

HERE TODAY, HERE TOMORROW-RECYCLED!

Section III: The Recycling Process and Market

Most New Jersey residents are familiar with recycling. The process itself though, is more comprehensive than just separating certain materials out from the trash and keeping them together in containers for drop-off or for pickup at the curb. Recycling itself isn't a new idea – some materials like scrap metal were recycled in the early 1900s and then again during World War II, largely to save money and conserve resources.

The purpose of this section is to explore the recycling process; laws that govern recycling; materials that are being recycled; how new recycled materials are being used; various recycling programs that communities have in place; and, roles residents can play to help recycling succeed and improve in New Jersey.

The Benefits of Recycling:

- **Reduces energy use**
- **Reduces emissions of air and water pollutants**
- **Conserves natural resources**
- **Reduces reliance on landfills and resource recovery facilities**
- **Strengthens local, state and national economies and provides jobs**
- **Supplies industry with valuable materials and resources**

The New Jersey Solid Waste Management Act of 1987 placed responsibilities on individuals and government agencies to see that 25% of municipal solid waste was recycled. Responsibilities for recycling were spread out as follows:

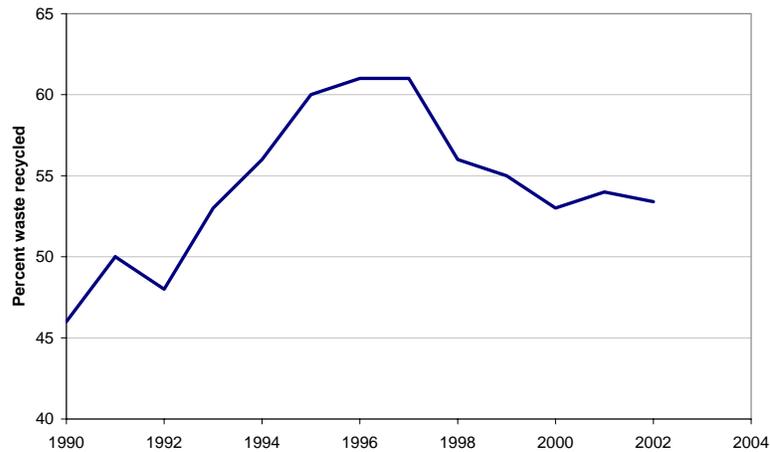
- A. Individuals and institutions must separate the recyclable materials to be recycled that are designated by their counties and then present them for collection as instructed;
- B. Municipalities must designate coordinators, educate the public, compile reports, and either provide collection services or arrange for them; and
- C. Counties must study the recycling markets and choose the mandatory materials for collection, educate the public, take the lead in enforcement, and provide direct recycling services or contract out for them.

In 1992 this law was revised and new goals were established - a recycling rate of 50% of municipal solid waste and 60% of total solid waste (which includes municipal and industrial waste). Since that time New Jersey's most successful year for municipal solid waste recycling was 45% in 1995, and for total solid waste recycling was 61% in 1997.

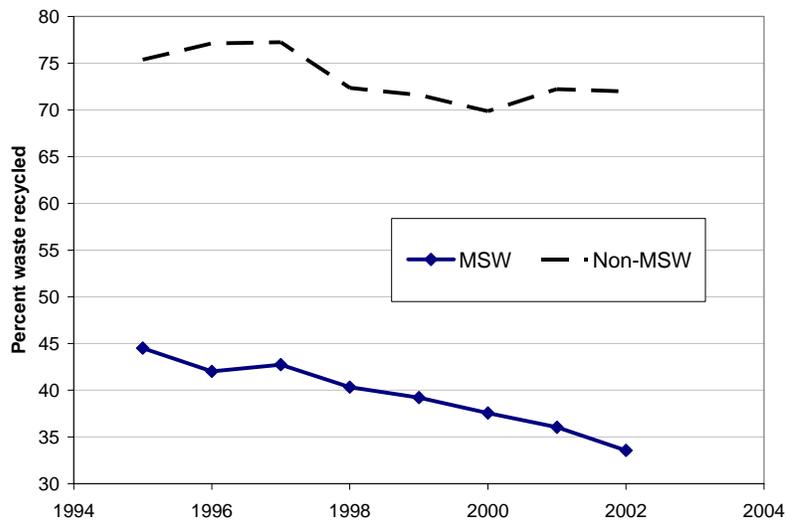
What do we mean by "Recycling Rate"? The New Jersey Department of Environmental Protection (DEP) calculates (in tons) the amount of refuse being recycled as a fraction of the total amount of waste being generated, to determine the "recycling rate." It allows the department to compare New Jersey's recycling performance with that of other states as well as to monitor the state's own performance over time.

In 1997 a federal court decision led to the deregulation of the solid waste system in New Jersey, which had given counties a monopoly on disposal that had enabled them to fund their recycling programs. Another development that hurt the recycling arena was the loss of the recycling tax, which sunset in 1996. This dedicated source of funds had provided over \$10 million annually for grants to towns and counties to improve their programs and offer educational services, as well as offering low interest loans to recycling businesses. As a result, the state has witnessed a decline in recycling rates annually since 1997, which is reflected in the graphs below. When these declines are combined with the annual increase of solid waste being generated (referenced in Section I), the state's overall recycling performance has not been good.

Overall Recycling Rate



Recycling Rate; MSW and non-MSW Waste



The state's decrease in annual recycling performance is attributed to the following factors:

- **Loss of dedicated funding;**
- **Lack of local enforcement;**
- **Lack of ongoing outreach and education;**
- **Increasing rate of waste that is being generated;**
- **Increased “away-from-home” consumption (i.e., fast foods and takeout);**
- **Development of products made of materials that are difficult to recycle;**
- **Decreasing value of some standard collected materials (i.e., glass and steel); and**
- **Lower disposal fees.**

The New Jersey Department of Environmental Protection is spearheading several practices to boost recycling rates, such as a tax credit to promote investment in recycling markets, an enhanced procurement program to expand government purchases of recycled content products, and expanded statewide education and outreach about recycling and solid waste management.

It is important to note that the 1987 recycling act mandated recycling in public institutions, which includes New Jersey's public schools. However, most of the state's school districts do not have comprehensive recycling programs in place. School faculty and students should be collecting paper, cardboard, newspaper, printer cartridges and rechargeable batteries from classrooms and offices, as well as steel food cans, beverage containers and cardboard from food service operations. Schools are also encouraged to evaluate the electronic devices they discard (i.e., fluorescent tubes and computers) and send such devices for special recycling to prevent toxic metals from entering landfills and resource recovery facilities. Many of the resources and activities in this section encourage students and faculty to get involved with analyzing or implementing their school or district's recycling efforts.

Materials that are Recycled in New Jersey:

To depict the array of materials or items that are being recycled, below is a list of the types of recycling facilities regulated by the New Jersey Department of Environmental Protection:

- | | |
|-----------------|---|
| Class A: | Metal, glass, paper and plastic (<i>A is for Aluminum!</i>)
These facilities handled 3.2 million tons of material in 2001 |
| Class B: | Construction and demolition debris (wood, concrete, etc.) and scrap tires (<i>B is for Bricks and Blocks!</i>)
103 facilities handle fifteen materials – over 5.3 million tons in 2001 |
| Class C: | Grass, leaves, brush and food waste (<i>C is for Compost!</i>)
167 facilities handled about 1 million tons of material in 2001 |
| Class D: | Used oil and universal wastes (electronics, batteries and oil-based finishes) (<i>D is for things that may Drip!</i>) |

In addition:

- Six oil recycling facilities process 14 million gallons of used oil per year
- Five handlers collect used fluorescent bulbs for recyclers out of state
- Eight demanufacturing facilities take apart electronic devices (i.e., computers) to sell components; thirteen handlers deliver them to recyclers out of state and one refurbisher repairs those items that can be repaired; together, they handled 0.06 million tons in 2001

The process of recycling involves three basic steps:

1. Collecting recyclable materials to be recycled (instead of allowing them to enter the solid waste stream);
2. Processing the recyclable materials into raw materials; and,
3. Selling the material to manufacturers, in place of “virgin material,” and then marketing the goods to consumers (thus, “closing the recycling loop”).

In New Jersey, local recycling programs vary from county to county and between communities. Differences in these collecting, sorting and processing procedures between communities often raise questions among residents. For example, citizens may ask “Why does my sister in the neighboring town put her recyclables into one bin while I have to separate mine into separate containers?” Or, “Why do I have to bind newspapers together with twine while my friend in another community puts their paper into a brown paper bag?” The answer is usually a compromise between personal convenience and economics. Communities implement recycling procedures that are most practical or affordable for them.

For example, municipalities in counties that run separation facilities can co-mingle their recyclables, but those municipalities in counties without such facilities are unable to sell their goods that way so they must be separated. Also, towns may choose to have local citizens separate in order to earn more money from the materials. Marketers then provide guidelines for how the materials must be packaged or bundled. For example, a bundle of newspaper going to become new paper might be contaminated by the coarse paper of brown bags, but strings used for binding may be easy to remove from the process. If the paper is going to make a heavy product like Masonite, the brown paper may not matter. Or, if a town’s glass is going to be crushed and turned into “glassphalt” it doesn’t matter if the colors of glass are mixed. If it’s going to be used for the production of new glass, the various colors must be separated.

Another example of differences in collection activity is that most towns in New Jersey offer curbside collection and a “depot” or “recycling center” where people can drop materials off. Some offer only one of these options. Some towns pick up waste and recyclables while others do not. Some pay the county to pick up the materials. Why such differences? One set of factors is geography and demographics. In most urban areas it is convenient for departments of public works to pick up the recyclable materials whereas in rural areas trucks must travel for miles to pick up at each home, so it’s more feasible for residents to go to the depot themselves. Each town selects the services it wants or that seem to be most feasible, at the cost it is able to sustain; and, by allowing towns to operate independently, the state encourages creative marketing and flexibility as materials are in greater or lesser demand.

All towns should inspect residential garbage to ensure that recyclable materials are not being thrown away. They usually do not fine homeowners but they may refuse to pick up the garbage. Collected recyclable materials are then transported to the four types of facilities listed earlier (Classes A through D) although sometimes they can be taken directly to a market. One factor effecting a town or county's recycling activities is the location of town versus markets. Towns may choose to market the recyclable materials themselves (for example, Mercer County can bring its paper directly to the Homosote factory) but most prefer to sell to marketers who can store the materials and can connect the supply of materials with the demand for them. A town located near an office paper mill will want to collect the cleanest paper and discard heavy stock. A town near a cardboard mill can sell most kinds of paper mixed together. Some marketers need very clean materials while others can accept mixed materials. In general, the cleaner the materials, the more likely a town will be paid for them.

Plastic packaging has often been blamed for the growth of waste in the solid waste stream but from a waste perspective there's nothing particularly wrong with the use of plastics. Codes for the various types of plastics being used in packaging today are described below.

Plastic Resin Codes			
<u>#</u>	<u>Code</u>	<u>Type of Plastic</u>	<u>Uses</u>
1.	PETE	Polyethylene Terephthalate	Beverage containers
2.	HDPE	High Density Polyethylene	Milk jugs
3.	V	Vinyl	Corn oil
4.	LDPE	Low Density Polyethylene	Shampoo bottles
5.	PP	Polypropylene	Cosmetics packaging
6.	PS	Polystyrene	Disposable coffee cups

Types 1 and 2 are collected and recycled and are in greater demand than glass. Styrofoam is occasionally recycled and is made without CFCs (chlorofluorocarbons) that harmed the ozone layer before they were discontinued from use in styrofoam in 1979.

The recycling facilities in New Jersey must operate according to the regulations and permitting system put into place by the New Jersey State Legislature and DEP. Such facilities are inspected regularly and have long-standing business relationships with local government officials, citizens and other recycling facilities. Recycling is a comprehensive business in New Jersey, even though each recycling facility only hires a few dozen people at most.

The final step in the recycling process is marketing. New Jersey businesses, institutions, corporations, agencies and residents need to buy recycled materials in order to "close the recycling loop." When a person buys a product made from recycled material or products packaged in recycled packaging material the value of that material has increased.

Corporations and government agencies have begun to buy recycled materials in significant volume, but consumers have been slow to follow. A diverse array of products made from recycled materials can be viewed at DEP's "Buy Recycled" Web site (listed at the end of this section) and in many industry web catalogs. The DEP encourages citizens to purchase recycled products and products with recycled packaging as often as possible.

Consumers often become impatient with manufacturers who use plastics that cannot be recycled after use. For example, many people prefer all plastic packaging to be made of plastics #1 and #2 since most towns have markets for those types. Or, they may want cell phones and i-pods with rechargeable batteries that can be replaced when they don't hold a charge, instead of buying a new piece of equipment and disposing of the old one. Many people also want product designers to exclude toxic materials from products or packaging because the chemicals can escape into the air or water when burned for energy recovery or when disposed of in a landfill.

These various concerns are being addressed by a fairly new concept called "product stewardship," which puts the responsibility onto product designers and companies to be accountable for their products from "cradle to grave," or from the earliest stages of development to disposal. One example of this is the collection of mercury ampoules in automobiles that are headed for recycling. The crushers break the ampoules and allow the mercury to vaporize, contaminating the air. Automakers have denied responsibility for items that they have sold and recyclers deny responsibility for the auto designers' planning. But public pressure has caused automakers to find new devices for their cars and they are beginning to work with recyclers to pull the ampoules from cars before crushing.

The success of recycling depends on selling new recycled material for products and getting these recycled products back into the economy so that they can replace the demand for raw materials. Paper returned to the mill can be rolled out again for new paper. Steel can be re-smelted and plastic can be reprocessed. While none of these processes are entirely damage-free environmentally, they do reduce the demand for natural resources as well as decrease the amounts of solid waste being disposed of.

For More Information Visit:

- ***New Jersey County/Municipal Recycling Coordinator Locator***
Bureau of Recycling and Planning, New Jersey Department of Environmental Protection
<http://www.nj.gov/dep/dshw/recycle/recycoor.htm>
- ***"Buy Recycled Products" Information Site***
Bureau of Recycling and Planning, New Jersey Department of Environmental Protection
<http://www.nj.gov/dep/dshw/recyclenj/index.htm>
- ***The New Jersey Waste Wise Business Network***
Bureau of Recycling and Planning, New Jersey Department of Environmental Protection
<http://www.nj.gov/dep/dshw/recycle/brbn03.htm>

- ***Association of New Jersey Recyclers***
<http://www.anjr.com/index.html>
- ***Recycling Manual for New Jersey Schools***
- ***Buy Recycled Guide***
- ***Recycling – Municipal Solid Waste***
U.S. Environmental Protection Agency
<http://www.epa.gov/epaoswer/non-hw/muncpl/recycle.htm>
- ***Recycling 101 – The Basics, the Benefits***
America Recycles Day
http://www.americarecyclesday.org/Recycling_101/recycling_101.html