



MSW RECYCLING

EPA defines recycling as a series of activities that include collecting post-consumer materials that would otherwise be considered waste, sorting and processing them into raw materials, and manufacturing raw materials into new products. Collection of residential recyclables occurs through four primary methods:

- ▶ **Curbside Collection:** Where residents place separated recyclables at the curb for pick-up by a waste hauler. In 2002, there were 8,875 curbside recyclables collection programs in the United States (U.S.) that served some 139.4 million people. This is a decline of almost 9 percent in the number of programs from 2001 when 9,709 programs were in operation. Curbside collection was most prevalent in the Northeast and Midwest and least prevalent in the West.
- ▶ **Drop-Off Centers:** Where separated recyclables are taken to a central location (e.g., grocery store, charitable organization) for later collection. In 1997, the latest data, there were 12,694 drop-off centers in the U.S. In some areas with sparse populations, drop-off centers may be the only option for the collection of recyclable materials.
- ▶ **Buy-Back Centers:** Where certain separated materials are taken to a commercial operation that pays for the material.
- ▶ **Container Deposit Programs:** Where consumers pay an extra fee on beverage containers at the point of purchase and on return of the empty container receive the fee back. Eleven states have container deposit laws. Connecticut, Delaware, Hawaii, Iowa, Maine, Massachusetts, Michigan, New York, Oregon, and Vermont have nickel or dime deposits, while California has a similar system where containers are redeemed, but the consumer does not pay a deposit.

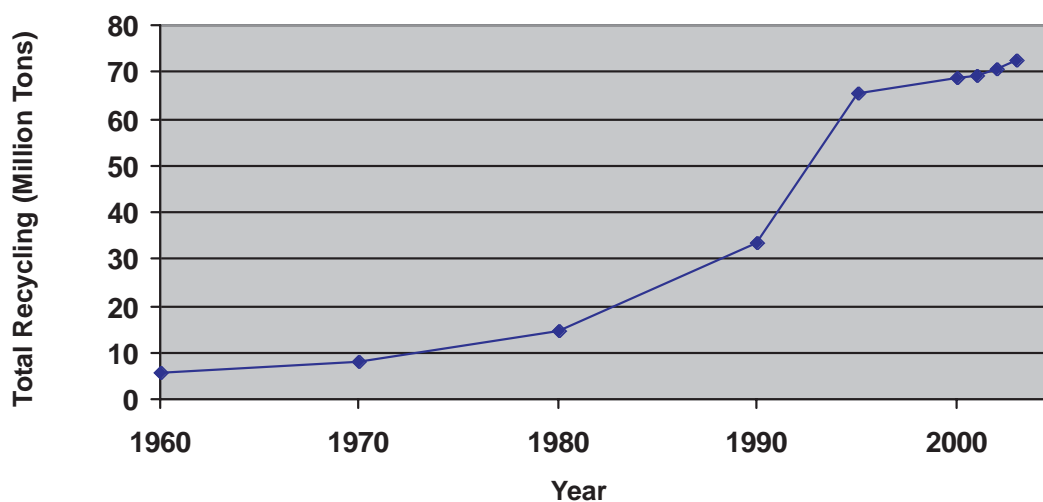
Collected recyclables are typically sent to a materials recovery facility (MRF) where they are sorted by component and prepared into marketable commodities for remanufacturing. In 2001 (the latest data), there were some 480 MRFs in operation in the U.S. with an estimated total daily throughput of 61,971 tons per day (tpd). The most extensive recyclables-processing throughput occurs in the West and South where more than 17,000 tpd were processed (Table 1). The average throughput per facility was 129 tpd in 2001 with the West having the largest average throughput per facility at 164 tpd.

According to the EPA, the amount of municipal solid waste (MSW) recovered (recycled or composted) in 2003 was 72.3 million tons or 30.6 percent of the total MSW generated (236.2 million tons). The amount of MSW recovered has steadily increased since 1960 when only 5.6 million tons was recovered (Figure 1). In the late 1970s, EPA thought that 25 percent was an attainable national recycling goal. EPA subsequently raised the goal to 30 percent (which was nearly attained in 2001) and now supports a 35 percent goal.

Table 1. Materials Recovery Facilities in 2001

Region	Number of MRFs	Estimated Throughput (tpd)	Average Throughput (tpd)
Northeast	107	15,055	141
South	149	17,161	115
Midwest	117	12,188	104
West	107	17,567	164
U.S. Total	480	61,971	129

Figure 1. MSW Recycling Rates



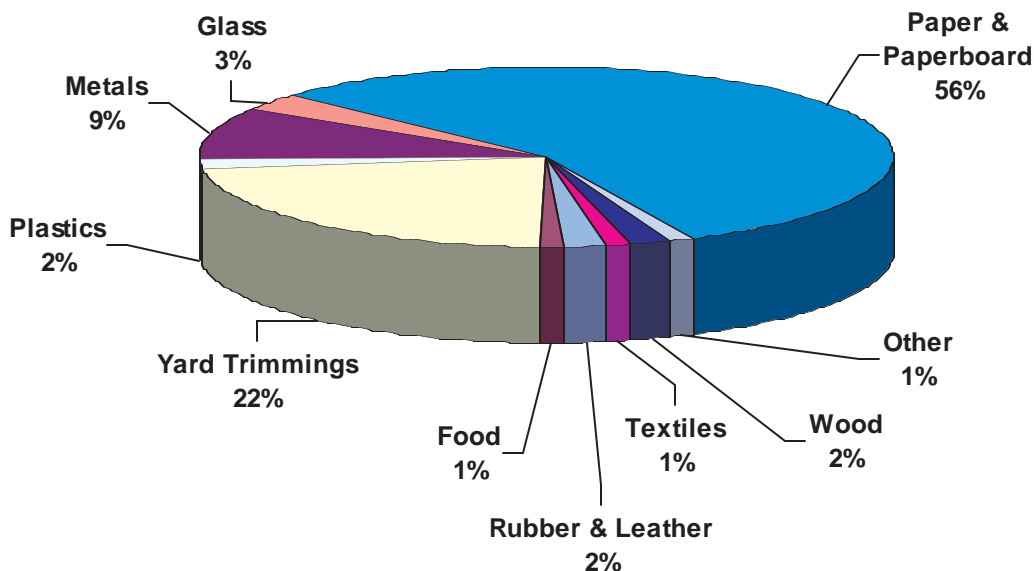
In 2002, eight states attained or exceeded EPA's latest recycling goal according to BioCycle (2004) including: Arkansas (36.3%), California (40.2%), Iowa (41.7%), Maine (49%), Minnesota (45.6%), Missouri (38.9%), New Jersey (37.9%), and Oregon (48.8%). Twelve states recycled less than 10 percent of their MSW with Mississippi (0.3%) having the lowest recycling rate of reporting states. The remaining 11 states with recycling rates less than 10 percent included: Colorado (2.8%), Georgia (8.3%), Idaho (8.4%), Louisiana (8.1%), New Mexico (6.5%), North Dakota (9.4%), Oklahoma (1%), South Dakota (3%), Utah (4.8%), West Virginia (6.9%), and Wyoming (1.7%). Table 2 lists the states and their recycling rates.

Almost every component of the waste stream is recycled. According to the EPA, the largest single component of the waste stream recycled in 2003 was paper and paperboard (40.0 million tons) followed by yard trimmings (16.1 million tons). The recycling rates for commonly recycled consumer goods as a percent of the total MSW recycled in 2003 are provided in Figure 2.

Table 2. Municipal Solid Waste Recycling Rates by State (BioCycle 2004)

State	MSW Recycled (%)	State	MSW Recycled (%)
Alabama	---	Montana	---
Alaska	---	Nebraska	15.4
Arizona	17.5	Nevada	15.8
Arkansas	36.3	New Hampshire	23.7
California	40.2	New Jersey	37.9
Colorado	2.8	New Mexico	6.5
Connecticut	18.8	New York	29.8
Delaware	20.4	North Carolina	11
Florida	24	North Dakota	9.4
Georgia	8.3	Ohio	23.5
Hawaii	25.2	Oklahoma	1
Idaho	8.4	Oregon	48.8
Illinois	32.5	Pennsylvania	26.8
Indiana	35	Rhode Island	12.8
Iowa	41.7	South Carolina	28.4
Kansas	11.5	South Dakota	3
Kentucky	11.4	Tennessee	26.4
Louisiana	8.1	Texas	24.9
Maine	49	Utah	4.8
Maryland	29.2	Vermont	29.8
Massachusetts	31.1	Virginia	29.1
Michigan	15.1	Washington	34.1
Minnesota	45.6	West Virginia	6.9
Mississippi	0.3	Wisconsin	24.6
Missouri	38.9	Wyoming	1.7

Figure 2. Recycling Rates as a Percent of Total MSW Recycling in 2003



Of the major material groups recycled, yard trimmings had the highest rate of recycling when compared to the amount generated (56.3%), followed by paper and paperboard at 48.1 percent. Table 3 lists the generation rates, recycling rates, and recycling rates as a percent of generation.

Table 3. Generation and Recovery of Materials in MSW in 2003

Waste Material	Weight Generated (million tons)	Weight Recycled (million tons)	Recycling Rate as a Percent of Generation
Paper & Paperboard	83.1	40.0	48.1
Glass	12.5	2.35	18.8
Metals	18.8	6.84	36.3
Yard Waste	28.6	16.1	56.3
Plastics	26.7	1.39	5.2
Rubber & Leather	6.82	1.10	16.1
Textiles	10.6	1.52	14.4
Wood	13.6	1.28	9.4
Food	27.6	0.75	2.7
Other	7.94	0.98	8.1
Total	236.2	72.3	30.6

References:

United States Environmental Protection Agency (EPA). 2005. Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2003. Office of Solid Waste and Emergency Response (5305W). EPA530-F-05-003.

BioCycle. 2004. The State of Garbage in America. pp: 31-41.



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