearly eliminated the recycling program for fiscal year 1992 due to fiscal crisis, the Council is now taking a more proactive role. In March 1992, at the urging of the Recycle First Coalition (the lobbying arm), which includes members of CRAB and the SWABs, the Council developed a bill, Intro. 131, and voted unanimously to give itself the authority either to approve or prevent the City's plan from being submitted to NYS DEC. The Council also decided to hold public hearings and hire its own consultant to assist in the review of the City's voluminous plan (several hundred pages with over 10,000 pages of appendices). The SWABs, City Administration, and DEC applauded this development, since it is recognized that without sufficient and timely funding, no solid waste plan of any kind could be implemented.

Future of Solid Waste Planning in New York City

Public participation in solid waste decision-making processes in New York City has gone through two phases: first, disregard and impatience with the public by government, and second, a period of anxiety and annoyance with the public. Neither has led to constructive dialogue or impressive results. The public participation process for the HHC medical waste plan began to create a new era of trust and cooperation, but the experience with DOS nearly halted that progress.

In large measure, the public interest community supports the solid waste hierarchy, particularly the waste prevention and recycling elements which are designated as first and second priority. However, in order to make the hierarchy a reality and abate the solid waste crisis, there is a need for considerable research, development and demonstration such as that outlined above, in many areas — particularly source reduction, reuse, recycling, and food and yard waste composting — at a level at least as great as that already committed to incineration, ash and landfilling strategies in the past. In addition, there is a great need both for respect by government agencies for the increasingly knowledgeable public and for a greater spirit of trust and cooperation between the two.

In order for public decision-making to become more efficient, public input from all interested/affected parties must be sought out, encouraged and respected. To foster widespread public participation and cooperation, policy CACs should be integrated into the structure of all agencies of government. In this way, planning will have the benefit of all points of view and there will be a better chance that, it will be more integrated and innovative, with the final results of greater acceptability to the public.

What does the future hold in store for solid waste management in New York? It was clear that the David and Goliath struggle set up by the DOS announcement of 68 percent incineration in September 1991 was going to continue between the CRAB/SWABs and DOS unless and until DOS restored the good faith extant prior to the Commissioner's September 1991 announcement. Though the court's issue of mandamus in early 1992 might have

made DOS address recycling implementation more seriously, the City instead asked the City Council to delay and possibly weaken the requirements of Local Law 19. However, at the same time, DOS told CRAB that it intended to ask the Council for funding to expand the recycling program such that six materials (metals, glass, plastic containers, newspaper, magazines and corrugated) will be picked up throughout Manhattan by September 1992, and throughout the Bronx by December 1992, Queens by 1994 and Brooklyn by 1995.

In the meantime, the City Comptroller issued four reports critical of MSW incineration and supportive of recycling: "Burn, Baby, Burn: How to Dispose of Garbage by Polluting Land, Sea, and Air at Enormous Cost," January 1992; "Fire and Ice: How Garbage Incineration Contributes to Global Warming," March 1992; "A Tale of Two Incinerators: How New York City Opposes Incineration in New Jersey While Supporting It At Home," May 1992; and "What Goes Around Comes Around: Good News About Recycling Markets," June 1992. Another report, "Setting the Record Straight: A Fiscal Analysis of the City of New York's Solid Waste Management and the Proposed Brooklyn Navy Yard Incinerator," published by the New York Public Interest Research Group in May 1992, presented cost analyses of the City's various solid waste programs, and criticized the accuracy of DOS' cost estimates, and what they considered the ill-conceived policies and unexpected cost burdens engendered thereby. These documents raised a number of important issues, but were largely seen as political in nature. It is not certain how these have altered or will shape DOS' approach to integrated waste management. DOS, in the Solid Waste Management Plan's Response Document, rebutted both the Comptroller's reports and the NYPIRG report.

Not insignificantly, since early February 1992 DOS has had a new Commissioner who has shown a willingness to listen carefully to alternative viewpoints, and has indicated a greater tolerance for the startup problems and costs associated with such desirable new technologies as waste prevention, recycling and composting. Since her tenure in office began, a number of decisive policy changes have been made which have changed the face of the Sanitation Department. Perhaps the most noteworthy is that the relative status of recycling and waste prevention was raised within the organization by elevating the Director of Recycling Programs to Assistant Commissioner of the new Bureau of Waste Prevention, Reuse, and Recycling. At the same time a new Waste Prevention group was authorized, and will, before too long, include five full-time professionals assigned to it. At a CRAB-sponsored waste prevention forum in December 1992, DOS announced an array of waste prevention programs which are either underway or in the planning stages.

Both the reorganization within DOS, to elevate prevention, recycling, and composting, as well as the appointment of a director of waste prevention, had been recommended for years by the advisory committees. Acceleration of the long-awaited curbside recycling program expansion for all six materials into all of Manhattan and the Bronx before the end of 1992 was also proposed. Also, the first draft of the DOS 20-year plan adopted one of the recommendations of Recycle First: delay implementing disposal strategies (i.e., the construction of the Brooklyn Navy Yard incinerator) until 1996. The first draft Plan also included a few of the recommendations made by the citywide Waste Prevention Committee, including the execution of a products, packaging, and toxics-oriented waste composition study for New York City.

During the summer of 1992, between the issuance of the first draft of the City's Plan at the end of March and the end of August, three sets of City Council hearings took place. In May each of the joint DOS/Council hearings in the five boroughs attracted hundreds of attendees, scores of whom gave testimony, and many more holding signs protesting the proposed Navy Yard plant. Aside from the advisory boards and the citizenry, many major environmental, community, business, and trade groups (some from outside the City) presented testimony. Much of the debate in the public hearings was focused on making the plans for waste prevention, recycling, and composting more ambitious, comprehensive, and visionary, as well as on the incineration/ash management issue. More hearings were held in July after the DOS revised the first draft based on NY DEC's and the public's comments. Subsequently, and into early August, numerous private negotiation sessions, primarily between representatives of the Mayor's office, the Sanitation Department and the City Council, took place. Later in August, unbeknownst to most of the SWAB and CRAB members and some Recycle First committee members, and to the dismay of the latter, several representatives of the Recycle First committee met, on a few occasions, with Council staff to work on compromise language. The last City Council public hearings occurred at the end of August after the Council finalized changes to the Plan. Although some of CRAB's and SWABs' goals were not realized in these final negotiations (e.g., immediate closure of the three existing, antiquated, polluting incinerators, and increased funding for waste prevention commensurate with its place on the hierarchy), some of the Council's changes included recommendations made by CRAB and the SWABs and their committees:

- Shutdown of two of the three decades-old, antiquated incinerators at Greenpoint, Brooklyn and Betts Avenue, Queens by 1995 and retrofit of the third old incinerator at Southwest Brooklyn.
- Abandonment of the plan to dispose of ash from any new incinerator(s) at the Fresh Kills landfill in Staten Island; new contract for an out-of-city ashfill for at least 5 years.
- Further acceleration of curbside recycling programs in Queens and Brooklyn by September 1993.
- Pilot programs in FY94 in a variety of residential neighborhoods to test recycling and composting additional materials through a four-sort process, such as that recommended in Recycle First.
- Requirement that the four-sort pilots and curbside recycling expansion be fully completed before financing is sought for the Brooklyn Navy Yard plant (construction would begin in 1996).
- Advancement by one year of the High-Quality Recycling Program which includes 25 materials, the development of waste prevention legislation, institution of a program to monitor recycling participation rates, markets, and new technologies, as well as construction of the Manhattan and Queens MRFs.

Although many improvements were ultimately made in the City's Plan, and certainly the City had come a long way from the September 1991 announcement to burn 68 percent of the City's waste, the final plans for waste prevention, recycling, and composting were not considered by the advisory boards to be nearly as comprehensive or ambitious as those proposed in Re-

cycle First. The City's final plan sets a goal of 9 percent waste prevention by 2000. As proposed by Systems A and B in the City's Plan, the percentage of the remaining tons recovered for recycling and composting fall into the following categories: residential and institutional recycling, commercial recyclables, paper, and mixed waste, bulk recycling, and recyclable materials removed in the Refuse Derived Fuel (RDF) portion of incinerators, and amount to a total of only 32 percent. However, the existence of the plan as it is, with an implementation schedule specifying the construction of MRFs and other waste prevention, recycling, and composting capacity, unquestionably lays the groundwork for the City to direct a sustained effort towards implementing a more integrated approach to managing its municipal solid wastes.

The last word on this issue came from the State DEC, which received both the City's plan and CRAB's Recycle First plan for initial review in Spring 1992. DEC was constrained to review all New York State municipalities' plans against the guidelines set forth in the Solid Waste Management Act, including specific requirements about source separation programs to be implemented by September 1992 as well as the 50 percent reduction and recycling goal to be attained by 1997. As DEC had, on several occasions in the past, refused to approve the completeness of the City's permit application for the Brooklyn Navy Yard Waste-to-Energy facility because of its inadequate recycling program, it was not inconceivable that DEC would require the City's plan to be more ambitious in its approach to reduction, recycling and composting.

In response to the initial draft Plan issued in March, DEC gave DOS over 70 pages of comments, pointing out omissions and inconsistencies, including that the City's Mandatory Recycling law (Local Law 19) contradicts State law which requires businesses to separate source recyclables on-site. This has since been rectified by the new City law. On September 1, 1992 DEC received the Council-revised DOS Plan, and in subsequent correspondence noted some deficiencies and stipulated that numerous additional modifications be made including that:

- The financial commitment made by the City to undertake full implementation of the Plan must be made clearer and more definitive.
- There are insufficient staff to implement the Plan.
- The Plan is really a ten-year plan, and thus, the second ten-year period should be specified in more detail.
- The decision tree approach to describing which alternative planning scenarios will be followed, which DOS used to cover unknown circumstances in the planning process, needs clarification, and that the options and scheduling, as well as factors, criteria and methodology for using the decision tree be clarified.
- Certain additional categories of recyclables and processible wastes (e.g., demolition, household hazardous) be quantified.
- The impact of City-owned processing facilities on private processing capacity be assessed.
- Amendments to local law to aid in the implementation of the Plan need to be specified.
- The Plan should commit to undertaking stack testing of the City's incinerators to the extent that federal, state, and local laws, and permit requirements stipulate.

After a month of negotiations on these points, DEC approved the City's Solid Waste Management Plan on October 28, 1992, three days before the deadline.

Since this time CRAB and the SWABs have continued to meet, as is their mandate from Local Law 19. Their continuing responsibility is to provide oversight on DOS' activities as regards solid waste management in general, to provide advice to the respective Borough Presidents regarding DOS' activities, to work with the Council to ensure that sufficient funding is made available to pursue integrated waste management to the fullest extent, to hold forums with invited speakers, periodically, on topics of current interest, to educate the community, to monitor the timing, adequacy, and efficiency of implementation of all parts of the City's Solid Waste Management Plan, and to recommend pilots, and research and policy initiatives which would improve the efficiency and efficacy of DOS' waste prevention, recycling, and composting programs.

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