

United States
Environmental Protection
Agency

Waste Management Division
Region 1 (HER-CAN6)
Boston, MA

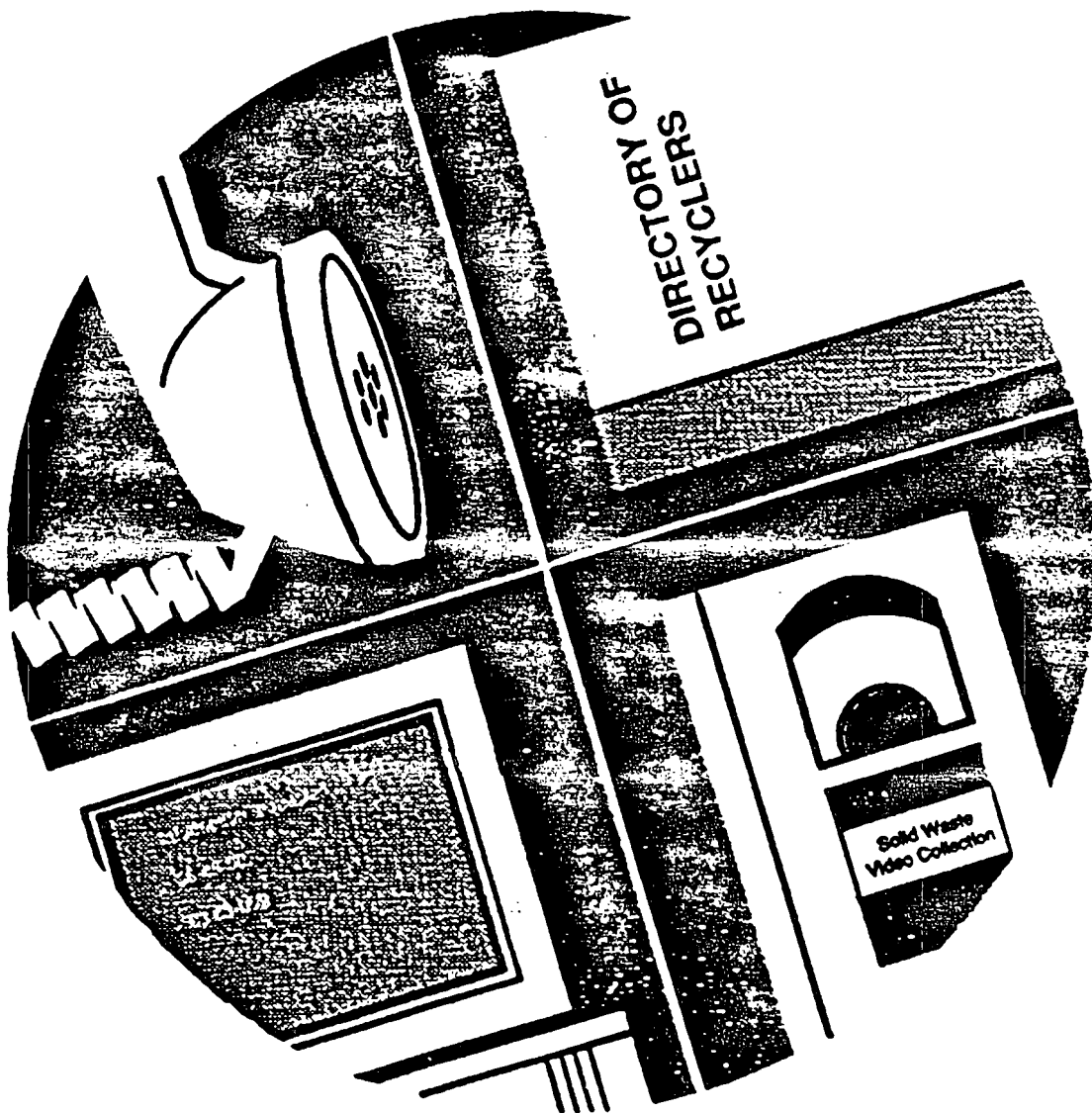
EPA/901/5-

Research Library for Solid Waste



Compendium of Materials on Municipal Solid Waste

COMMUNITY RECYCLING



DISCLAIMER: THE ENCLOSED MATERIALS HAVE BEEN PREPARED BY THE USEPA, REGION 1, SOLID WASTE PROGRAM TO DISSEMINATE INFORMATION FROM THE RESEARCH LIBRARY FOR SOLID WASTE OR FROM OTHER SOURCES. INCLUSION OF INFORMATION ABOUT AN ORGANIZATION, A PRODUCT, A TRADE NAME, OR A SERVICE DOES NOT REPRESENT ENDORSEMENT BY THE USEPA NOR DOES IT REPRESENT EPA OPINION, POLICY OR GUIDANCE UNLESS THIS IS SPECIFICALLY INDICATED. USERS OF THIS INFORMATION SHOULD CONDUCT THEIR OWN EVALUATION OF THE INFORMATION PRIOR TO DEVELOPING CONCLUSIONS OR OPINIONS.

FOR FURTHER INFORMATION CONTACT:
THE RESEARCH LIBRARY FOR SOLID WASTE
(617) 573-9687

**A COMPENDIUM OF MATERIAL ON MUNICIPAL SOLID WASTE
* COMMUNITY RECYCLING ***

TABLE OF CONTENTS

INTRODUCTION	1
A GUIDE TO RECYCLING IN YOUR COMMUNITY	
by the Michigan Department of Natural Resources	
Planning the Program	4
Designing and Starting the Program	5
Evaluating the Program	18
PUBLIC EDUCATION	
by the MA Department of Environmental Protection	
Recycling Public Education	20
COOPERATIVE MARKETING OF SECONDARY MATERIALS	
by the New Hampshire Resource Recovery Association	
Identifying Markets for Recyclables	25
(An approach to recycling in rural communities)	
INTEGRATED SOLID WASTE MANAGEMENT	
by the U.S. Environmental Protection Agency	
Integrated Solid Waste Management	36
OPERATING A RECYCLING PROGRAM: LOCAL GOVERNMENT AND THE PRIVATE SECTOR	
from the Proceedings of the First U.S. Conference on Municipal Solid Waste Management	
Local Government Recycling Program Design: Integration of Existing Recyclers	
by Deanna Ruffer and Susan Schaefer, of Roy F. Weston, Inc.	39
RECYCLING AND HOUSEHOLD HAZARDOUS WASTE MANAGEMENT	
by INFORM Environmental Research and Education	
Two Planning Checklists	50
EDUCATIONAL FLYERS FOR CITIZENS	
Examples	55
WHERE DO YOU GO FROM HERE?	64
SOURCES USED IN INFORMATION PACKET #1	66

Please Note: Since documents in this compendium are only partially reproduced, there will sometimes appear references to appendices or other sections that are not included in this reproduction. Users are encouraged to obtain the full document from the organization which originally published it.

Introduction:

The question, "How do we set up a recycling program?" is frequently received from municipal officials, schools, businesses, community groups, individuals, and many more. There are so many possible answers to this question that it is simply not possible to provide one complete answer.

This Compendium of publications is intended to assist community members in planning, establishing, or modifying municipal recycling programs. It is intended to provide some things to consider, present potential answers to problems, identify some resources to use, and mostly to save people time in their search for answers.

From the publication **"A Guide to Recycling in Your Community"** by the Michigan Department of Natural Resources, information on things to consider in planning, designing, starting and evaluating a recycling program is presented. Issues in economics, collection possibilities, siting, materials handling, transportation, and storage are discussed. The basic concern, however, is the economic viability of a program.

The second publication from the Massachusetts Department of Environmental Protection titled **"Massachusetts Regional Recycling Program: Public Education"** focuses on the key factor of getting the public involved and supportive of a municipal recycling program.

Rural communities oftentimes have a different set of problems to overcome in establishing and maintaining recycling programs. A publication from the New Hampshire Resource Recovery Association titled **"Recycling in New Hampshire: An Implementation Guide"** reviews the cooperative marketing approach that they have taken to market many recyclable materials.

From the EPA publication **"Decision-Makers Guide to Solid Waste Management"** it is seen that recycling cannot be considered as the single solution to municipal solid waste management. The waste management hierarchy advanced by EPA places recycling in a necessary context. Source reduction, landfilling, and combustion, the other three major means of management, must be considered by municipalities as well. Recycling alone cannot solve the "solid waste dilemma."

Planners of recycling programs can often save time and resources by researching activities that have preceded their own plans in their community. One component of this is integrating existing recyclers into the program or plan. The importance of private sector contributions are set forth in the document from the Proceedings of the First United States Conference on Municipal Solid Waste Management, titled **"Local Government Recycling Program Design: Integration of Existing Recyclers."**

Two checklists titled **"Recycling and Household Hazardous Waste Program: A Planning Checklist"** are included from the organization INFORM, Inc. These checklists may be of value to municipal planners in identifying the preliminary tasks necessary to establish a program to collect the components of municipal solid waste; metals, glass, paper, bulky wastes, construction debris, yard wastes, and household hazardous waste. Although plastics are not specifically mentioned, readers are encouraged to consider this material as a separate waste stream component as well.

In the fall of 1991, the Northeastern University American Society of Civil Engineers' Student Chapter Recycling Committee presented the study "The Path of Recycled Plastics From the Greater Boston Area" to EPA. The report included examples of flyers used by the Cities of Cambridge, Roxbury, and Somerville of Massachusetts to educate their citizens about the towns' recycling efforts. These flyers are provided in the section, **"Educational Flyers for Citizens,"** and may provide municipal planners with examples of how to communicate with their own citizens, and what to include in distributed materials.

Finally, the section, **"Where Do You Go From Here?"** offers resources and tips for further information.

This Compendium is intended to serve as a resource for developing and maintaining successful recycling programs at the community level. We hope that you will find the information contained within useful.

A GUIDE TO RECYCLING IN YOUR COMMUNITY
PLANNING THE PROGRAM; DESIGNING AND STARTING THE PROGRAM;
EVALUATING THE PROGRAM

from the publication titled
A Guide to Recycling in Your Community
[N.D., Circa 1989]

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
Resource Recovery Section
P.O. Box 30028
Lansing, MI 48909

INTRODUCTION

Solid waste disposal is a growing problem for communities. The traditional method of disposing of solid waste—by landfilling—is becoming more expensive and less acceptable politically, economically, and socially. The costs of collecting and landfilling solid wastes are rising and available land is becoming scarce and more expensive. Furthermore, many citizens are beginning to oppose using available land to bury solid waste.

As landfills near capacity, many communities have begun to look for ways to reduce the amount of solid waste for disposal. One proven option is source separation (recycling).

Source separation is the setting aside of one or more materials such as paper, glass, and cans from refuse. Source separation program crews collect the separated materials in two ways: 1) by providing centers to which residents can bring materials; and 2) by collecting the recyclables at curbside on a house-to-house basis. The materials that are collected are transported to a site for processing, and then are delivered to a manufacturer who uses them as raw materials to manufacture new products. In general, a source separation program requires participating residents to keep recyclable materials separated from waste materials destined for disposal.

This report presents an overview of some of the issues involved in a source separation/recycling program. It outlines various concepts a community may wish to consider when deciding upon the feasibility of a source separation/recycling program. Some of these concepts include: the options for materials collection; necessity of a comprehensive public education campaign; and expected cost considerations involved in the program.

This report deals with the general costs incurred by a source separation program, however, a detailed assessment of costs and benefits is beyond this scope. It is important to remember that the key to developing a successful residential waste materials recovery program is careful organization and planning.



STAGE I. PLANNING THE PROGRAM

When planning for a residential waste recovery program, there are several steps to follow:

Step One: The first step in planning, is to assess the marketplace and research what waste you can sell. To start, you can contact and talk with scrap buyers, paper buyers, your local solid waste management department, and others involved in waste collection and sale, and find out exactly what is saleable and what the market is for each type of waste. There have been many groups that started recycling programs and later found there was little or no market for their materials, and thus had to pay to have items hauled away. Some questions to keep in mind when talking to people about markets are:

- a) What are the quality requirements for each price?
- b) Is the price high enough for the program to function economically?
- c) Will your program have the ability to prepare materials to the degree of purity required by markets?
- d) What is the long term history of the price of the materials?
- e) What are the contaminants and what percentage is allowed?
- f) What is the basis for rejection of a load?
- g) What is the minimum load?
- h) Are there seasonal variations in price?
- i) Will they send certified weight tickets on the load?

Other things to consider in assessing a market is the location: If the market is close by you can cut down on storage space and transportation cost. If it is at a distance, are the prices high enough to offset additional costs?

Step Two: Step Two of the planning stage is to decide what materials will be collected. To make this decision, you must first determine what materials are available. You should also determine the authority legally responsible for waste collection. Cities, counties, or townships may have this responsibility, but may have delegated or hired a solid waste board or private waste collector for the job. The most logical approach is to call or visit with your city or county waste management department or Department of Public Works.

Once the appointment is made, be sure to ask about local laws and regulation regarding waste collection. You may even want to work directly with their solid waste planning staff. Others to contact to get an idea of what materials are available and how they are currently handled include local dumps or landfills and private waste collectors.

Another way to get information on materials availability is to contact companies that sell directly to the consumers. For instance, newspaper purchasing agents know the exact amount or number of tons of paper they buy each month, and how many subscribers they have in the community. They should be able to tell you how much of their monthly tonnage ordered is left over, which will indicate approximately how much paper is being put out into the community. The same holds true for food and beverage distributors. They know the number of cans or bottles that are used each month. All of these steps may help you in estimating the potential recovery of the waste you want to collect.

Step Three: You must understand the community in which the program will be started. Understanding the community is important in that people own the waste that the program wishes to recycle. There are also three major reasons why one should understand the community:

- a) To determine the degree of existing public interest;
- b) To assess public attitudes and concepts regarding recycling;
- c) To learn who will be the best targeted group for recycling.

Understanding and communicating with your community can be accomplished in several ways, including:

- a) Public service announcements regarding what you want to accomplish with a local contact person and telephone number;
- b) Plan speaking tours throughout the community on recycling;
- c) Mail-out questionnaires;
- d) Door-to-door questionnaires;
- e) Stage a one-day recycling event; those interested will show their support by recycling that day.

Determining what the public knows about the solid waste problem, and if they are willing to help or participate, will help you in deciding on target audiences and promotion strategies.

Step Four: Establish a solid foundation for the program. In this process, one has to secure support for the program, whether it be public or private, supported by public officials or community groups. Working with others in the community can lead to a stronger program and open the path to a more socially accepted recycling program. In addition, working with others reduces the risk of program duplication and promotes good will throughout the community. A group or individual in the beginning stages of developing a new project can benefit by contacting local government groups such as the city or county waste disposal/recovery departments. This is beneficial in that government support is needed to obtain use permits and other permits necessary to start operation. Other local groups include community groups like the Chamber of Commerce, churches, Urban League, and service groups. Many of these groups may be in the process of establishing their own recovery program, but lack certain elements needed to get started. In conjunction with your group, the lacking element could be provided, and vice-versa.

For example, the Michigan Department of Natural Resources' (MDNR) Resource Recovery Section and the Michigan Recycling Coalition work with ecology centers and recycling groups in establishing community curbside recycling or drop off site programs.

Step Five: Decide what areas of the community your program will cover. This decision should be based on the information gathered from Step Three-Understanding Your Community. The questionnaires, interviews, etc. should tell you which groups or areas of the community are most interested in the program. Naturally, it is best to initially operate the program in the areas showing the highest interest and willingness to participate. During this step, you will also want to seek out other recycling programs to make sure there is no overlap in areas covered. It is also a good idea to assess other communities of similar demographics to determine types of programs currently existing, and which type of program works best for a particular community. (See Appendix A, Recycling Program Summaries).

STAGE II. DESIGNING AND STARTING UP PROGRAM

1. TYPE OF PROGRAM & SITE: There are several types of programs that can be established in a community. This booklet has divided recycling systems into three basic classifica-

tions, however, this should not limit your ideas for establishing various other types of programs. These three classifications are to help focus on the scale that is most appropriate for the needs of the community.

Type A - Drop-off Program (non permanent sites) - This type of program is the simplest to organize and manage. Recyclers bring their recyclables to a central place established by the coordinating organization. The materials are then sorted according to type (glass, paper, etc.). This program format has the option of temporary locations, such as schools and shopping center parking lots. Most of the companies purchasing the recyclable materials will provide your organization with containers and transportation of materials. A good example of this type of program is the monthly "drop-off" site sponsored by the Recyclers of Greater Lansing. This Michigan non-profit organization sets up a drop-off site once a month in a shopping center parking lot. Recyclers drive through the roped-off area where volunteer workers unload the cars and separate the materials before putting them into containers. This type of program is ideal for several groups working together, and does not leave the responsibility for providing labor with a single group.

Type B - Drop-off Program (permanent location) - The Type B recycling program has two options, a permanently located drop-off site with no mechanical equipment or a permanently located drop-off site with motorized equipment.

The first Type B option is the permanently located site with no mechanization. In this type of program, containers are permanently placed where people can drop off their recyclable materials. There may also be satellite centers located in other areas of the community. This option usually does not have any motorized equipment on site. The materials that are collected are stored until a load is ready for transportation. They are then taken to their markets or to other dealers to be properly prepared for final marketing.

The second Type B option is the permanently located site with motorized equipment to prepare the materials for market. This site would have the same type of containers as the first option, but would include a newspaper or paper baler/shredder, glass crusher, fork-lifts and other equipment that might be needed to prepare recyclables for markets.

Type C - Drop-off Program with Collection Routes - This last type of program consists of more complex forms of recycling. This type of recycling program could include the collection of multi-grades of paper, routing for homes and businesses, and the collection of local "exotic materials" (materials unique to the area or community). An example of this may be the recycling of scrap lumber from lumber companies.

All three of these recycling programs include four basic steps:

- 1) collection
- 2) processing
- 3) materials handling
- 4) transportation

They also depend on three other factors for efficient operation:

- 1) staffing
- 2) site
- 3) equipment

There are various ways to collect recyclables. One of the more common forms is the drop off center. These are centers where the public or businesses can drop off their recyclables. These centers are either permanently or temporarily established in a specific location like a shopping center parking lot or school lot. They can be staffed or non-staffed. This type of collection center is good for rural areas on a monthly collection basis, or as often as necessary. It can also be used as an alternative to house-to-house or business-to-business collection. The center can range from an unsupervised center to a 24 hour per day supervised center. In a collection or drop-off center, the collection area is divided into sections, one for each type of material. Each section should be clearly marked. You will need to determine the amount of space needed for parking, delivery and pickups. The center's functions could also include the receiving, temporary storage and shipping of one or more materials. You may also be responsible for handling and/or delivery of materials to a processing center, or delivery of the processed product to buyers.

Some things to consider upon designing such a center are: the location, space requirements, storage and equipment, protection of materials, maintenance, traffic flow, and room for expansion. Listed below are *some of the advantages and disadvantages* of both a supervised and unsupervised drop-off center.

Unsupervised Center

Advantages

- possible 24 hour accessibility
- no pick up service cost
- little or no labor

Disadvantages

- may cause poor sorting of materials
- (no assistance to public)
- travel to center may be inconvenience to public
- possible noise and traffic congestion
- possible vandalism
- less public feedback
- small amount of material usually collected

Supervised Center

Advantages

- personal contact
- paid personnel to assure proper attention to materials and customers
- on-site educational programs

Disadvantages

- higher cost (wages etc.)

Curbside Collection

This method requires participating individuals to place recyclables at the curbside or alley for collection and the retrieval of any empty storage containers on a prescribed day. There are five basic questions to consider when deciding on the start-up of a curb-side recycling program.

Question #1

Will the pick up of recyclables be integrated with general refuse collection or not?

Answer

This depends on the type of program to be established. However, it is best to work with those handling general refuse collection; you may want to coordinate your schedule around, or with, theirs in order to reduce the risk of contamination of materials.

Question #2

When two or more recyclables are being collected, will they be picked up together or will each recyclable material be picked up separately?

Answer

This also depends on the type of program established. If you have limited equipment and crew, you may want to start out with the collection of just one material and expand later. The less effort it takes to participate, the more response you will get.

Question #3

How often will pick up be made?

Answer

The frequency of collection is a very important aspect of any source separation program. It is most important to make sure the public is aware of the schedule and frequency of pick ups. In determining the frequency of collection, one must consider the following factors: sanitation, collection cost, fuel consumption, and availability of storage space. Monthly pick up may be frequent enough for some residential area's needs, but the participants may forget from one month to the next. There has been sufficient data gathered by the Environmental Protection Agency, demonstrating that overall participation is greater for programs that collect weekly or bi-weekly than programs collecting on a monthly basis. Although participation may be higher for weekly and bi-weekly collection, the cost is also higher. You will have to weigh the additional cost against the increased benefits of monthly versus shorter collection periods. The Grand Rapids, Michigan program has bi-weekly collection.

In order to receive complete cooperation from the home or business participant, you must take collections on a regular basis. The participants must consistently be made aware of what is expected of them and when collection will take place. Some things to consider and keep in mind during collection:

- Tell people exactly how you want the material prepared;
- Be sure you have informed participants of when collection will take place;
- Be safe; watch for broken glass, jagged cans, and any other safety hazards;
- The customer should be treated properly at all times;
- Maintain a good public image;
- Develop a policy to deal with scavengers who take the materials intended for you;
- Develop and maintain a maintenance schedule on all collection vehicles and centers;
- Have alternate plans for collection vehicle break-down, time and personnel absences.

Question #4

What type of collection vehicle should be used?

Answer

The type of collection vehicle used depends on what type of materials are collected. For example, if you are collecting newsprint only, then you would not need a truck with various compartments. On the other hand, if you are collecting several materials, you may need some type of truck or vehicle with separate compartments. This makes it quicker and easier to prepare the materials for processing.

The size of your vehicle should be based on the amount of materials recovered and on the number of participants. It is also wise to start on a small scale with room to expand later, as needed. It is also cheaper over the long run to buy rather than rent vehicles, unless a vehicle is to be used for a very small pilot test, or employed for only one or two days per week or month. (See Appendix B for more details on equipment and vehicles).

Question #5

Should participation be voluntary or mandatory?

Answer

The type of participation will depend on the type of program you want to establish. If you decide to go with the mandatory participation program, you will have to obtain some type of local ordinance. The ordinance would require that recyclables be source separated, and that all households participate. These ordinances are necessary to signal citizens that the program requires and expects participation. In areas where an ordinance has been adopted, a large increase in participation has resulted with minimal

enforcement needed. You may also want to investigate Anti-Scavenging ordinances. These ordinances make it unlawful for others to pick up materials set aside for curbside collection. Scavenging can be a big problem, especially when material market prices are up. (See Appendix A for examples of mandatory ordinance programs and others).

Once the questions are answered, you will have to decide which approach for collection is best for your program.

Recovered materials can be picked up simultaneously with general refuse using the same vehicle or independently from general refuse collection. The recycled materials may be collected on either the same day or a different day than the general refuse.

a) Pickup with Municipal Collection

This approach is possible if compartments and/or trailers for recovered materials can be added to collection vehicles. This system offers maximum integration with overall waste management systems, lowest startup costs, and maximum convenience to residents. However, it requires residents to separate their refuse which in turn demands alertness on the part of the collection crews. Also, different compartments may fill up at varied rates, requiring drop-off spots for certain materials along the established route.

b) Pickup Independently of Municipal Collection

The independent pickup of recyclables with the same or different day approach is generally more successful, because collection crews do not then have the problem of distinguishing between separated and general refuse items. Also, separated materials set out apart from refuse act as a visible advertisement for the recycling program, thus encouraging increased participation.

2. PROGRAM COORDINATOR AND STAFFING: Many organizations fail to realize the importance of their staff to the outcome of their operations. Each person in a recycling center is a sales person or public relations person. The public is not required by law to conduct business with your center, but if people are treated with respect and courtesy, most are willing to make the extra effort to recycle.

Upon staffing your community recycling center, you should try to secure staff members that are concerned about providing a service to the community and to individual households, and that possess the ability to work efficiently.

The first position to be filled is the program coordinator. This person, with the help of others, is primarily in charge of developing and planning the entire program. The coordinator and the rest of the staff will also be responsible for putting the program into operation and managing the program on a day-to-day basis. In some situations, the staffing may depend on the type of program funding available. Many government funded programs, and others, are staffed with unemployed workers funded through programs such as CETA (Comprehensive Employment Training Act).

3. LOCATING A SITE: Regardless of the type of program you decide to establish, you will need a site or location in which to operate. Again, this decision will depend on the area you want to concentrate on, or the area with the highest interest. Site location will also depend on the type of program established and on the quantity of materials you expect to handle.

When selecting a site, you will want to consider the following:

- a) Accessibility - be close to people, but not too close where people will complain about noise.
- b) Space - make sure you have room for storage and room for expansion. There should be adequate parking and a good traffic flow pattern for loading and unloading.
- c) Security - review safety measures for employees and participants, security to discourage vandalism, and fire emergency measures (sprinkler systems).
- d) Zoning - make sure the area is zoned for recycling operations.

A covered or sheltered space is best, but is not always the easiest to obtain. You may want to seek out a local school, church, or community center as an operating location. These areas are usually equipped with storage areas, safety measures, and sprinkler systems. You may also want to ask your local Chamber of Commerce if they know of available spaces, and check with local businesses who are often willing to donate the space or a shelter for a recycling center.

4. PROCESSING: Processing includes or can include size reduction and separation. Processing systems have two primary purposes:

- a) Size Reduction - Size reduction equipment reduces material particle sizes. Generally, size reduction includes shredding and smashing cans, smashing glass, and baling papers.

b) Separation - The major differences in physical properties by which solid waste may be separated include: color, luster, size, shape, brittleness, structure, texture, surface characteristics. Separation will be geared primarily to the market. Processes incidental to separation may include: crushing and grinding, sizing, screening and classification, sorting, washing, magnetic separation and electrical separation.

Separation is used in various salvage and recycling operations. Paper is sorted by type and grade. Metals are sorted by types and glass is separated by color.

Processing Steps

After collection, the basic processing steps usually involve:

- a) Unloading
- b) Weighing
- c) Separation (although much of this is done in the collection process)
- d) Reduction of volume (such as the baling of paper, flattening cans, crushing glass)
- e) General preparation for shipment to the buyer
- f) Loading

Processing Strategy

The strategy of how you will address processing generally is determined by four factors:

- 1) Financing available to purchase capital equipment.
- 2) The markets that exist in your community. How the buyer wants the product to be delivered and the increased price for processing.
- 3) The size of the operation and the potential amount of recycled materials available.
- 4) The availability of labor, particularly labor from government agencies and programs such as CETA (Comprehensive Employment Training Act). If labor is readily available, the program may be more labor intensive than equipment intensive.

Points to Remember When Processing Materials

- a) Keep supplies on hand;
- b) Separate processing from collection;
- c) Keep different types of materials physically separate from each other;
- d) Handle material only as much as needed, avoid double handling or moving material several times;

-) Keep regular maintenance schedules;
-) Keep good equipment records;
-) Keep bales tight.

Material Handling*

The basic objectives in material handling are:

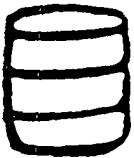
- 1) Minimize handling;
- 2) Every time it is handled, it should be converted to a more marketable form or its quality should be improved.

Materials Placed In Small Containers

A small container is any container that will fit in groups of 2-4 on a four foot square pallet.

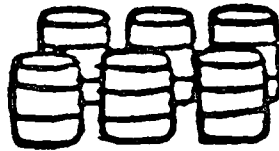
Being Filled

- 1) one at a time



Being Stored

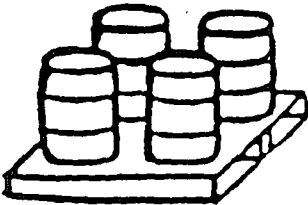
- 1) in groups on hard surface



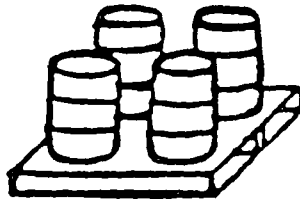
Being Loaded

- 1) a) lift on manually
- b) use forklift with a barrel gripper
- c) use truck with a power tailgate
- d) use forklift with a barrel rotation

- 2) set on a pallet

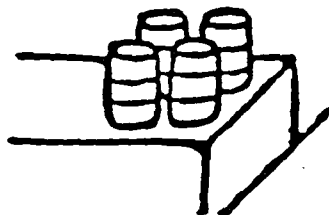


- 2) on pallets



- 2) a) load on a flatbed
- b) load in a van
(pallets must be less than 4 feet to load two)

- 3) on a loading dock



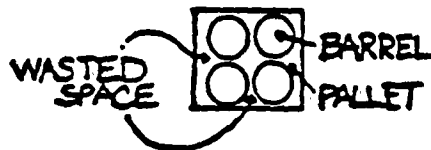
- 3) a) roll in flatbed or van by hand
- b) use a pallet jack and bottomless pallets
- c) pour into roll-off bin or dump truck

Advantages

- 1) Availability of containers
- 2) Close quality control
- 3) No forklift required

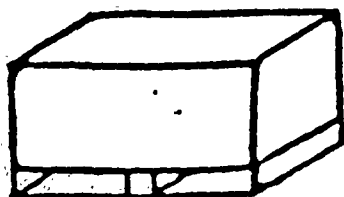
Disadvantages

- 1) Handling small amounts
- 2) Dangerous
- 3) Requires large number of containers
- 4) Circular shape is not efficient:

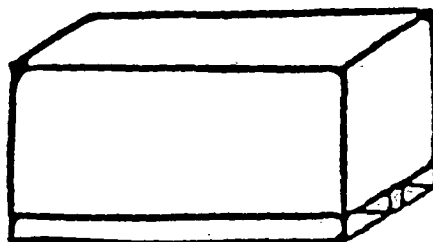


Materials Placed In Rotatable Medium Containers

Wooden or metal containers from 32 to 100 cubic feet.

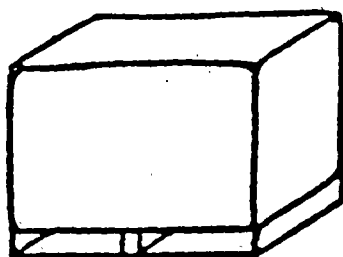


2' HIGH
4' SQUARE



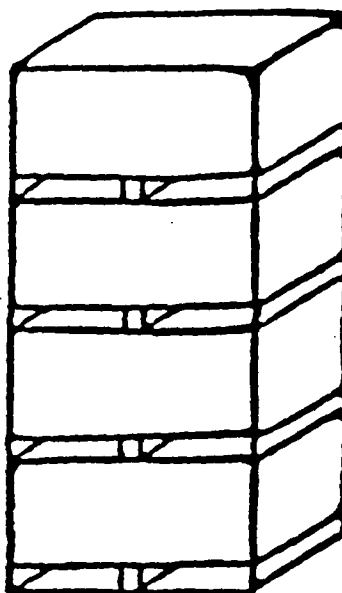
4' HIGH
4' DEEP
6' LONG

Being Filled



one at a time

Being Stored



stacked 3-5 high

Being Loaded

1. stack on a flatbed
2. rotate into a:
 - a. roll-off bin
 - b. dump truck

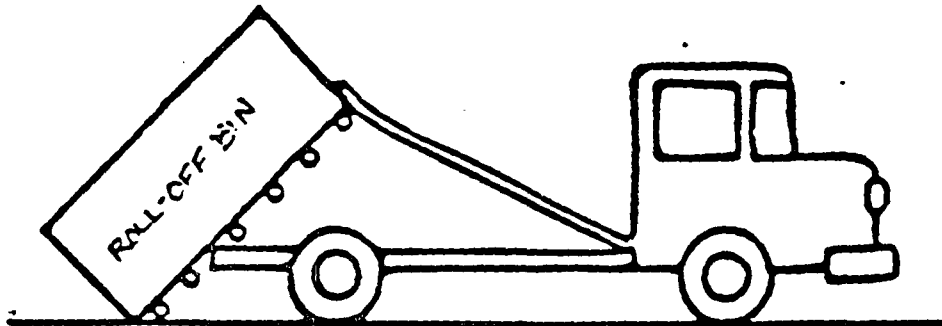
antages

-) Very quick system
-) Handles large amounts

advantages

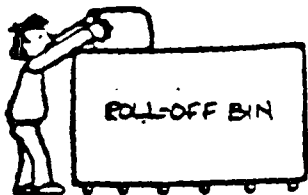
-) Requires a forklift
-) Containers are expensive

Materials Placed in Large Roll-Off Bins



Being Filled

- 1) throw over side (not over five feet high)



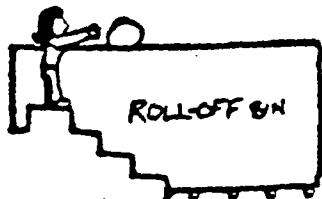
Being Stored

- 1) no handling for storage

Being Loaded

- 1) pulled up on a roll-off bin truck or trailer or transfer trailer

- 2) walk up steps (not over eight feet high)



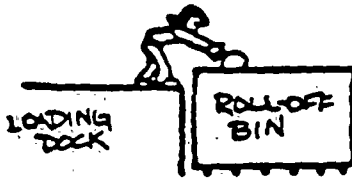
- 2) no handling for storage

- 2) pulled up on a roll-off bin truck or trailer or transfer trailer

3) place bin along a dock
(not over eight feet high)

3) no handling for storage

3) pulled up on a roll-off bin
truck or transfer trailer



—Caution! Watch out for overhead wires—

Advantages

- 1) Minimal handling
- 2) Handles a large volume
- 3) Brokers will furnish bins
- 4) Security

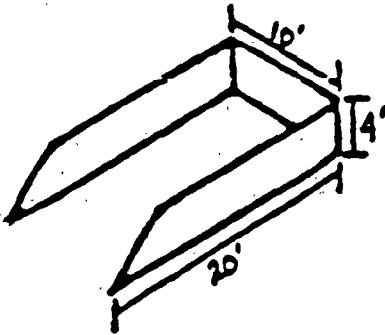
Disadvantages

- 1) Lack of quality control
- 2) Expensive to have handled
- 3) May not get serviced when full

Materials Placed in Bulk Bays

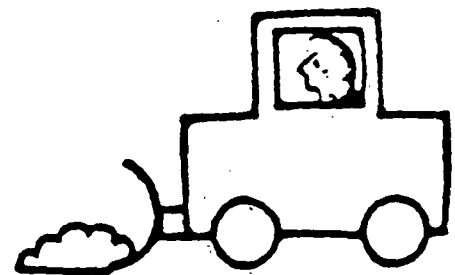
Being Filled and Stored

- 1) manually filled



Being Loaded

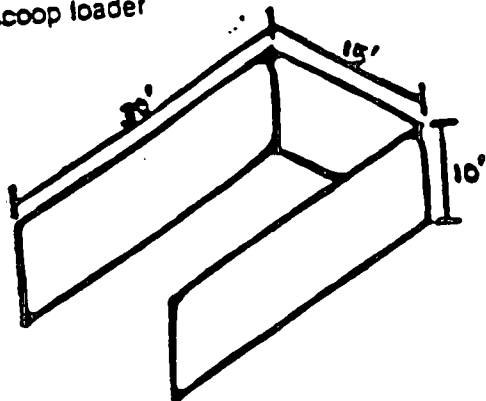
- 1) all loading with a scoop loader



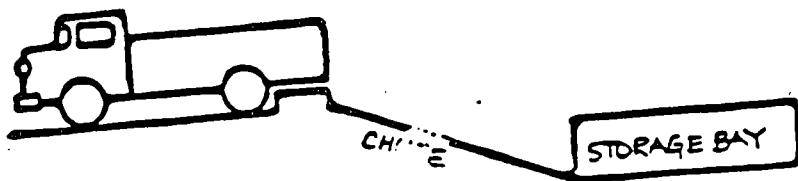
.....

Information on this page obtained from "Fresno County. Recycling in Your Community - A Guide to Make it Happen".

chine filled
belt conveyor
scoop loader



) gravity feed



Advantages
1) Reduces equipment needs
2) Provides storage flexibility

Disadvantages
1) High initial cost
2) Quality control

5. TRANSPORTATION: Commercial transportation is regulated by various public utility or public service commissions in each state, which determine various commodity freight rates to be charged within the state. You should sit down and discuss rates with members of the staff of these bodies. Generally, there are inconsistencies in freight rates. Truckers in many cases will come down on their rates, if they can legally do it. They want your business. If you are going to use shippers, the advantages in using close markets are many; transportation costs are the most obvious. Even if the buying price for material is somewhat less in a close market than a distant one, it may be still more economical to go with the close market. Remember, transportation is expensive.

When a market is close, arrangements other than commercial shipping can more easily be made. The buyer may be willing to pick up the material himself. Even if he buys at a lower cost because of this, you may still be saving money and will be saving yourself from the problems that occur in transporting materials. For close markets, there is also the possibility of rental trucks. This will probably be cheaper than commercial trucking. Check the prices of rental equipment. Make sure, however, that you have a vehicle that you can handle.

When a shipping company ships to a city, they may not have a load going back to their own city. This can be used to your advantage. As an example, suppose a company has a shipment of paper sent to them from a recycling center. They could then return material to the center from that same community. Many times trucking firms will donate services to non-profit groups.

Another way of cutting down transportation costs is the use of a co-op system. If there is another recycling center or some other company shipping to the same place you are, you might pool transportation costs. Generally, the more that is shipped, the less the per unit pound rate. This could also be done when the center does its own transporting.

Points to Remember*

- 1) Transportation is expensive. You should check out all possibilities in order to cut costs. These possibilities include truck rentals, owning and maintaining your own equipment, rail shipments, and cooperative arrangements.
- 2) Make sure the load is secure. When shipping paper or loose material, all material should be tarped down.

- 3) Make sure that all arrangements are checked well before the shipping time.
- 4) Not only should you schedule the shipping time, but you should schedule the loading time. This will save a lot of unnecessary problems and will cut costs.
- 5) Use back hauls whenever possible.
- 6) Transportation units should be completely filled. Do not send a half-loaded truck to the market. This will minimize the amount of handling needed and will save money.
- 7) Know when the material should reach the market.
- 8) Set aside a transportation allowance.
- 9) Ship in 10-20 ton lots; this will give you the best rates.

6. PUBLIC EDUCATION-PUBLIC RELATIONS: Public education is the key to high acceptance and participation in a source separation/recycling program. Education should begin at least two or three months before programs are in place and continue as a major program activity. Education can account for a substantial portion of a program's budget, but the return is worthwhile. The county and local pilot program communities should plan an extensive public educational effort. Public education should be a major continuing component of the operation of programs.

Education of the public is critical to any successful program. Initially, the education informs people of the program and how to participate. Continuous "feed-back" education reminds people to continue to participate and updates the results of their efforts.

High per-capita materials recovery in a source separation program depends on residents in the program area being aware of understanding and having concern for the goals of the program. To achieve this end, an all-out effort is required to design and conduct an effective publicity campaign. The importance of publicity prior to and during start-up, and after the program is in operation, cannot be over-emphasized.

The manner in which you approach your publicity campaign is to a great extent dependent upon existing public recycling awareness, and available publicity mechanisms. Your endeavors can range from posters and newspaper announcements concerning collection dates or center location, to comprehensive and lengthy explanatory meetings with city officials and other community leaders.

As with any other new business, you must be prepared to spend considerable time and effort informing the public of who you are, what you do, and how you will be a beneficial addition to the community.

The following is a listing of a variety of publicity and education techniques that are available for a community, and how each technique should be carried out. When working with the media as a means of educating the public, there are certain guide-lines to follow:

Using the Mass Media - The news media is the means through which you reach your public en masse—most of which does not fall under your control. The mass media includes newspapers, magazines, radio, and television. You should coordinate use of all media to gain the widest possible coverage.

Often times the term "publicity" is taken to mean "propaganda" or "build-up-to-sell". However, you can use a publicity campaign to your best advantage.

Use the media to inform the public of activities, to announce events, and to promote positive aspects of your center. Give recognition to those citizens who have contributed to the success of the center. Let the community see the results of citizens' efforts (See Appendix C for more details in dealing with media).

7. PROGRAM RECOVERY RATE: The goals of a municipal program should be defined in terms of cost avoidance rather than revenue generation. Hence, the real benefits of the program will be realized through extended landfill life and reduced transportation and disposal cost.

The recovery rate is the quantity of material recovered from the waste stream as a proportion of the total amount of waste generated. The recovery rate may be calculated by dividing the actual tonnage of materials recovered by the total amount of residential solid waste in the area and then multiplying by 100

For example: If 50 tons of material were recovered in one month out of a total tonnage of 250 tons, the diverted recovery rate would be $(50 \div 250) \times 100 = 20\%$. The recovery rate indicates the effectiveness of the program in diverting waste from a landfill.

8. PROGRAM ECONOMICS AND COST DISTRIBUTION:

Program Economics - The collecting and selling of recovered materials is essentially a volume business - the greater the quantities of materials separated, the more viable a program is likely to be.

Market values for recoverable waste materials vary according to fluctuating supply and demand conditions, type of buyer, and material quantity.

Economics: Markets - The importance of securing markets for processed materials is heightened by the unique nature of many recycled materials markets. As a general rule, recycling growth is limited by consumer demand rather than by supply. As the often used adage from the salvage industry indicates, "scrap is not sold, it is bought". So, because of their dependence on the wider economy, waste materials markets are volatile. A gentle ripple in the national economy may generate severe waves through the recycling marketplace, forcing buyers to purchase only what they are confident they can sell. In other words, the market situation determines what will be recycled and how it will be recycled.

Cost Description

Capital Costs - Capital costs are non-recurring costs such as those for equipment purchase, modification, and installation. Such costs should be reported over a given period of time at current rates of amortization, depreciation or capitalization.

Operating Costs - Operating costs are usually recurring costs such as those for collection and handling labor, vehicle fuel, office supplies, etc.

Maintenance Costs - Maintenance costs include those associated with the servicing of equipment, including labor, parts for replacement, and supplies for upkeep. (See Appendix D for sample format for recording costs).

Some Cost Assessment Factors

	Capital Costs	Operating Costs	Maintenance Costs
Collection	Vehicles; hydraulic lift & installation	Labor*, vehicle fuel, registration, insurance; labor overtime for missed pick-ups	Labor; vehicle parts, lubrication; washing compounds
Handling	Baler purchase & installation; forklift; electrical, rewiring; handling containers	Labor*, bale straps; propane; site rent, utilities; insurance	Labor; equipment, parts & lubrication, site upkeep; supplies
Transportation		Container bulk-lift fees	

Revenue and Cost Savings

Revenues arise from the sale of recovered materials. To estimate revenues, multiply the expected number of tons of each material to be recovered by the price per ton quoted by buyers.

Definition: Revenues result from the sale of goods or the providing of services to customers, and they produce an inflow of assets.

$\# \text{ tons/material} \times P/\text{ton} = \text{Gross Revenues};$

$P = \text{Price}; I = \text{Per}$

(See Appendix C for sample format for recording recovery and revenue)

Generally speaking, cost savings are costs not incurred and/or reduced costs through a source separation/recycling program. Such cost savings may be:

- Disposal site entrance fee savings (tipping fee): $\# \text{ of tons recovered (diverted from landfill)} \times \text{tipping} = \$ \text{ savings.}$
- Vehicle maintenance and fuel cost savings (fewer trips to landfill, and reduced labor to haul materials to landfills).
- Disposal site operating costs (less labor and equipment requirements).
- Disposal site capital cost savings (extended landfill life).
- Reduced potential for future groundwater contamination clean-up.

There may be difficulties in quantifying cost savings, however, they should not be excluded from program cost consumption for that reason.

Revenue Lost by Not Recovering Recycling Materials at a 100 Ton Per Day Facility

In Michigan, 50 percent of the waste stream contains recyclable materials. This breaks down to:

34% - Paper	4% - Glass
6% - Plastics	6% - Metals

Out of this total, it is feasible that about half could be source separated before entering the waste stream and market. By source separation, the total volume of waste entering landfills would be reduced by 25 percent and thus, increase the life of the landfill by 25 percent.

The following is a cost breakdown of all recyclables in the Michigan waste stream:

Average price for paper: \$30/ton

1 year - 5,304 tons \times \$30 = \$159,120

5 years - 26,520 tons \times \$30 = \$795,600

Average price for plastic: \$150/ton

1 year - 936 tons \times \$150 = \$140,400

5 years - 4,680 tons \times \$150 = \$702,000

Average price for metal: \$20/ton

1 year - 936 tons \times \$20 = \$18,720

5 years - 4,680 tons \times \$20 = \$93,600

Yearly totals of paper, plastic, glass, and metals which could be recycled out of a 100 ton per day waste stream:

Thus, some \$340,080 of revenues from the sale of source separated recyclables is lost annually.

* Includes unemployment insurance, workmans compensation and any additional employee benefits.

Considerations

The cost of a source separation program is the difference between the costs of program administration, labor, collection equipment, recycling facilities, maintenance, transportation, etc., and the revenues that are generated from the sale of recyclable materials. Also included in any cost computation must be the cost savings resulting from the lowered incinerator or landfill capacity requirements. Landfill tipping fees are also reduced because of the fraction of the total waste stream that is recycled.

Feasibility Concerns

Among some of the issues concerning source separation programs is the perception that such programs may not be profitable, or that they may not even pay for themselves. This concern ignores the fact that no other means of disposing of solid waste pays for itself.

Another concern is that the level of citizen participation in a source separation program will not be high enough. Unless there is a relatively high percentage of participation in proportion to the actual costs of the source separation program, the program will be extremely costly. Mandatory ordinances can play a key role when projecting participation rates for the program.

A third concern about the cost effectiveness of source separation programs stems from the lack of experience of most communities. Such inexperience may result in short-term high costs that public agencies may not be willing to bear.

It is important to realize that precise estimates of program costs can only be made when final choices for program features have been made, and when decisions on staffing, equipment, marketing, arrangements, etc., have been worked out among county and local officials and private sector participants.

STAGE III. EVALUATING THE PROGRAM

Once the program is established and operational, the third, and perhaps most often overlooked stage, evaluation, must begin. This process is critical to the improvement of the efficiency and viability of the program. Each point that was analyzed during the planning and start-up of the program must now be reassessed to determine:

- 1) Did it meet the needs of the program?
- 2) Did it work as expected?
- 3) What adjustments could be made to improve efficiency or productivity?
- 4) Have changes occurred in the market for materials which require adjustments in the program?
- 5) Has the target audience received the message the program needs to convey? Does the message need to change?
- 6) Are costs at projected levels? Can adjustments be made?
- 7) Can changes be made in the processing system to produce more marketable materials? Increased revenues?

A recycling program, like any business, is a dynamic process. It requires constant and consistent effort and attention to be successful and achieve the desired goal.

SUMMARY

Source separation or recycling programs can be and have been successful. Many times, those which have proven to be beneficial to the public have recycled the largest volumes of materials, have done so due to the organizations' determination and willingness to please their customers and provide them with the type of service needed.

Making an endeavor such as a recycling program successful requires time, money, dedication, and most of all, patience. One should remember to plan broad and implement gradually or as needed. Patience is the key factor; as an organization you should expect it to take several years for wide range acceptance and participation. Always be prepared for funding difficulties and pitfalls in planning. Keep in mind this type of a program not only depends on you and your organization, but on the general public; thus make them aware and keep them aware of your program.

This booklet was designed to help you sort through the many questions that may arise upon the start-up of a recycling program. Although it is written in a general approach, it is intended to provide a starting point for a more comprehensive study and analysis by those communities considering a recycling program as an approach

to solid waste management. Many of the helpful hints on strategies and approaches, are just that, helpful hints. None of these hints can work without people like you being involved. Each community is unique and your own creative ideas may work better than anything in this booklet.

The actual establishment of your center will probably have a number of crises as you get started. This seems to be normal and it should not be discouraging. Your program depends on people's cooperation and it is very important to create a good public image. The most difficult part of recycling is to actually get started, whether it can be something simple or complex. Most of all, keep in mind that your efforts can have a lasting effect on your community.

Editor's Note:

One concern expressed about the draft copy of this guide was that it addressed primarily community recycling programs. In so doing, it didn't adequately address the advantages or feasibility for a private project or non-profit recycling organization.

There are successful non-community sponsor programs now operating in North America. Eco-cycle, Boulder, Colorado and Total Recycling, Kitchner, Ontario, Canada are two successful examples. Sheltered workshops are also becoming involved in recycling programs. Such programs provide meaningful employment for handicapped persons and meet the environmental needs of the community.

The analysis of the feasibility for such programs is beyond the scope of this report. However, Appendix E contains a list of persons who can provide technical assistance to private organizations. Also, the Local Institute for Self-Reliance has produced a "Business Guide to Community Recycling Enterprises", which would be helpful to entrepreneurs considering recycling ventures. See Appendix E for more details.

Glossary

BALING—the compression of material into a large closely-compressed package. Newspapers are the most commonly baled material.

BUY BACK—programs where material is purchased from the public.

CULLET—broken or refuse glass usually added to new material to facilitate melting in making glass.

COLLECTION—to gather material from a number of sources and people.

CONTAMINANT—material of one type that is an impurity for another type. As an example, metal is a contaminant in newspaper recycling.

DROP-OFF CENTER—centers where material can be brought in for recycling.

DROP-OFF SYSTEMS—a center or place where material can be taken to be recycled. This is similar to the drop off center.

EPA—(U.S.) Environmental Protection Agency, the primary federal agency concerned with natural resources.

FERROUS METAL—metal containing iron. Ferrous metal will stick to a magnet.

GENERAL FUND—local tax revenues, generally obtained through property taxes.

GENERATION—the process or action of creating waste.

INCINERATION—burning of material.

LANDFILL—a system of trash and garbage disposal in which the waste is buried between layers of earth.

MARKETING—the process of selling recycled material to buyers.

NON-FERROUS METAL—metal without iron, this would include aluminum.

PALLETIZE—to place on a portable platform for handling, storing or moving materials and packages.

PROHIBITED MATERIALS—materials that absolutely cannot be contained in a load of recycled material. As an example, ceramics are a prohibited material for glass collection. A load could be rejected if any of the prohibited materials is in the load.

ROUTING—the process of establishing transportation routes.

SCAVENGERS—persons who take material from the recycling program.

SEPARATION—the process of sorting material by its physical properties including color, luster, size, shape, brittleness, texture, structure or surface characteristics.

RECYCLING PUBLIC EDUCATION

from the publication titled
Massachusetts Regional Recycling Program: Public Education
1988

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
1 Winter Street, 4th floor
Boston, MA 02108

RECYCLING PUBLIC EDUCATION

INTRODUCTION:

Effective public education is essential to the success of any recycling program. The experience of every successful program has demonstrated that an effective public education campaign can have a dramatic effect on participation rates. The more people know about recycling and its benefits, the more likely they are to recycle. The more people who recycle, the greater community's solid waste savings.

Public education for recycling doesn't have to be excessively costly. It does, however, require a definite commitment of both funding and staff time to run a successful public education program. That's a small cost when one considers the benefits of recycling: averted disposal costs, a cleaner environment, and longer landfill life.

As a part of the Massachusetts Regional Recycling Program, participating communities will conduct local public education campaigns. Those campaigns will be funded initially by each community's share of the \$100,000 allocated to each Regional Program for public education. Part of the Commonwealth's assistance will be the services of recycling consultants who have designed and implemented successful public education programs. Eventually, responsibility for on-going public education will rest with each participating community.

PART ONE: THE MESSAGE

A public education campaign should convey a few basic messages:

1. How to participate. Participants must be given essential facts on how to recycle: how to separate recyclables from the rest of their waste, how to use their set-out containers, and when their recyclables are collected are three of the key facts.

2. Why to participate. Participants should be told why they are being asked to take a few minutes a week to recycle. Typical reasons include: longer landfill life, solid waste savings for the town, and conservation of resources are some of the many reasons which may motivate people to participate.

3. The program's success. It's very important to let people know what their efforts--which may seem small or even insignificant to the individual--have indeed made a difference. They should know what their collective contributions have resulted in for their community: natural resources conserved or tax dollars saved, for example. This kind of feedback is an important motivator to keep people in the recycling habit.

PART TWO: GETTING THE WORD OUT

MEDIA:

Media coverage--newspaper articles and mentions on television and radio news shows--can be extremely helpful in letting participants know about the recycling program. Best of all, it's free!

Reporters and editors are likely to be interested in recycling at predictable times: when the recycling ordinance is passed, when the program starts, or at yearly "anniversaries." At these times, it pays to have information, and a spokesperson, readily available.

There are other ways to use the media. Radio and television stations usually run public service announcements, or PSA's. These are a relatively cheap form of publicity: they cost nothing to run, and are inexpensive to produce. Many media outlets, and especially newspapers, run community calendars which can run recycling information. As well, advertising can be purchased. While this is a more expensive route, carefully designed and placed advertising, especially at times of peak interest, can be cost-effective. Local businesses can often be persuaded to underwrite advertising costs, with appropriate credit. Local cable television stations can also be helpful: most have a local-access provision in their contract with the municipality, and can be persuaded to allow recyclers to get their message across.

COMMUNITY GROUPS

The cooperation of community groups can be extremely helpful in a successful recycling program. They can be useful in a number of ways:

--The leaders of community groups are frequently "opinion leaders", and their support can be important in convincing others to recycle.

--The groups themselves can be a source of volunteers for labor-intensive tasks, such as delivering collection schedules.

--Most groups have a regular newsletter which can carry recycling news.

The support of community groups is usually obtained by making a presentation to a meeting, and then maintaining regular ties. Many groups, such as the League of Women Voters, have been active in recycling in the past, and are willing to get involved again.

FLYERS AND BROCHURES

At some point, it is helpful to communicate directly with residents in their homes. Usually this is done just prior to program start-up, and then annually afterwards to deliver the year's collection schedule. A letter to residents (on recycled paper!) promoting the recycling program, signed by municipal officials, representatives of community groups and other civic leaders, can also be very effective. Other items which can be distributed include stickers to identify the recyclable set-out containers.

CURRICULUM

Integrating recycling into school curricula is also an effective public education tool. Many states and school districts have developed good recycling curricula, which can easily be tailored to a school's existing curriculum. Elementary school students, in particular, can be avid recyclers. Recycling in the schools has three benefits: first, since children are often the ones who actually take out the trash, they're likely to be hands-on recyclers; second, over the long term, it encourages recycling behaviour; third, it carries the message home yet another time--and kids get a kick out of telling their parents what to do.

COMMERCIAL SUPPORT

Many programs have been successful in gaining the cooperation of local merchants. That cooperation can range from putting a poster in a store window to including a recycling message in their advertising or contributing to the cost of printing up flyers.

RECYCLING HOT LINE

Residents and businesses which recycle usually have many questions about the program, especially just after it starts. Giving people a number to call for information can help.

NEWSLETTER

Keeping people informed is important. After the cooperation and support of the City Council and community leaders has been secured, they can be kept informed about the progress of the program through a newsletter. If you keep people informed, it's easier to keep their support.

SURVEYS

Surveys can be helpful. Many useful surveys have been run using volunteers and phones. There are two times when surveys can be useful: before the program begins, a survey can determine people's attitudes towards recycling, and suggest ways to motivate their participation; after the program has been running

for some time, a survey can determine what problems residents are having, and, if they're not recycling, find out why.

PUBLIC PARTICIPATION EVENTS

Events and contests can help increase interest in the program. Before start-up, a logo, slogan, and poster contest can be run. The program kick-off itself can be an event. Workshops on subjects such as composting, household hazardous waste, and waste oil recycling can be held. Public participation events usually attract media attention, increasing their impact to more people than just those in attendance.

SET-OUT CONTAINERS

Perhaps the most effective public education tool is the set-out container which is distributed to each household. It's large and can be colorful. Recycling instructions can be printed on the side. It announces a household's participation, and encourages neighbors to recycle.

SAMPLE MATERIALS

Several examples of successful public education materials are attached. The Montclair, New Jersey and Groton, Connecticut flyers were distributed to each household. The Montclair flyer contained a collection schedule. The press clippings from Woodbury, New Jersey are examples of the type of press coverage which can be expected. The "Join the Team" campaign from Wellesley, Massachusetts is an example of the using community leaders in public education. A large range of other public education materials are on file at the Bureau of Solid Waste Disposal.

COOPERATIVE MARKETING OF SECONDARY MATERIALS

Identifying Markets for Recyclables

from the publication titled
Recycling in New Hampshire; and Implementation Guide
1988

NEW HAMPSHIRE RESOURCE RECOVERY ASSOCIATION
P.O. Box 721
Concord, NH 03302

Identifying Markets for Recyclables

4.1 Market Identification

Reliable markets for secondary (recycled) materials are essential to the operation of a successful recycling system. Fluctuating market conditions and the lack of a basic recycling framework throughout New England have spelled failure for many recycling programs.

Marketing recyclables can be a successful venture, providing the right questions are asked of potential markets *prior to* implementing a recycling program. Asking the right questions will eliminate any unwanted surprises once a recycling program has been started. The following questions should be asked when calling or writing to any potential market for recyclables. Once answers are obtained, the criteria should be reviewed and used to make a decision on which market will be receiving recyclables.

- 1) MATERIALS - What recyclables are purchased/accepted by your company?
- 2) PROCESSING - How does your company require recyclables to be prepared for purchase by your company? How should they be processed and stored? Does your company provide storage containers?
- 3) QUANTITY - What is the minimum quantity of recyclables which constitutes a shipment?
- 4) TRANSPORT - Who pays transportation costs? Does your company provide a vehicle to transport recyclables, or must they be delivered?
- 5) PRICE - What do you pay for recyclables? Do prices vary depending on quantity of materials or transportation?
- 6) CONTRACT - What type of contract does your company offer to guarantee our program a long-term market for our recyclables?

4.2 Introduction to NHRRA's Cooperative Marketing Programs

To take away the uncertainty of recycling markets, the New Hampshire Resource Recovery Association, at the direction of its membership, has developed a Cooperative Marketing Program.

Given the rural nature of many New Hampshire municipalities,

individual recycling programs typically cannot generate a large amount of recycled materials, thus making marketing those materials a difficult and uncertain task. Through the Cooperative Marketing Program, NHRRA acts as a broker for individual programs and sells recycled materials to specific material buyers. By acting as a broker representing a number of NHRRA members' programs, NHRRA can guarantee large amounts of quality materials to buyers. Simply put, there's strength in numbers.

The Cooperative Marketing Programs work something like this. NHRRA works with recycling industry representatives to identify material markets. After reviewing market options, NHRRA staff, in conjunction with the Marketing Committee, recommend specific buyers to the Board of Directors. The Board of Directors then enters into a signed contractual agreement with the buyer. Once this process is completed, the marketing of materials begins. Municipalities collect specified recyclables at their local facilities. NHRRA coordinates pick-up routes from communities whose recyclables meet market specifications, and handles all marketing, transportation, billing and payments. This coordination of pick-up routes increases the program's economic efficiency by ensuring that full loads of materials are being sent to market. In some cases, one municipality may be able to produce a full load of material alone. Other times, it takes materials from number of municipalities to produce a full load.

By guaranteeing material buyers both quality and quantity recyclables, NHRRA's Cooperative Marketing Programs can earn better revenues for the sale of municipal recyclables, and more importantly, can guarantee a stable market and reliable pickup service for the sale of recyclables.

4.2.1 *Glass*

The Cooperative Glass Marketing Program provides a steady market for the major glass categories — clear, green and brown jars and bottles. The primary market for NHRRA's Cooperative Glass Marketing Program is CRINC (Container Recovery, Inc.) of North Billerica, Massachusetts. Municipalities choosing to market their glass through this program simply contact NHRRA. General guidelines for marketing glass bottles and jars through this program:

- Separate glass according to color — clear, green and brown
- Rings, caps and labels are acceptable
- Glass should be crushed for volume reduction
- Storage in divided concrete bins is the preferred method

- Recycling center must have the capability of loading the buyer's 12 ft. high truck
- Glass contaminated with mixed colors or unacceptable items such as mirrors, ceramics, drinking glass, light bulbs or window glass *cannot be marketed*.

Currently (as of November, 1988), revenue for full 20-ton loads of recycled glass are: clear - \$25/ton, brown - \$20/ton and green - \$10/ton. Revenue for loads of glass produced by two or more programs drops \$3/ton for each color. These prices include pickup and hauling, less a fee for marketing services.

Other market options available are listed in Appendix C. These markets require individual recycling programs to make arrangements for transportation and payment.

4.2.2 *Baled Paper*

NHRRRA's Cooperative Baled Paper Marketing Program provides a reliable market for baled paper in four major categories — newspaper, old corrugated cardboard (OCC), mixed paper, and high grade office paper.

A signed contract for the marketing of baled paper has been in place between NHRRRA and North Shore Recycled Fibers, Inc., Salem, Massachusetts since December 1984. All marketing details for paper to be marketed through this program are handled by NHRRRA staff. Through this contract, baled paper is transported to one of North Shore Recycled Fibers' Massachusetts paper mills, or in the case of northern New Hampshire locations, are shipped to Canadian mills at North Shore Recycled Fibers' discretion. Marketing Program guidelines include:

- Bales must be stored in a dry place
- Bales must be standard industry size (600 lb. minimum weight per bale)
- Recycling center must be able to quickly load a 40-45 foot box trailer
- All bales must have less than 2% non-paper content (such as plastic, staples, etc.)
- Baled newspaper can have up to 10% slick magazine content
- Mixed paper from municipalities includes junk mail, food boxes, office paper, and any other clean paper.
- Transportation costs are covered by buyer

Revenues for baled paper fluctuate depending on paper demand. The price structure set up in the NHRRA/North Shore Recycled Fibers contract is based on the "Yellow Sheet" (the weekly industry price-setting guide). However, the contract also sets a floor price to be paid for paper, which protects municipalities when prices drop lower. These floor prices are: newspaper (including up to 10% magazines) - \$15/ton, OCC - \$20/ton, mixed paper - \$5/ton, and office paper - \$25/ton (depending on type, may be higher). Typically, revenues are higher than these floor prices, and include transportation of paper to market. NHRRA receives a fee for marketing services.

Other companies will purchase baled paper sent to their mills, but transportation and arrangements are up to the individual recycling program. These markets are listed in Appendix C.

4.2.3 *Loose Paper*

Municipalities and businesses wishing to market loose (unbaled) recycled paper can do so through NHRRA's Cooperative Loose Paper Marketing Program. This program provides a market for newspaper, OCC, mixed paper and high-grade office paper. NHRRA's buyer of loose paper is Manchester Recycling Corp., Inc., of Manchester, New Hampshire. Guidelines for the Cooperative Loose Paper Marketing Program are:

- Paper must be stored in a dry container, such as a closed top roll-off container or live bed trailer
- Paper must have less than 2% non-paper content (such as plastic, staples, etc.)
- Newspaper can have up to 10% slick magazine content
- The municipality or business is responsible for arranging to haul paper to Manchester
- Paper must be able to be quickly unloaded from storage container

Revenue paid to municipalities/businesses marketing loose paper through this program will be higher than the current street price paid to the general public. NHRRA receives a fee for marketing services.

Other buyers of loose paper are listed in Appendix C.

4.2.4 Scrap Metal

Given recent market instability for scrap metal, this material can be one of the most difficult recyclables to market. NHRRA's Cooperative Scrap Metal Marketing Program provides a guaranteed market for the three major categories of municipal and commercial scrap metal:

- 1) #1 light iron - sheet metal, metal furniture, toys, tools, and appliances
- 2) #2 light iron - empty metal drums and cans, wire and cable, and auto exhaust systems, including empty mufflers, gas tanks and oil filters
- 3) high-grade metals - aluminum scrap, cast iron, heavy unshreddable metals, copper and brass

Appendix D contains a more detailed list of market specifications.

Through the Cooperative Scrap Metal Marketing Program, NHRRA has a contractual agreement with Jewell Logging, Inc., of Lebanon, New Hampshire, to process (bale) metal with its mobile baler and haul it to market. #1 light iron is processed into #1 logs, which are hauled to local shredders. #2 light iron is made into #2 bundles, which are shipped overseas. High-grade metals are hauled by special arrangement to market and sold separately. Terms for processing (baling and marketing) scrap metal piles are as follows:

- NHRRA staff schedule processing as soon as possible
- Municipality pays \$3/mile to bring baler to site from previous site
- Municipality pays \$75/hour for scrap metal processing
- Municipality pays \$50 each time the truck is loaded to remove baled metal
- Municipality pays \$3/loaded mile to haul metals to market
- Municipality pays NHRRA a fee for marketing services
- Revenue from the sale of metals is deducted from service fees. The sale value of materials varies, but experience dictates an average range of \$20 to \$35/ton of metal

Processing fees for scrap metal piles which have been managed, that is, separated into categories and free of unacceptable contaminants are lower than charges for unmanaged piles. In some cases, a net profit has been realized after all charges have been deducted from revenues.

See Appendix C for other markets for #1 light iron or special high-grade metals.

4.2.5 HDPE Plastic

Plastic represents the fastest growing component of today's waste stream. One type of plastic which is easily recycled is high-density polyethylene, or HDPE. HDPE plastic includes containers like milk and water jugs, orange juice bottles, automobile product bottles (oil, antifreeze), dish and laundry soap containers and shampoo bottles. (See Appendix E for a photo of recyclable HDPE plastics.)

NHRRRA's Cooperative HDPE Plastic Marketing Program provides a market for granulated and baled HDPE plastics. (Granulated plastic are flakes produced when whole containers are processed in a machine, a granulator, which cuts the plastic into $\frac{3}{16}$ " bits.) NHRRRA's buyer for these materials is Midwest Plastics, Stoughton, Wisconsin. Recycling programs wishing to market HDPE plastic through NHRRRA's program should contact NHRRRA staff for program specifics. Marketing guidelines include:

- HDPE plastics can be mixed by color
- Plastic or metal caps must be removed
- If granulating, granules (flakes) must be $\frac{3}{16}$ "
- Granulated plastic should be stored in gaylord (industrial sized) boxes
- Municipality must be able to load bales or gaylord boxes onto box trailer for transportation to market

The current market price (as of November 1988) is \$.25/lb for granulated HDPE plastic, \$.18/lb for baled HDPE plastic less a fee for NHRRRA marketing services. These revenues include transportation. Additionally, through the Cooperative Marketing Program, Midwest Plastics will reimburse any recycling program that purchases a plastic granulator \$.01/lb. (up to \$3,000) for each pound of granulated HDPE plastic sold to Midwest Plastics.

See Appendix C for other markets for HDPE plastics.

4.3 Marketing Guidelines for Other Recyclables

The eleven materials listed on the following pages are recyclable in some capacity. Market information is provided for planning purposes, and constitutes no endorsement by the New Hampshire Resource Recovery Association or any affiliate organization.

4.3.1 *Aluminum*

Aluminum used beverage containers (UBC's) are a commonly recycled material in New Hampshire. Lightweight and easy to handle, aluminum generates a high revenue per pound. Prices and specifications depend on the market used. Prices are adjusted according to the amount of contamination, how containers are processed, whether UBC's are delivered or picked up, and size of load. The typical range of prices, given market trends, is between \$.25 to \$.70 per pound. Primary markets for New Hampshire are listed in Appendix C.

Aluminum foil and pie plates are also valuable recyclables, but are usually marketed differently than UBC's. It is best to check with UBC buyers about these materials. Also, some scrap dealers are willing to buy aluminum foil and plates if large quantities are generated.

4.3.2 *PET Plastic*

Polyethylene Terephthalate (PET) soda bottles are easily identified, and constitute a steadily growing portion of the waste stream. PET plastic can be marketed to a variety of buyers, which will determine revenues and specifications. Markets will accept PET granulated or baled, color separated or mixed, with or without base cups, and with or without metal caps. Primary markets are listed in Appendix C.

4.3.3 *Tin Cans*

Tin food cans are actually made of steel which is then coated with a thin tin coating to prevent rusting of the steel and the subsequent spoilage of food. Tin can market specifications vary by buyer, but most buyers agree on these: no aluminum contamination from bi-metal cans, no paper labels, remove can ends to flatten cans, and remove food residues. Appendix C includes the primary buyers of post-consumer tin cans.

4.3.4 *Used Oil*

Markets for used oil are available. However, whereas used oil was once a valuable commodity, the drop in international crude oil prices has changed oil recycling economics. Used oil haulers charge a per gallon fee for pickup of used oil. See Appendix C for a list of used oil haulers and their hauling specifications.

Another market option for used oil is to purchase a used oil heater to be operated in a local garage or service station. Check with the Air Resources Division of the New Hampshire Department of Environmental Services in Concord prior to purchasing any heater to make sure the heater unit meets current air emission standards.

4.3.5 *Textiles*

Currently the biggest demand for textiles is the wiping cloth market, which categorizes textiles into various wiping cloth grades. Clean, dry absorbent cloth can be recycled at the market listed in Appendix C.

Dry, wearable clothing can also be donated to rummage sales, the local Goodwill, Salvation Army or other service organizations.

4.3.6 *Batteries*

Used wet-cell batteries from any vehicle are recyclable, providing New Hampshire Dept. of Environmental Services regulations are met (see Chapter 5). Companies purchasing or accepting used wet-cell batteries are listed in Appendix C.

Dry-cell (household) batteries, like their vehicular counterpart, contain heavy metals and chemicals that can harm the environment as leachate from landfills or through incinerator emissions. A variety of recycling programs are designing ways to remove these batteries from the waste stream. The only such program currently in existence in the Granite State is run by the New Hampshire/Vermont Solid Waste Project located in Claremont.

Currently, only silver oxide and mercury oxide button cell batteries from cameras, watches and hearing aids are easily recyclable. Other household batteries collected are safely disposed through household hazardous waste programs. The primary market for silver and mercury oxide button cell batteries is listed in Appendix C.

4.3.7 *Organics*

Organic food and yard waste comprises up to 30% of a municipal waste stream. Composting is the controlled biological decomposition of organic materials which include, but are not limited to, leaves, yard waste, vegetable matter, paper waste, manure, and sewage sludge. The end-product of the composting process is compost, a dark, crumbly, earthy material possessing valuable soil-building properties. A successful composting program will require land, equipment, labor, plan approval, residents' cooperation and a steady end-use.

Primary markets for compost include home gardeners, public works departments, greenhouses, nurseries, landscapers and farmers.

4.3.8 *Stumps/Limbs*

Given the rate of land development in New Hampshire, tree stumps and smaller tree limbs are a problem at many disposal facilities. Instead of paying costly disposal fees, using valuable landfill space or siting lined stump landfills, tree stumps can be easily recycled.

Equipment that can grind tree stumps and limbs into small wood chips is available on a mobile and stationary basis. Mobile stump grinders will travel to a site where a large number of stumps are stored, such as a large land tract that's being clearcut, or a municipal stump transfer station. Stationary stump grinders operate in a single location, and require that stumps be brought to their site.

Wood chips can be marketed locally to home gardeners, public works departments, nurseries, landscapers and contractors to be used for landscaping material, fuel, and a compost or sludge additive. Local companies which have mobile chipping equipment, or accept stumps at their facility, are listed in Appendix C.

Homeowners with stumps originating from their own property should be urged to look in the local phone book yellow pages under "Tree Services" to locate private contractors that will grind stumps.

4.3.9 *Tires*

At present, there are few economically feasible tire recycling options for waste tires generated in New Hampshire. Listed in Appendix C are known permitted tire disposal/processing options presently available for tires.

4.3.10 *Demolition and Construction Debris*

Demolition and construction debris includes materials such as construction rubble, used road beds, fire-damaged buildings, and a variety of other wood and concrete materials. While these materials constitute a large percent of the municipal waste stream by weight, ways to recycle them are just beginning in New Hampshire.

Equipment is available that can process old pavement into new aggregate to be recycled into new roadbeds. Furthermore, clean wood demolition products can be ground into wood chips and used as a fuel supplement, a mulch or sludge additive for composting.

Local companies with such demolition debris processing equipment are listed in Appendix C.

4.3.11 *Household Hazardous Wastes*

Although household hazardous wastes are for the most part unrecyclable, removing them from the waste stream decreases the possibility of environmental contamination from landfill leachate or incinerator emissions.

The New Hampshire Department of Environmental Services, Waste Management Division, currently provides modest financial assistance to municipalities, solid waste districts and regional planning agencies to set up household hazardous collection programs around the state. On collection days, residents are allowed to bring certain hazardous materials to the collection facility. From there, the wastes are properly shipped to facilities equipped to properly dispose of them. For more information on setting up such a program, contact the Department of Environmental Services' Household Hazardous Waste Program at (603) 271-2902.

For a list of household hazardous wastes and safe substitutes which can be used instead of household hazardous wastes, see Appendix F.

INTEGRATED SOLID WASTE MANAGEMENT

from the publication titled
Decision-Makers Guide to Solid Waste Management
November, 1989

U.S. ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W., OS-301
Washington, D.C. 20460

INTEGRATED SOLID WASTE MANAGEMENT

Integrated solid waste management involves using a *combination* of techniques and programs to manage the municipal waste stream. It is based on the fact that the waste stream is made up of distinct components that can be managed and disposed of separately. An integrated system is designed to address a specific set of local solid waste management problems, and its operation is based on local resources, economics, and environmental impacts.

The idea behind integrated solid waste management is that a combination of approaches can be used to handle targeted portions of the waste stream. Instead of immediately driving the development of big, high-technology programs, or setting unrealistic expectations as to what portion of the waste stream can be recycled, decision makers implement a series of programs, each of which is designed to *complement* the others. Source reduction, recycling, combustion, and landfilling can all have a positive impact on the local municipal waste management problem.

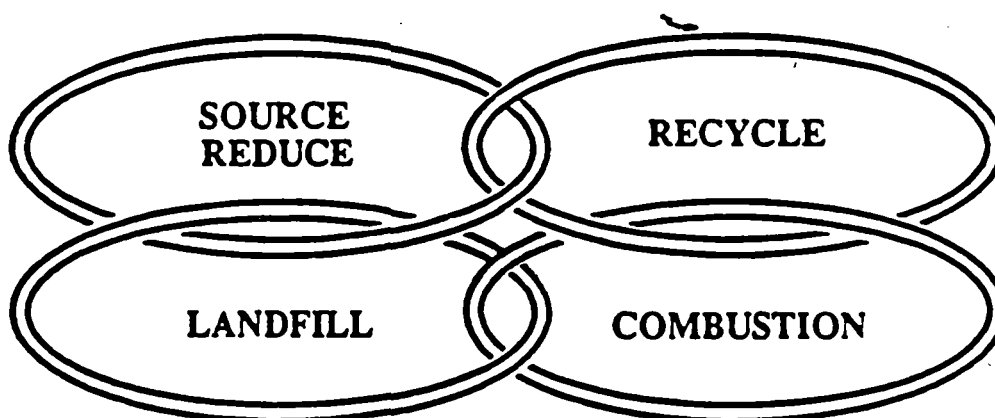
This *Decision Makers Guide to Solid Waste Management* is designed to assist in the understanding and development of an integrated solid waste management plan. It shows that a well-designed plan can improve

system economics and reduce environmental impacts while fostering public support and involvement in municipal solid waste management.

There is no universal, step-by-step method for selecting and developing integrated waste management components and systems. The success of integrated solid waste management depends largely on the dedication and expertise of local decision makers. The purpose of this *Guide* is not to provide a blueprint of what to do. Instead, the purpose is to provide a list of factors that should be considered in framing municipal solid waste decisions. In addition, the *Guide* also presents information and data helpful in making these difficult decisions.

HIERARCHY OF INTEGRATED WASTE MANAGEMENT

Consistent with the principles described in EPA's *Agenda for Action*, to reduce our waste management problem at the national level most effectively, states, municipalities, and the waste management industry should use the hierarchy described in Figure 1.1 for evaluating the components of integrated waste management against the community's needs. Although each community will choose a mix of alternatives that most effectively meets its needs, the hierarchy is a useful conceptual tool for goal-setting and planning.



The elements of the hierarchy are all interrelated and can be designed to complement each other. For example, a recycling program can have a positive impact on the development of a waste-to-energy facility. One purpose of this *Guide* is to show how municipal waste management alternatives can positively affect each other.

FIGURE 1.1 Hierarchy of Integrated Waste Management

Source reduction is at the top of the hierarchy and is discussed in more detail in Chapter Five. Source reduction programs are designed to reduce both the toxic constituents in products and quantities of waste generated. Source reduction is a front-end waste management approach that may occur through the design and manufacture of products and packaging with minimum volume and toxic content and with longer useful life. It may also be practiced at the corporate or household level through selective buying habits and the reuse of products and materials.

Recycling, including composting, is the second step of the hierarchy. These options can reduce the depletion of landfill space, save energy and natural resources, provide useful products, and prove economically beneficial. These options are discussed in more detail in Chapters Six and Seven.

Below source reduction and recycling are waste combustion and landfilling. EPA does not rank one of these options higher than the other, as both are viable components of an integrated system. Waste combustion, discussed in Chapter Eight, reduces the bulk of municipal waste and can provide the added benefit of energy production. State-of-the-art technologies developed in recent years have greatly reduced the adverse environmental impacts associated with incineration in the past and, although waste combustion is not risk-free, many communities are relying on this waste management alternative.

Landfilling, discussed in Chapter Nine, is necessary to manage non-recyclable and noncombustible wastes, and is the only actual waste "disposal" method. Modern landfills are more secure and have more elaborate pollution control and monitoring devices than in the past. Environmental concerns at properly managed landfills are greatly reduced. Also, many new landfills are utilizing methane recovery technologies to develop a marketable product.

No Miracle Solutions

Decision makers must be realistic in what they expect their waste management system to accomplish. All municipal waste management planning will require the dedication of decision makers; no miracle solutions exist. For example, many people are quick to point out that waste-to-energy is not a complete response to a solid waste problem, citing the need for recycling, source reduction, etc. But just as combustion is not a complete answer, neither is recycling alone going to solve the problem. Even the most successful programs have to dispose of a significant portion of the waste stream. Decision makers must be realistic in their planning. Answers won't come easily.

STRATEGIC PLANNING

Strategic planning is a concept that is reiterated throughout this *Guide*. It refers to the concept that decision makers must plan for the long-term, and that the planning process should involve anticipating the changes that are likely to occur in the future. It is crucial to build *flexibility* into all elements of the waste management system. Strategic planning demands a dedicated staff and leadership at the local level that must assume the *responsibility* of managing the community's municipal waste.

The accompanying flowchart (Figure 1.2) provides some structure to the planning process by highlighting key stages. *These steps should be followed only as an outline!* Municipal waste management is an ongoing process that has *no set beginning or conclusion*. Review of new alternatives and evaluation of operations should be performed continually. Although a flowchart is provided here, it should be noted that all stages of the process are interrelated. Decision makers should not put part of the process on hold while developing a particular option or working on a particular activity. Planning, development, monitoring, and evaluation of options take place simultaneously.

**OPERATING A RECYCLING PROGRAM:
LOCAL GOVERNMENT AND THE PRIVATE SECTOR**

Local Government Recycling Program Design:
Integration of Existing Recyclers

by Deanna Ruffer and Susan Schaefer, Roy F. Weston, Inc.
June, 1990

FIRST UNITED STATES CONFERENCE ON MUNICIPAL SOLID WASTE
MANAGEMENT
by U.S. Environmental Protection Agency and
the Governmental Refuse Collection and Disposal Association

LOCAL GOVERNMENT RECYCLING PROGRAM DESIGN INTEGRATION OF EXISTING RECYCLERS

INTRODUCTION

Markets are essential to local government recycling programs. When assessing the feasibility of recycling and designing recycling programs, local governments typically (and rightly) place priority on determining what markets exist. In many instances this results in the identification of local recyclers who have been in business for many years. It is also fairly common for local governments to look to these local recyclers for help in the marketing of recyclables collected from municipally sponsored programs. Yet, too often, the capability of local recyclers to process as well as market materials has been overlooked. As a result, recycling programs are designed and facilities are built which may duplicate the capabilities of the local recyclers. In some instances, unneeded materials recovery facilities are constructed, costing local governments both time and money, and ultimately competing with private recyclers.

While it may be that existing recycling firms are not providing the materials collection services needed for many local government recycling programs, the use of existing recyclers to process materials collected through other means versus government sponsored development of a materials recovery facility may be crucial to the long term success and fast track development of recycling programs. Local recyclers can, if considered, be valuable partners with local governments and provide an important component of successful municipal recycling and composting programs while at the same time saving the local government capital costs and implementation time.

THE PRIVATE SECTOR - THE BACKBONE OF RECYCLING EFFORTS

Collection, sorting and processing materials, which would otherwise be disposed of as waste, for reuse as raw materials has been happening for decades. Thousands of companies throughout the country and world have been the backbone of these recycling activities. These businesses, some of which have been passed down through several generations of family members, possess valuable expertise in separating, processing, marketing and reusing metals, paper, glass and other materials.

Before addressing the services these companies may be able to offer to a local government recycling program, it is necessary to define who "local recycling firms" are. This can be done by characterizing the type of service these companies provide. These include:

- Brokers - are essentially commodity movers who have limited involvement in the collection, sorting, processing or end use of recovered materials.

44-40

- Processors - are firms that buy, process, and sell materials for reuse. These firms must have an understanding of what materials are recoverable and at what cost, what market conditions are, what the values of different materials are, and what must be done to prepare the recovered materials for market.
- Dealers - typically have the ability and flexibility to provide whatever service is needed to satisfy market needs and conditions. Their services may include collection, sorting, processing, and marketing of materials. In some instances they may also be the actual end-user of the recovered materials. Many dealers are "full service" recyclers.
- End users - of recovered materials may accept materials directly from the source and typically have established relationships with brokers, processors, and/or dealers. Their objective is the receipt of a useable raw material meeting specifications to allow new products to be manufactured.

This paper focuses on the capabilities of the local recycler who is a processor and on those dealers that have processing capabilities and the role these firms can have in government sponsored recycling programs. Specifically, an argument is made for utilizing the processing capabilities of local recycling firms, where possible, versus the development of government sponsored materials recovery facilities. To avoid any confusion, for the purpose of this discussion a materials recovery facility is defined as a facility which processes for marketing either commingled or source separated recyclables.

LOCAL GOVERNMENTS - THE NEW KID ON THE BLOCK

In comparison to the private sector recyclers, local governments are the new kids on the recycling block. While some local governments may have experience in collecting, processing, and marketing materials for recycling, many are just entering the field and have had little experience that gives them the needed skills and capabilities that can be critical to the success of a recycling program. In fact, bureaucracy and institutional constraints of local government leave it poorly equipped to deal with the fluidity of recyclable markets. Quick response is needed.

It is also important to keep in mind the primary reason local governments are in recycling. The driving reason local governments implement recycling activities is to solve part of their solid waste disposal problem or crisis. The commonality with the local recycler/processor is that it is the local government's objective to divert material from the waste stream, and it is the local recycler/processor's objective to consolidate material for sale. However, local governments are involved in recycling activities to reduce the need for disposal capacity, where the recycler/processor is involved in recycling because the diverted materials, or the processing services, have a value that provides a profitable business opportunity. While this difference in reasons for recycling may result in misunderstandings between recyclers and government entities, it is not irreconcilable. In fact addressing this

45
45
41

issue during program design may reduce the risk of local governments misunderstanding the costs and benefits of waste reduction through recycling.

MEETING PROCESSING REQUIREMENTS

To our knowledge there has been no formal survey of the percentage of local governments nationally who are utilizing existing recyclers for the marketing of recovered materials. However, informal inquiries indicate that many local governments have recognized and are utilizing the marketing skills of local recyclers. The broad based knowledge of these firms about recovered materials markets and market specifications is of value to local governments. Local recyclers have a hands-on understanding of what materials are marketable and to whom, where markets are located, how to negotiate deals, the value materials have in the marketplace, and the market specifications.

In a number of communities, the local governments are looking to the existing private sector to provide both processing and marketing services. We believe this is a trend that will continue to grow and in fact will put into question the need for many local governments to develop materials recovery facilities except in cases where no local recyclers exist.

A recent survey by BioCycle magazine (June 1990 issue) of materials recovery facilities in the United States concluded that most existing MRFs have been public sector sponsored, yet the actual owner-operators are predominately from the private sector. The question which now needs to be asked, and should be a fundamental issue addressed during the design of any government sponsored recycling program, is whether or not these materials recovery facilities duplicated or will duplicate overlooked processing capacity of local, existing private sector recyclers?

In those communities where there are processing capabilities in the existing recycling community, it makes economic and service provision sense to integrate this capability into the government sponsored program.

STRENGTHS AND WEAKNESSES OF LOCAL RECYCLERS/PROCESSORS

The greatest strength of the local recycler/processors is that they are entrepreneurs. They have made successful businesses out of reusing materials otherwise bound for the waste stream long before government incentives and subsidies existed. The recycler/processor is innovative, flexible, and typically looking ahead for opportunities to improve its business. The recycler/processor has a broad base of knowledge about markets, market specifications, commodity pricing, recovery techniques and costs, processing equipment, operations and costs, and recycling business fluctuations, pitfalls and strengths. End users are more comfortable with the recyclers'/processors' ability (as compared to a new entity's) to provide materials which meet specifications and are delivered in a timely manner.

By virtue of their substantial experience, commercial recyclers/processors have expertise which can be drawn on to provide a service that is potentially more efficient and

50
46
42

cost effective than can be provided by government or newly created recycling entities. And finally, if given the opportunity the existing recycler is usually more than willing to work with local government in the development and enhancement of local recycling activities - it only makes good business sense for them to do this.

The strengths of local recyclers/processors do not come without potential weaknesses - at least from a local government perspective. Often the local recycler/processors have no firm contracts for the sale of materials. Rather, deals are worked through a network of processors, dealers and end use markets. This may seem threatening to local governments who are more accustomed to requiring long term contractual relationships. However, this isn't an unusual situation even for local governments developing MRFS, but these networks can often result in better material revenues and more reliable markets for the materials collected. In addition, as more materials come into the marketplace, the long term relationships these firms have with markets can be beneficial to the negotiation of materials sales contracts.

Another potential weakness from a local government perspective is that the government may have little direct control over how materials are processed. Typically, the processors knowledge in this area will far exceed that of the local government. In addition, the processor may consider some aspects of their operation to be proprietary. As a result, the basis of an arrangement between the processor and local government will more than likely be performance and incentive based rather than based on specific processing requirements.

The existing recycler is above all else an autonomous, independent, entrepreneur. He/she is probably not used to reporting to anyone, let alone to a public sector entity. This could cause concerns about program reporting requirements. Typically these concerns can be addressed through the clear delineation by the local government of what will be required for program reporting and open discussions with the recycler/processor about how this information can be gathered, compiled, and reported.

Concerns about involving private, traditionally independent and proprietary firms as an integral partner in a government program should be discussed openly. And finally, measures to alleviate any nervousness about a public/private partnership should be established and should be clearly delineated in the contractual arrangement between the local government and the recycler/processor.

Regardless of the final decision about using local recycling processing capabilities, a thorough identification of processor capabilities and costs, and a comparative analysis of the capital and operating costs of development of a municipal materials recovery facility should be undertaken early in the process of defining local government recycling programs. This analysis should also include an evaluation of institutional issues such as the desirability of private sector involvement, allocation of risks, and contractual requirements of each approach. Table 1 summarizes the strengths and weaknesses of recyclers/processors.

~~41~~
~~47~~
43

TABLE 1
RECYCLERS/PROCESSORS STRENGTHS AND WEAKNESSES

Strengths	Weaknesses
<ul style="list-style-type: none"> • Entrepreneurs • Often innovative and flexible • Typically forward looking in processing and marketing opportunities and improvements • Broad base of knowledge about: <ul style="list-style-type: none"> - Markets; - Market specifications; - Commodity pricing; - Recovery techniques and costs; - Processing equipment; - Collection equipment; - Operations and costs; - Recycling business fluctuations/trends. • Long standing relationships with end users • Can offer more timely implementation of programs • Usually willing to work with local governments in the development and enhancement of local recycling activities • May have processing equipment in place, with excess capacity. 	<ul style="list-style-type: none"> • Often have no firm contracts for sale of material (however can result in better material revenue and more reliable markets) • Local government may have little direct control over how materials are processed • Often not accustomed to formal reporting requirements • Often not accustomed to working with a public sector entity • Limited experience with public sector procurement

IDENTIFYING PROCESSOR CAPABILITIES

There are several parameters and criteria that can be used to identify processor capabilities. Some of the most important are as follows:

- Financial community, surrounding private community and market perception of the recycler/processor;
- The length of time the recycler/processor has been in business;
- The types and quantities of materials handled and the ability to expand the type and quantity of materials;
- The willingness of the firm to work - as a team - with the local government;

5248 44

- Individual visits to the local recyclers' facilities and visual inspection and evaluation of capability;
- Formalized solicitation of qualifications/capabilities, possible through a Request for Qualification/Capabilities and Request for Proposals (RFP) process; and,
- Utilization of an independent third party to assess capabilities while still maintaining confidentiality of individual firms and their business arrangements.

One important point to keep in mind throughout this process is that just as local governments can be characterized as the new kid on the recycling block, local recyclers typically have limited experience with public service procurements. As a result, the dialogue that is established with the local recyclers must truly be a two way dialogue, with the recyclers helping local governments learn about recycling and the local governments helping the recyclers learn about providing services to the public sector.

CONTRACTING FOR SERVICES

As part of the process of defining the local government recycling program the types of material to be collected, and collection and processing requirements must be determined. To this point our discussion has focused on how processing requirements will be met and what role local recyclers might have in the provision of this service. An equally important consideration is how the recyclables will be collected. In actuality, the provisions for collection services must be defined before the provisions for processing services can be defined.

One of the first decisions that must be made is where materials will be collected: at the point of use; at drop-off points; or at the point of consolidation/processing for marketing. For those programs in which collection will be at the point of use, ie "curbside", there are three basic approaches that can be taken to the collection of recyclables. These are: the local government can collect the materials; collection services can be franchised; or collection of materials can be provided through a contract with a private company. If the local government is collecting the recyclables, the local government usually will provide for the processing of collected recyclables. If collection is franchised or contracted, the local government must decide whether the franchisee or private collection contractor is responsible for processing and marketing of materials or if the local government will take responsibility for the provision of processing and marketing services.

There are reasons for either approach, and local circumstances may dictate which approach is used. At minimum, the local governments must assure themselves of adequate ability to monitor performance of each element of the service provided and recognize the interdependencies between collection and processing and the different skills required for each. Some of the factors which may be taken into consideration in making this decision include:

- administrative requirements;

349
45

- finding solution should problems occur with the overall recycling program, marketing requirements, or processing needs and capabilities;
 - reporting the information necessary to allow the local government to adequately monitor the recycling program; and
 - suggesting refinements to the program or processing arrangement.
- The cost, pricing, and accounting arrangements proposed for providing services.

One of the questions raised by local governments wishing to evaluate the capabilities of existing local recyclers is how to get the information, support and cooperation needed to thoroughly assess capabilities. The inability to get substantive information which can be confirmed has been an impediment to local recyclers' involvement in government sponsored recycling activities. As would be expected, the information requested by the local governments should provide a detailed profile of the local recycler's ability to perform and be competitive and successful as a private sector business in a free and competitive market place. As a result, there is a natural and legitimate reticence on the part of the local recycler to share what is considered to be proprietary information with the public sector. Particularly since, even if the local government elects not to utilize the capabilities of the recycler or if the capabilities do not match needs, the recycler wants to stay in business, doing what they have been doing well for years.

While there is no simple answer to this situation, the best approach is to openly acknowledge the concerns of the local recycler and the needs of the local government. Experience indicates several approaches or combination of approaches can be used to effectively satisfy both parties. A commonality is the importance of involving local recyclers in the early planning of recycling programs. Here again, their experience and knowledge can be very helpful to the local governments in realistically assessing what types of programs best fit local needs and what waste reduction expectations can realistically be achieved.

The local governments should communicate to existing local recyclers their interest in developing recycling programs, their interest in involving the private sector, the need to understand the capabilities of the private sector, and their objectives and concerns. In turn the local recyclers need to indicate their interest in working with local governments to community leaders and program planners, to participate in solid waste and recycling planning and study groups, and to make people aware of their capabilities. This communication must be open and honest at all times. Private recyclers are more likely to participate in program planning if they know that the local government is interested and committed to a partnership than they would be if there is a belief that the government will end up in competition with the recycler.

Communication and information gathering can take a variety of forms including any or all of the following:

- Informal "round table" discussions;
- Formulation of advisory committees including recyclers;

450
46

- local firm capabilities individually or in joint venture relationships;
- desired competitive environment; and
- program monitoring and evaluation objectives.

In general, separating the provision of collection and processing services may increase the administrative costs of the recycling program. However, in a program which utilizes the private sector for collection and processing, the local government will have increased oversight over program results and may realize cost savings if these services are contracted for separately. In addition, competition may be increased due to the larger number of companies that would bid on providing for either collection or processing than would bid on providing both services.

If collection and processing contracts are separated, attention must be given to contract provisions in both contracts and to acknowledging the interrelationships between the two contracts. Recognizing this interrelationship is of particular importance to the processing contract as the ability of the processor to perform can be directly related to how and what materials are delivered to the processor. At minimum, the procurement of a processor and the processor contract must address:

1. The terms of the contract
2. The requirements of the local government, including specification to the processor on:
 - how the material will be collected and delivered to the processor;
 - the quantity and type of materials that the processor will process and market or a guaranteed minimum quantity;
 - the method of payment for services;
 - the treatment of materials revenues; and,
 - the right of the local government to audit the operation and all records related to the program.
3. The requirements of the local processor concerning:
 - providing adequate services needed upon receipt of material at the processing facility may include:
 - truck turnaround time (may specify maximum);
 - weighing of materials;
 - operating schedule; and,

~~48~~
52 47

- processing turnaround time (may specify maximum);
 - provisions for processing the recovered material to the degree necessary to be marketable at the greatest rate of return.
 - reject specifications and residue disposal requirements;
 - accurately weighing all processed material by type;
 - marketing all materials delivered and processed;
 - accurately accounting for all materials sold by type, quantity and price received;
 - provisions for the return or sharing of revenue earned from sale of material;
 - reporting to the municipality the amount of recovered material delivered, processed materials, residue produced, processed materials sold and unsold, price received for materials, and material rejections;
 - the period of service needed; and,
 - contract termination conditions.
4. Future options open to the local processor including:
- other residential programs;
 - addition of materials;
 - commercial programs; and,
 - government programs.

The local government will also want to request references, a confidential listing of markets used and, of course, a cost to process the material. Subsequent contract negotiations will often focus on revenue sharing with the processor, indemnification from any hazardous waste that may inadvertently be delivered to the facility and a guaranteed minimum amount of materials delivered to the facility to protect the processor should quantities not reach that expected. There are really no set standards for these negotiable items. The two parties must simply negotiate until they become comfortable with the terms and conditions of the contract that they both must live with.

After the program has had time to stabilize, it is often beneficial to have an independent party monitor the provision of service by both the collector and hauler. Contract with processor may even include an independent audit clause for which there could be specific remedies if unfavorable. The goal of the collector assessment should be to assess the pick-up and delivery of items to the processor. The assessment of the processor should assess

47
55 ST 48

the ability of the contractor to receive, process, and market the recyclables. The approach taken to the review may include reviewing the proposals and contracts of the collector and processor and developing a list of questions, conducting an onsite inspection of the processing facility, reviewing with the processor the procedures for marketing materials, terms and conditions and current pricing schedule. Reports submitted to the local government from each of the contractors should also be reviewed. This process has been seen as providing comfort to the local government that the program is running as it should, and as a way to provide both the collector and processor with feedback as to their performance and possibly suggestions for improvement.

CONCLUSIONS

Recyclers, brokers, processors and dealers have been the backbone of recycling activities for decades. To avoid overlooking a significant amount of processing capability and expertise, local recyclers/processors should be considered by local governments when designing recycling programs. Processing capabilities or material recovery facilities (MRFs) are an essential part of a recycling program. Development of MRFs by local governments can too easily lead to putting governments into a business that they often do not want to and do not have the expertise to be in; and, in competition with a critical link to essential markets. Looking to local recyclers, where possible, for processing capabilities can avoid: capital investment; design, construction and procurement time; risk of development of a new facility; and, risk associated with processing and marketing resulting from being a relative newcomer to the local recycling community.

Along with the benefits realized from using local recyclers/processors there may be some potential drawbacks. However, these drawbacks can be overcome by thoroughly identifying local processor capabilities and carefully structuring procurement and contract documents through the methods and guidelines outlined in this paper. Being honest about the local government's intentions throughout the process and soliciting the same open discussions from the local processor is important in assessing the capabilities of local processors.

Local governments and local processors can create a partnership that can provide an essential component to successful municipal recycling programs while saving the local government valuable implementation time and large capital costs.

53
49

RECYCLING AND HOUSEHOLD HAZARDOUS WASTE MANAGEMENT

Two Planning Checklists

from the publication titled
Recycling and Household Hazardous Waste Program:
A Planning Checklist
[N.D. Circa, 1990]

INFORM ENVIRONMENTAL RESEARCH AND EDUCATION
381 Park Avenue South
New York, NY 10016

RECYCLING AND HOUSEHOLD HAZARDOUS WASTE PROGRAM

A Planning Checklist

Starting a Recycling Program

In planning and setting up community recycling and household hazardous waste programs a first priority is to create an office of solid waste planning and recycling. This office then needs to undertake, or arrange to have taken, the following specific steps:

1. A waste composition analysis to define the quantity and types of various materials available for recycling

- Metals
- Oversized bulky wastes (eg. appliances, sofas...)
- Glass
- Paper
- Construction debris
- Yard and other compostable wastes
- Specific household hazardous materials

2. An evaluation of the levels of current recycling, if recycling is going on

- Who is collecting and hauling materials
- What quantity of various materials is being collected
- Where are the materials being taken
- Does the community have contracts with specific waste brokers, materials recyclers, for what durations and what costs

3. An evaluation of the potential to expand recycling

- What room is there for expanded recycling by existing recyclers already under contract
- Are there other readily accessible recyclers
- Does your county, region, or state have a comprehensive recycling program
- Are there intermediate processing centers near your community
- Are there other recycling programs within reach in which your community can participate, thus marketing your recyclables more cost-effectively

140
51

4. Establishment of organized procedures for households enabling them to recycle their wastes, indicating

- The types of wastes that should be separated
- How these wastes should be bundled or sorted that would be acceptable to vendors
- The schedules for pick-up (collection) of various materials
- Any central places materials may be taken to for recycling and during what hours

5. Definition of equipment needs

- Trucks
- Household use containers
- Street drop-off containers

6. Planning of public education and awareness programs

- Programs in schools
- City/town/village-wide placement of posters
- Contests/awards
- Local newspapers/radio stations
- Program logos and slogans
- Other

7. Maintenance of compliance records

8. Establishment of mechanisms for receiving and handling public complaints, inquiries, and suggestions

9. Establishment of an independent citizens' program to monitor implementation of the recycling program

10. Definition of funding needs, including liability insurance

11. Exploration of sources of program funding

- Income from sale of recyclables
- Local governmental support
- Funding from the county
- Funding from the state

40 HT 3 2

Starting a Household Hazardous Waste Collection Program

The community solid waste planning and recycling office needs to take the following steps to develop an effective household hazardous waste collection program:

1. Development of a list of household hazardous materials to be separated for collection
2. Establishment of collection procedures and schedules
3. Determination as to whether currently used equipment is sufficient or new or additional equipment is needed
4. Identification of where collected materials will be taken and how they will be disposed of, stored, or recycled
5. Exploration of waste management firms who will collect and/or dispose of collected materials
6. Planning for public education programs and publicity regarding collection days

Definition of funding needs and sources of support:

Local government support
County, region, or state support

4/42/53

EDUCATIONAL FLYERS FOR CITIZENS

Examples

from the Cities of Cambridge, Roxbury, and Somerville
Massachusetts
[N.D. Circa, 1991]



COMMON QUESTIONS

WHAT IF MY RECYCLABLES ARE NOT PICKED UP?

Your recyclables must be at the curb by 7:00 a.m. on your trash day. If your recyclables have not been picked up by 4:00 p.m., call 349-4005 or 349-4860.

WHAT IF I HAVE MORE TO RECYCLE THAN WILL FIT IN THE BLUE BIN?

Make extra space by flattening plastic and metal containers so that they take up less space. Put extra recyclables in a separate container clearly marked "RECYCLE" and place it next to the blue bin.

WHAT IF SOMEONE OTHER THAN LAIDLAW TRUCKS TAKES MY RECYCLABLES OR MY BIN?

Call 349-4005 or 349-4860 immediately and report the license plate number and description of the vehicle and person. City law prohibits the collection of your recyclables from the curbside by anyone other than the city's contractor, Laidlaw Waste Systems.

IF I MOVE, SHOULD I LEAVE THE BIN?

Yes, you *must* leave the bin and this flyer for the next resident. If you do take the bin, you may be charged a fee for replacing it.

WHY AREN'T LARGER APARTMENT BUILDINGS INCLUDED IN CURBSIDE RECYCLING?

Larger apartment buildings will be phased into the recycling program over the next 18 months. In the meantime, apartment dwellers can bring their recyclables to the drop-off center at the Department of Public Works, 147 Hampshire St., Cambridge. Those interested in coordinating recycling in their building should call 349-4005 for more information.

MANDATORY CURBSIDE RECYCLING BEGINS JULY 15, 1991

Mandatory curbside recycling for residences in the City of Cambridge begins on July 15, 1991. Why is mandatory recycling a new law? Because we can all help keep the environment clean. And because Massachusetts landfills will stop accepting:

- yard waste by the end of 1991.
- recyclable aluminum, metals, and glass by the end of 1992.
- all grades of recyclable paper and recyclable plastics by the end of 1994.

By recycling some of your trash, you help reduce the problem of solid waste disposal.

RECYCLING IS IMPORTANT... AND EASY!

Once you learn the basics, recycling becomes second nature. After you receive your blue bin from the city, all you have to do is:

1. Write your address and apartment number in the white strip on the bin.
2. Keep the bin in a place that makes recycling easier, like next to your kitchen wastebasket.
3. Clean your recyclables and put them in the bin. (See the how-to chart on the other side of this sheet.)







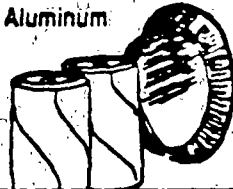

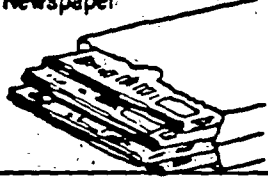

4. On your street's scheduled trash day, put the bin and bundled newspapers outside next to your regular trash.
5. Bring your bin back inside after the recyclables have been collected.

Map jwen tradikson Kroyol papye sila nan CHAMA, 105 Windsor St., Cambridge.

Podrá obter cópias deste folheto em Português na COPA, 1046 Cambridge Street, Cambridge.

Hay cópias de este folleto traducidos al español en el
• Centro Presente, 54 Essex St., Cambridge
• Concilio Hispano, 16 Cherry St., Cambridge



Material	What to Recycle	How to Prepare	Do Not Include
Glass 	<ul style="list-style-type: none"> Bottles and jars only (clear and colored) Deposit and non-deposit 	<ul style="list-style-type: none"> Rinse clean. Remove all corks and metal or plastic lids and rings. Remove styrofoam and metal foil neck wrappings. Labels may be left on. 	<ul style="list-style-type: none"> No broken glass No plate glass or other glass items (lightbulbs, Pyrex, crystal, and so on)
Plastic 	<ul style="list-style-type: none"> Milk, water, & juice jugs Rigid containers (yogurt, etc.) marked on the bottom with a  or  	<ul style="list-style-type: none"> Rinse clean. Remove metal or plastic caps and rings. Containers may be crushed or nested. Labels may be left on. 	<ul style="list-style-type: none"> No unmarked containers No containers with 3, 4, 5, 6, or 7 on the bottom No plastic bags
Aluminum 	<ul style="list-style-type: none"> Deposit and non-deposit aluminum cans Pie plates Clean foil Aluminum trays 	<ul style="list-style-type: none"> Rinse clean. 	<ul style="list-style-type: none"> No bottle and jar lids No other aluminum items
Metal Cans 	Metal "tin" cans only	<ul style="list-style-type: none"> Rinse clean. Remove labels. Cans may be nested or flattened. 	<ul style="list-style-type: none"> No cans with plastic or paper parts (such as frozen juice cans) No paint or aerosol cans No other metal items
Newspaper 	Newspapers (advertising inserts and Sunday supplements ok)	<ul style="list-style-type: none"> Put in paper (not plastic) bags or use twine to tie in bundles. Place next to recycling bin. 	<ul style="list-style-type: none"> No magazines or other glossy papers No soiled newspapers No other paper items
Yard Waste (begins October 7th, 1991) 	Leaves, grass clippings, weeds, hedge trimmings, garden waste, and twigs and branches less than 2 feet long and one half inch in diameter.	<ul style="list-style-type: none"> Place all yard waste in 30 gallon biodegradable paper bags (available in most supermarkets in October 1991) or barrels clearly marked for yard waste recycling. 	<ul style="list-style-type: none"> No tree limbs No food scraps

SAVE TOMORROW BY SORTING TODAY!

Place all recyclables except newspaper inside the blue bin. Put bundled newspaper next to the bin.

Include only the items listed in the chart above. It is important that you prepare them as described in the chart. Materials not accepted for recycling will be left in the blue bin with an orange sticker describing why the material was rejected. (You can throw rejected items into your regular trash.)

If you have more recyclables than will fit in the bin, put the extras into a second container (such as a plastic basket or sturdy box) clearly marked "RECYCLE."

If your bin is less than half full, please wait until it is completely full before putting it at curbside.

Your recyclables must be at curbside before 7:00 a.m. on your street's scheduled trash day each week.

The Laidlaw recycling trucks do not come at the same time of day as the Public Works trucks. One Laidlaw truck will collect glass, plastics, and metals. A second Laidlaw truck will collect newspaper bundles. The Cambridge Public Works trucks will still pick up your regular trash.



**CAMBRIDGE
RECYCLES**

GIVE YOUR TRASH 9 LIVES!

Grand Opening

Starting September 28

Open every Saturday 9:00 a.m. - 3:00 p.m.

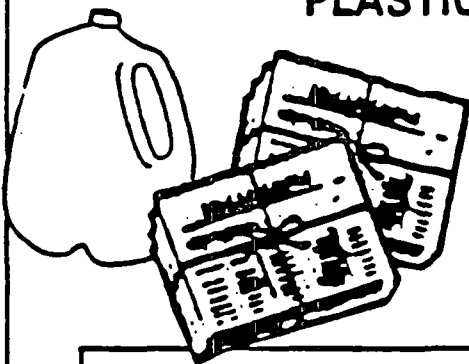
BOSTON BUILDING MATERIALS COOP

100 Terrace St., Roxbury
442-2262

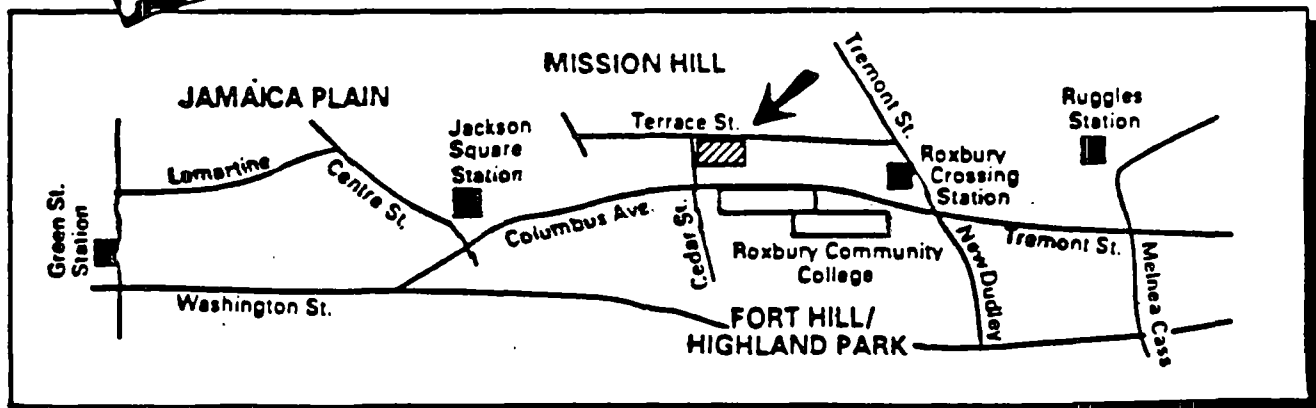
BRING: NEWSPAPER Tied with string or in paper bags

PLASTIC Only clear water, juice
and milk jugs

*Expanding to other
materials soon!*



Volunteers needed:
Call Gilly at 738-1783



Sponsored by: ✓ Mission Hill Recycling Coalition ✓ Mission Hill Community Center
✓ Boston Building Materials Coop ✓ Boston Public Works Department

GRAN ABERTURA

Comenzando Sept. 28

Abierto todos los Sábados 9:00 -a- 3:00

BOSTON BUILDING MATERIALS COOP

100 Terrace St., Roxbury, MA
442-2262

TRAIGA: PERIODICOS Póngalos en bolsa de papel
amarrelos con una cuerda.

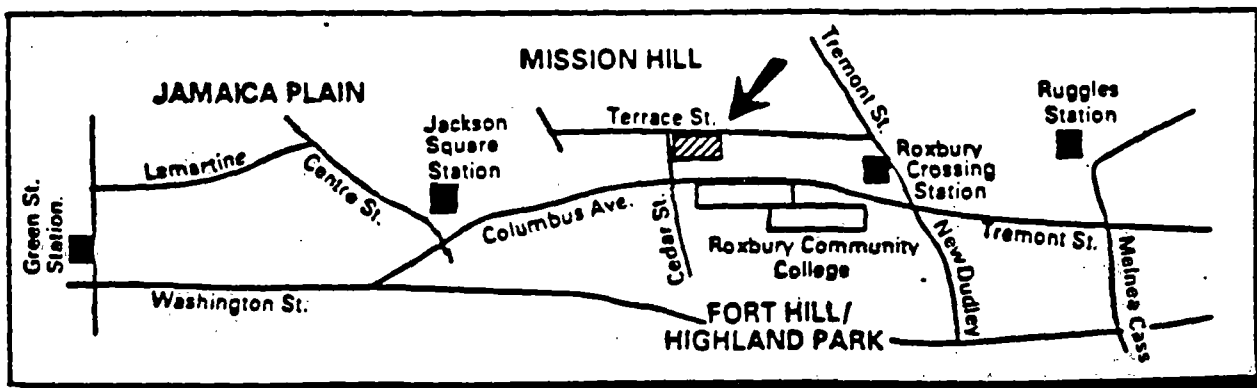


PLASTICOS Solamente claros
jarros de agua, leche jugos.



EXPANDIENDOSE PRONTO A OTROS MATERIALES

Necesitamos voluntarios, por favor llame a Gilly al 738-1783



Promovido por: ✓ Mission Hill Recycling Coalition ✓ Mission Hill Community Centers
 ✓ Cooperativa de Materiales de Construccion de Boston ✓ Boston Public Works Department

AT THE SOMERVILLE RECYCLING CENTER...

We want to recycle as many materials as we possibly can. However, there are a few things that limit our abilities to accept certain materials. The most important of these is the markets for recyclables. We can only accept certain items because they are what we are able to sell. A material is not truly recycled until it is used again in a manufacturing process.

When we ask you to take your telephone books, magazines, cardboard, window panes, etc. back home with you it is because they cannot yet be recycled in Somerville. If you give them to us they will only be thrown away as we have no storage space while seeking markets for them.

Please help us by only bringing materials we are able to recycle. Sorting through and disposing non-recyclable materials costs us time and a lot of effort. Thanks for your help.

Anybody interested in working with the Somerville Recycling Committee, call Roger Geller (7962) or Judy Goldberg (625-6600 x2500).

We Accept:

Please Keep All Below Categories Separate

Newspapers bound with natural twine or in brown paper bags. Please, no plastic bags! Newspaper Magazines (Parade, Boston Globe Magazine, etc.) are okay.

White Writing Papers; which include: xerox paper, notebook paper, envelopes with the plastic window removed, printing paper, etc.

Computer Paper.

Colored Writing/Printing Papers.

Glass; bottles and jars only. Please remove all lids and rings from bottle necks and please sort by color.

Plastic. We can now only accept milk and water jugs (HDPE-"high density polyethylene"), detergent bottles, and empty motor oil and anti-freeze bottles. **Please remove and discard all caps !!**

Returnable beverage containers.

We Do Not Accept:

Telephone books.

Glossy Magazines, such as Time, Sports Illustrated, Cosmopolitan, etc.

Cereal Boxes or other household cardboard.

Drinking Glasses.

Window Glass.

Pyrex, Light Bulbs, Mirrors, or Ceramics.

Plastic bags, Yogurt Containers (any type of plastic other than those listed at left).

Why we no longer accept all plastics:

We used to be able to accept a wide range of plastics, and in future months we may again be able to. The mixed plastics we accepted were melted and molded into plastic lumber. However, the company that accepted our mixed plastics sold their plastic lumber machine. As a result, they no longer accept mixed plastics and neither can we. So, until we re-establish markets for mixed plastics, please do not bring us unacceptable plastic materials.

THANKS FOR YOUR ENTHUSIASTIC RECYCLING !!

THE SOMERVILLE RECYCLING CENTER OPERATES THE 2nd SATURDAY OF EVERY MONTH FROM 9 am - 3 pm. Next dates: July 8 and August 12

Somerville's Environmental Programs

Mayor Michael E. Capuano has developed a unique plan to put municipalities in a position to be active participants on environmental issues. This "Municipal Approach to Environmental Problem Solving" places the environment at the top of Somerville's urban agenda. The resourceful and innovative environmental programs illustrate the success of this philosophy.

Pilot Curbside Recycling Program

Approximately 50% of Somerville residents participate in a weekly, pilot curbside collection program. Four recyclable items are accepted: clear glass; colored glass; metal "tin" cans; and aluminum cans.

Used Motor Oil Recycling/Collection Program

With the assistance of the Massachusetts Water Resources Authority, the City has established a collection center for used motor oil at the Somerville Recycling Center. Hours of operation are Saturdays, noon to 4 pm.

Somerville Environmental Strike Force

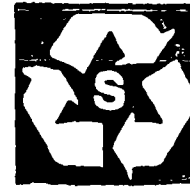
Created by Mayor Michael E. Capuano in March of 1990 to combat the increasing incidence of illegal dumping of solid waste in Somerville. The Strike Force has been expanded to an interdepartmental team that works together to investigate all environmental abuses. A 24-hour hotline has been established for reporting of any violation. Call 623-6878.

Pilot Collection Center for Special Residential Waste

With the assistance of the Massachusetts Water Resources Authority, the City of Somerville will host a pilot collection center for special residential waste in the Fall of 1991. Special residential waste includes chemical household cleaners, oil-based paint, varnishes, spent batteries, automobile products, etc. The pilot collection program will accept waste during six consecutive weekends in the Fall of 1991.

Material Recovery Facility — MRF

A MRF is a comprehensive processing facility that removes recyclables from the solid waste stream (from trash), prepares the recyclables to industry standard, then, finally, markets the recyclables to vendors as building blocks for a new product. A MRF has been proposed for construction in Yard 21 in Somerville.



Somerville Recycles



Somerville Recycling Center
10 Poplar Street
Somerville, MA 02143

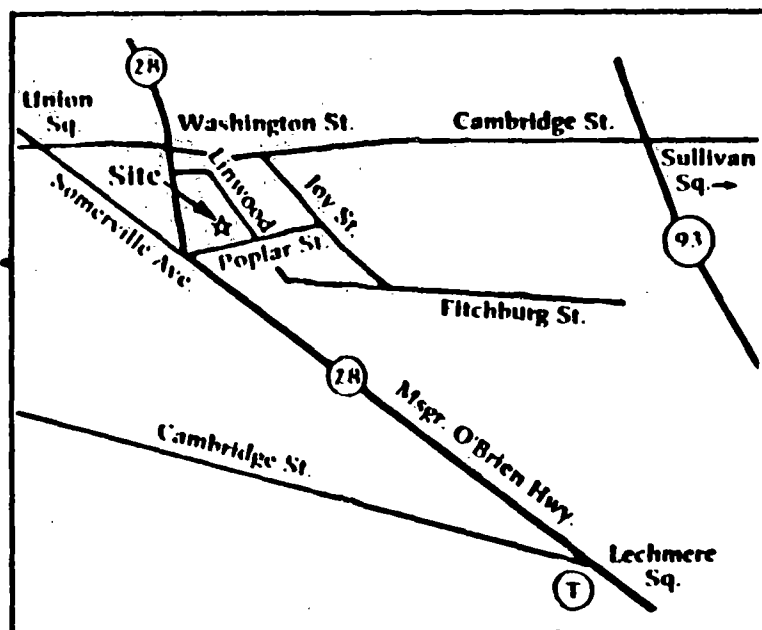
Hours of Operation

Monday - Friday 4 - 7 pm
Saturdays 12 - 4 pm

Closed on City Holidays

Open to Somerville Residents Only

Location of Recycling Center



Michael E. Capuano, Mayor

Directions

Car Route: Washington Street to Joy Street to Poplar Street
(look for green and white city signs)

Bus Routes: 80, 86, 87, 88 and 91

For More Information

Call: The Somerville Environmental Protection Office
at 625-6600

The Recycling Hotline at 625-2171
(24-hour recorded message)

or Write: The Environmental Protection Office
City Hall
93 Highland Avenue
Somerville, MA 02143

Materials Accepted at Recycling Center

NEWSPAPER

- Accepted, newspaper and all inserts in brown paper bags or tied in natural twine
- Accepted, brown paper bags
- NOT accepted magazines, phone books or paperback books

GLASS

- Accepted, clear and colored bottles and jars
- NOT accepted, drinking glasses, window panes, pyrex or cerami
- Remove all lids, metal rings and lead tape (on wine bottles)

PAPER

- Accepted, white paper, colored paper and green-bar computer pa
- Remove self-adhesive labels and envelope flaps
- Remove plastic windows in envelopes

ALUMINUM

- Accepted, aluminum cans, foil, trays and containers

SCRAP METAL

- Accepted, food cans
- Accepted, objects made entirely of metal
- Remove labels around food cans

PLASTICS

- Accepted, manufacturing code 1, 2, 3, and 5 containers
- Accepted, compressed, unmarked milk and water jugs
- NOT accepted, plastic bags, automobile product containers, and wide-mouthed containers
- Remove all lids and caps, empty and rinse containers

REDEEMABLES

- Massachusetts Bottle Bill Returnables

USED MOTOR OIL

- SATURDAYS ONLY
- Accepted, 5 gallons per resident
- NOT accepted, antifreeze, transmission fluid, gasoline, hydraulic fluid, etc.

Dear Somerville Resident,

- Welcome to curbside recycling! Since my first day in office, I have worked for and
- looked forward to the implementation of this program. I am convinced that recycling is one of the most important things you and I can do to protect our environment.

I would like to extend my special thanks to all the volunteers and the members of the Somerville Environmental and Recycling Volunteers for their assistance with distribution of the blue recycling bins. Their efforts and support have enabled this pilot program to get off to a smooth start.

This pilot program is a step toward a comprehensive citywide curbside program. The program is designed for expansion, that is, in the future we hope to collect more recyclable materials and we hope to involve all Somerville residents. In addition, the administration is working toward development of a Material Recycling Facility (MRF) to process the collected recyclables. I need your support to make both efforts successful.

Acknowledging the City's fiscal difficulties, I would like to share the pilot program's financing mechanisms. First, the blue recycling bin you have received was provided by the Massachusetts Department of Environmental Protection as part of an equipment grant award. Second, the operations costs of the program will be deferred through the money saved in landfill fees and through the sale of some of the collected recyclables. The pilot curbside program targets recyclable items of the highest economic benefit. Unfortunately, presently, newspapers is not an economically beneficial material to collect at curbside, hence, it was not included in our pilot curbside program.

Finally, a message to parents — don't be surprised if your children become the "recycling patrol" in your house. At my home, my older son, Michael, reminds me not to throw recyclable items into the trash and my younger son, Joey, looks forward to our Saturday visits to the recycling drop-off center.

I truly believe that the positive impact of sound environmental policies and practices goes well beyond any term in office or any one lifetime. A healthy environment is the gift we leave our children.

Sincerely,

Mike

Michael E. Capuano
Mayor



PRINTED ON RECYCLED PAPER



SOMERVILLE RECYCLES!!

Welcome to Mayor Michael E. Capuano's PILOT CURBSIDE RECYCLING PROGRAM



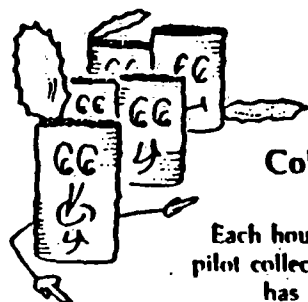
Somerville's Litter Critter
urges you to
Protect Our Environment
PLEASE RECYCLE

PILOT PROJECT
coordinated by the
Somerville Environmental Protection Department

Welcome to Curbside Recycling

Beginning the week of Monday, September 30th, the City of Somerville will institute a bold new pilot curbside recycling program.

The pilot program involves approximately 50% of the City's residents and is designed for future expansion. Curbside recycling is convenient and easy. It helps control disposal costs, helps the environment, and helps Somerville meet the State of Massachusetts' recycling goals.



Collection of Materials

Each household in the pilot collection program has been issued a special blue recycling bin.

This bin is to be used to store glass bottles and jars, aluminum cans, and metal cans.

On your regularly scheduled trash collection day, simply place your full bin at the curb. It is important to remember that full bins should be set out before 7 am in order for the material to be picked up that day.

Recycling Makes Sense

- R Reduce** — Recycling reduces pollution. The more we recycle, the less garbage we have to send to a landfill or burn.
- E Energy** — Making a product from recycled materials expends less energy than making a product from virgin materials.
- C Conservation** — Recycling conserves valuable resources. It saves our nation's natural resources and our energy supply.
- Y You** — The success of Somerville's pilot program lies with you. Please participate in this valuable program and prepare materials properly.
- C Convenient** — The pilot curbside recycling program is designed to be convenient. Just use your blue bin to store your sorted recyclable materials, then put the full bin at the curb for collection.
- L Landfill** — Recycling saves landfill space.
- E Environment** — To ensure the future of our environment, recycling is the right thing to do.


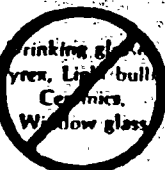
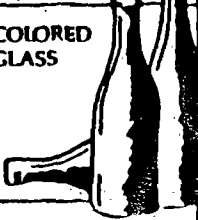

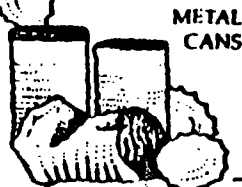

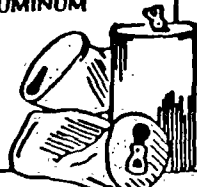

Damaged or Missing Containers

The recyclable materials are the property of the City of Somerville. If you see someone other than one of the City of Somerville drivers take your recyclables or bin, please call the recycling hotline (625-6600) with the vehicle license number and/or a description of the person or people involved. If your bin becomes lost or damaged, within 30 days, you must provide a suitable replacement of similar size.



What goes in the bin?

You can recycle the following materials at your curb. Follow these easy instructions when you place the items in the bins:

	RECYCLE THESE MATERIALS	HOW TO PREPARE MATERIALS	EXCLUDE THESE MATERIALS
	CLEAR GLASS Clear Glass Bottles & Jars Empty, Unbroken	Rinse clean Remove lids Remove metal rings	
	COLOR GLASS Brown and Green Glass Bottles & Jars Empty, Unbroken	Rinse clean Remove lids & corks Remove metal rings and lead tape	
	METAL CANS Steel ("tin"), mixed metal cans, food cans	Rinse clean Remove labels	
	ALUMINUM Deposit and Non-deposit aluminum cans	Rinse clean Remove labels	

Questions? Problems?
Compliments?
Call the Recycling Hotline:
625-6600 ext.



Michael E. Capuano
Mayor

WHERE DO YOU GO FROM HERE?

You have read this information packet and are wondering, "Now what?" There are many additional sources of information that you might try.

First, contact your community agencies, municipalities, county agencies and other levels of government. If recycling efforts are already underway, plug in.

Second, at the state level, each New England state has a recycling information contact, and in most cases, a great deal of useful and relevant information to help you to get started. State contacts include:

Connecticut Department of Environmental Protection
Solid Waste Division
165 Capitol Avenue
Hartford, CT 06106
(203) 566-8476

Maine Waste Management Agency
Office of Waste Reduction & Recycling
State House Station 154
Augusta, ME 04333
(207) 289-5300

Massachusetts Department of Environmental Protection
Division of Solid Waste Management
1 Winter Street, 4th floor
Boston, MA 02108
(617) 292-5988

New Hampshire Department of Environmental Services
Waste Division
6 Hazen Drive
Concord, NH 03301
(603) 271-3306

Rhode Island Department of Environmental Management
Waste Management Branch
291 Promenade Street
Providence, RI 02908
(401) 277-2797

Vermont Department of Environmental Conservation
Solid Waste Management Division
103 South Main Street
Waterbury, VT 05676
(802) 244-7831

Third, many nonprofit and for-profit trade associations have information on various aspects of recycling. At least four New England states also have associations of recyclers who can often assist you with information bearing on some specific localities. These are:

Connecticut Recyclers Coalition
P.O. Box 445
Stonington, CT 06378

MassRecycle
P.O. Box 3111
Worcester, MA 01613

New Hampshire Resource Recovery Association
P.O. Box 721
Concord, NH 03302

Association of Vermont Recyclers
P.O. Box 1244
64 Main Street
Montpelier, VT 05601

Fourth, many for-profit consultants are in business to assist you in establishing a recycling program, from doing a small piece of the planning process to doing it all for you. There are even some for-profit consultants specializing only in providing you with research information.

Fifth, the U.S. Environmental Protection Agency has documents on the subject of recycling: marketing, promoting, publicizing, transporting, contracting. It also has publications about the technical processes involved in recycling various substances, in using various types of recycling methods, and concerned with how to organize the necessary resources. To obtain a complete listing of all documents available, contact the RCRA Hotline by calling 1-800-424-9346. When these documents are sent to the National Technical Information Service for distribution, they may be purchased from NTIS by calling (703) 487-4630.

Also, try calling EPA Region 1, Solid Waste Program at (617) 573-9670 or the Research Library for Solid Waste in Region 1 at (617) 573-9687. The Research Library has put out other compendiums on solid waste and recycling topics.

A COMPENDIUM OF MATERIAL ON MUNICIPAL SOLID WASTE
* COMMUNITY RECYCLING *

SOURCES USED

A GUIDE TO RECYCLING IN YOUR COMMUNITY by Michigan Department of Natural Resources, (Lansing, Mich.: DNR, N.D.).

MASSACHUSETTS REGIONAL RECYCLING PROGRAM: PUBLIC EDUCATION by Massachusetts Department of Environmental Protection (Boston, Mass.: DEP, 1988).

RECYCLING IN NEW HAMPSHIRE: AN IMPLEMENTATION GUIDE by Mary Kohrell and the New Hampshire Resource Recovery Association (Concord, NH, 1988).

DECISION-MAKERS GUIDE TO SOLID WASTE MANAGEMENT by U.S. Environmental Protection Agency, EPA/530-SW-89-072, November, 1989.

LOCAL GOVERNMENT RECYCLING PROGRAM DESIGN: INTEGRATION OF EXISTING RECYCLERS by Deanna L. Ruffer and Susan J. Schaefer, Roy F. Weston, Inc., in Proceedings of the First United States Conference on Municipal Solid Waste Management, Washington, DC, June 15, 1990 cosponsored by the U.S. Environmental Protection Agency and the Governmental Refuse Collection and Disposal Association, Silver Spring, MD.

RECYCLING AND HOUSEHOLD HAZARDOUS WASTE PROGRAM: A PLANNING CHECKLIST by Inform Environmental Research & Education (New York: Inform, N.D.).

INFORMATIONAL FLYERS FOR CITIZENS from the Cities of Cambridge, Roxbury, and Somerville, Massachusetts, [N.D. Circa, 1991].