



MUNICIPAL SOLID WASTE POCKET FACTS

Municipal Solid Waste Pocket Facts is a product of NSWMA, October 2010.

and information to help members provide safe, effective, and professional waste and recyclables management.

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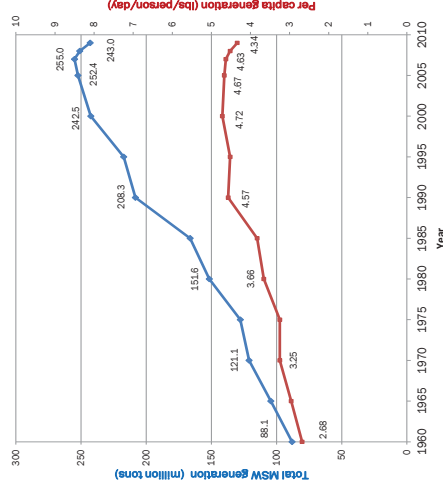
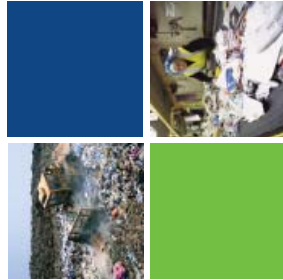
The National Solid Wastes Management Association's mission is to provide leadership and support to the waste management industry through education, research, and advocacy.

State Recycling Data By Percentage (Biocycle 2010)

Alabama	8.9	Montana	4.6
Alaska	4.5	Nebraska	12.6
Arizona	13.5	Nevada	6.3
Arkansas	10.3	New Hampshire	7.2
California	40.4	New Jersey	15.3
Colorado	7.2	New Mexico	11.4
Connecticut	17.4	New York	18.1
Delaware	16.3	North Carolina	6.9
District of Columbia	2.1	North Dakota	3.6
Florida	10.3	Ohio	15.4
Georgia	5.9	Oklahoma	3.9
Hawaii	15.4	Oregon	30.7
Idaho	9.0	Pennsylvania	27.4
Illinois	6.0	Rhode Island	10.0
Indiana	5.1	South Carolina	20.5
Iowa	23.7	South Dakota	10.2
Kansas	21.0	Tennessee	4.6
Kentucky	18.7	Texas	9.0
Louisiana	0.5	Utah	2.0
Maine	28.1	Vermont	20.6
Maryland	22.3	Virginia	18.3
Massachusetts	27.5	Washington	19.7
Michigan	6.0	West Virginia	16.0
Minnesota	25.1	Wisconsin	16.1
Mississippi	4.8	Wyoming	5.2
Missouri	19.6		

Data on Materials Recycled (2009)

Material	Weight Generated (million tons)	Weight Recovered (million tons)	Recovery as % of Generation
Paper & Paperboard	68.43	42.50	62.1
Glass	11.78	3.00	25.5
Metals	20.91	7.22	34.5
Yard Trimmings	33.20	19.90	59.9
Plastics	29.83	2.12	7.1
Rubber & Leather	7.49	1.07	14.3
Textiles	12.73	1.90	14.9
Wood	15.84	2.23	14.1
Food Scraps	34.29	0.85	2.5
Other	8.46	1.23	14.5
Total	242.96	82.02	33.8

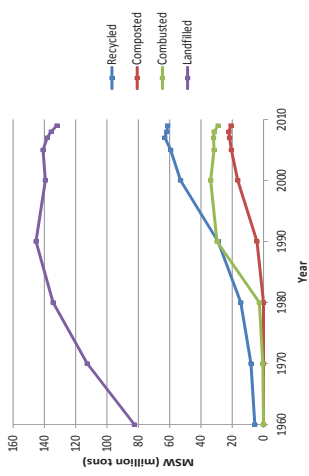


Municipal Solid Waste Generation

In 2009, Americans recycled 61.3 million tons (35.7%) of the materials in products that we used. Additionally, 20.8 million tons of organic wastes (e.g., yard trimmings, food waste) were composted at about 2,900 community composting programs.

EPA defines recycling as a series of activities, including: collecting post-consumer materials; sorting and processing these materials into raw materials; and manufacturing raw materials into new products. In 2009, collection of residential recyclables occurred through four primary methods, including curbside collection (i.e., more than 9,000 programs), drop-off centers, buy-back centers, and container deposit programs. Eleven states had container deposit laws in 2009, including: California, Connecticut, Delaware, Hawaii, Iowa, Maine, Massachusetts, Michigan, New York, Oregon, and Vermont.

Collected recyclables were typically sent to a materials recovery facility (MRF) where they were sorted by component and prepared into marketable commodities for remanufacturing. In 2009, 578 MRFs were in operation in the United States with an estimated throughput of 86,353 tons per day.

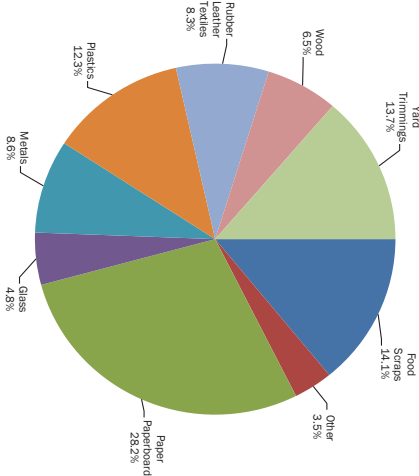


The following figure shows how MSW has been managed.

The amount and management of MSW has changed significantly since 1960 when only 1.88 million tons were generated. Of this amount, 5.6 million tons (6.4%) were recycled and 82.5 million tons (93.6%) were landfilled. Composting and combustion with energy recovery were zero. In contrast, the 243.0 million tons of MSW generated in 2009 were managed using all methods. According to EPA, 61.3 million tons (25.2%) were recycled, 20.8 million tons (8.6%) were composted, 29.0 million tons (11.9%) were combusted with energy recovery, and 131.9 million tons (54.3%) were landfilled.

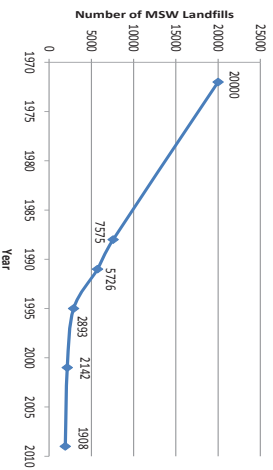
Municipal Solid Waste Management

In 2009, paper and paperboard were the largest component of MSW at 28.2 percent. The other materials in the waste stream were: food scraps (14.1%); yard trimmings (13.7%); plastics (12.3%); metals (8.6%); rubber, leather, and textiles (8.3%); wood (6.6%); glass (4.8%); and other materials (3.5%). The following figure graphically depicts the materials in the waste stream. The generation of paper and paperboard has had the greatest decline since its peak generation rate in 2000.



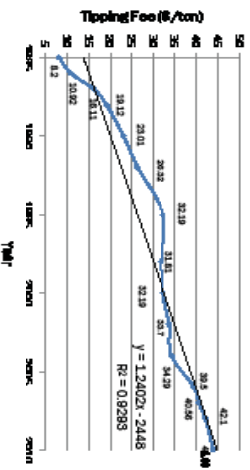
Municipal Solid Waste Landfills

Landfilling remained the most common way to dispose of MSW in the United States. Of the 243.0 million tons of MSW generated in 2009, 135.9 million tons (54.3%) were landfilled. Landfills received approximately the same amount of MSW since 1980 despite a steady decline in landfill numbers. In the 1970s, some 20,000 landfills existed and most were unlined "dumps". Today, as a result of stringent federal and state regulations, slightly more than 1,900 MSW landfills are operating. The following figure shows the decline in the number of MSW landfills over time.



Cost of MSW Disposal

The cost of waste disposal at an MSW facility is called the "tipping fee." Many tipping fees exist at a facility, but the most common is the "spot market" fee (i.e., the drive-up cost to dispose of a single ton of MSW). The figure below shows the average national tip fees at landfills from 1985 to 2010. A regression analysis of the data shows that tipping fees have increased on average by \$1.24 per year. Between 1987 and 1995, tipping fees increased steadily at \$2.40 per year. This increase was probably caused by states implementing the federal Subtitle D regulations or their state equivalents. Tipping fees remained relatively constant between 1995 and 2004. From 2004 to 2010 tipping fees rose at a rate similar to the 1995-2010 period at \$1.62 per year. This increase was probably caused in part by rising fuel costs.



Municipal Solid Waste Landfill Size

Although the number of MSW landfills has declined with time, national capacity has not changed significantly because older MSW landfills tended to be smaller and more numerous. These landfills probably closed to avoid the cost of new federal and state regulations. Older landfills were replaced by newer larger landfills supported by greater intra- and inter-state wastesheds. The following table lists the ten largest landfills in the United States in 2009 according to Waste & Recycling News (2010).

Rank	Landfill	Location	2009 Tonnage
1	Puente Hills	Witter, CA	2,638,241
2	Newton County	Brook, IN	2,249,110
3	Apex	Las Vegas, NV	2,111,078
4	Rosevelt Regional	Rosevelt, WA	2,088,177
5	Seneca Meadows	Waterloo, NY	1,911,316
6	Rumple Sanitary	Coleman Township, OH	1,862,431
7	Orchard Hills	Davis Junction, IL	1,707,828
8	Atlantic Waste	Waverly, VA	1,674,842
9	Denver Arapahoe Disposal Site	Aurora, CO	1,672,312
10	Pine Tree Acres	Lenox, MI	1,645,405

Municipal Solid Waste Combustion

Most of the MSW combustion occurring in the United States incorporates the recovery of energy (e.g., electricity, thermal). According to the Energy Recovery Council, 86 waste-to-energy facilities were operating in 24 states in 2010 as shown in the following table.

State	State	State	State
AL 1	IN 1	NM 9	OR 1
AK 1	IA 1	NH 2	PA 6
CA 3	ME 4	NJ 5	UT 1
CT 6	MD 3	NY 10	VA 5
FL 11	MA 7	NC 1	WA 1
HI 1	MI 3	OK 1	WI 2

Number of Waste-to-Energy Facilities By State

Greenpower from Landfill Gas

Landfill gas-to-energy (GTE) projects have been around since the late 1970s, providing renewable energy in the form of electricity and direct use of the gas as an alternative fuel. On July 2011, 558 operational landfill GTE projects existed in 46 states according to EPA's Landfill Methane Outreach Program (i.e., only Alaska, Hawaii, Nevada, and Wyoming did not have projects). These landfills produced 1,727 megawatts (MW) of electricity and 312 million standard cubic feet per day (mmscfd) of gas for direct use.

LMPD believes an additional 510 candidate landfills could be utilizing collected landfill gas. If projects were developed at these landfills, an additional 1,170 MW or 590 mmscfd could be converted to alternative energy sources.

The following table provides the states with operational landfill GTE projects and the number of candidate projects.



State/Territory	Operational Landfills	Candidate Landfills	State/Territory	Operational Landfills	Candidate Landfills
AL	4	18	NE	2	5
AK	0	2	NV	0	3
AZ	3	14	NH	8	3
AR	4	7	NJ	17	3
CA	77	37	NM	2	3
CO	1	12	NV	28	6
CT	3	3	NC	18	34
DE	3	—	ND	2	1
FL	17	16	OH	20	20
GA	13	24	OK	3	12
HI	0	8	OR	7	2
ID	2	3	PA	38	12
IL	32	22	PR	0	12
IN	22	12	RI	2	—
IA	4	14	SC	14	8
KS	6	8	SD	1	1
KY	7	18	TN	6	11
LA	6	7	TX	27	52
ME	2	2	UT	4	5
MD	10	11	VT	5	—
MA	20	2	VI	0	2
MI	36	4	VA	26	11
MN	7	6	WA	6	8
MS	2	13	WV	2	9
MO	11	15	WI	26	6
MT	2	3	WY	0	2

Greenpower from Landfill Gas

MSW and Greenhouse Gases

According to EPA, waste-to-energy facilities incinerated 29.0 million tons of the total MSW in 2009 (i.e., 11.9% of the total MSW generated) and their locations are shown in the following table. The nation's waste-to-energy facilities have the capacity to generate an estimated 2,790 megawatts of electricity (Energy Recovery Council).

Region	Number Operational	Design Capacity (tons/day)
Northeast	40	46,537
South	23	31,131
Midwest	16	10,912
West	8	6,141
Total	87	94,721

Waste-to-Energy Projects (EPA 2009)

According to the EPA, greenhouse gas (GHG) emissions from all sources of solid waste management were less than 2 percent of the total GHG emissions in 2008. The MSW management industry has significantly reduced its GHG emissions through improved landfill operations, increased recycling and composting, and improved waste collection and transportation efficiencies. The minimum annual environmental benefits from these GHG reductions by the MSW management industry (i.e., landfill gas energy projects and waste-to-energy facilities) are equivalent to the:

- Annual GHG emissions from 41,527,219 passenger vehicles;
- Carbon sequestered annually by 46,313,066 acres of pine/fir forests; or
- Carbon dioxide emissions from 24,432,876,826 gallons of gasoline consumed.

The energy benefits derived by landfill GTE projects and directly combusting MSW are capable of powering more than 2,667,005 homes plus directly heating another 736,361 with landfill gas.