

US EPA ARCHIVE DOCUMENT

# EPA's Annual Municipal Solid Waste (MSW) Characterization Report



# What is the annual report?

- Each year EPA publishes the MSW Characterization Report
- Report describes annual MSW generated, recycled, and disposed, by material type and product type
- Uses a materials flow methodology, relying heavily on a mass balance approach

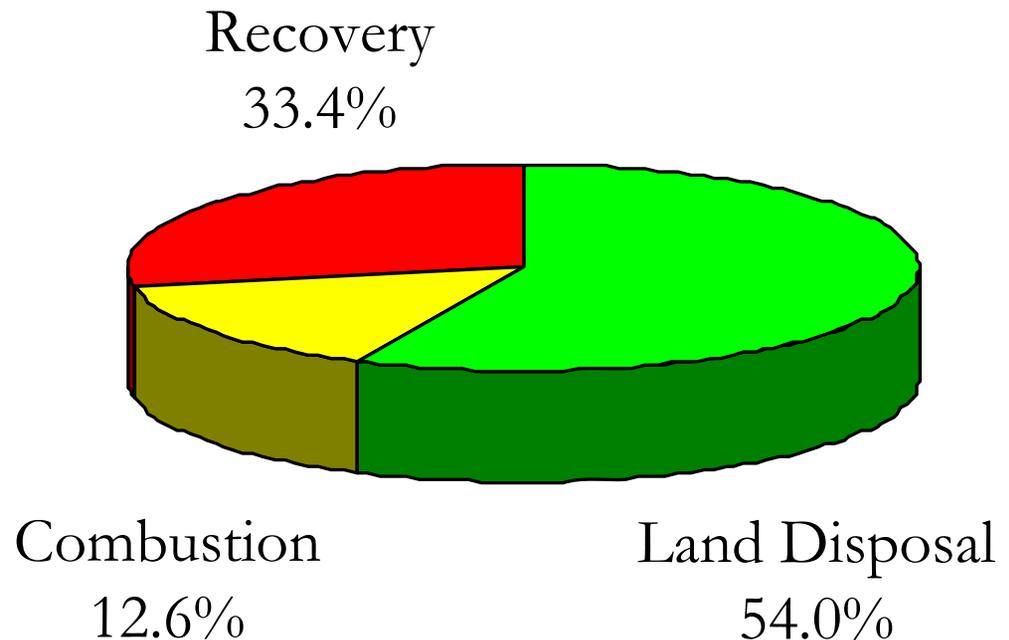
# Outline for Today

- General results on MSW for 2007
- Overview of methodology
- Commodity-specific results and methodology
- Brief notes on EPA's voluntary standard recycling method

# How Waste is Managed

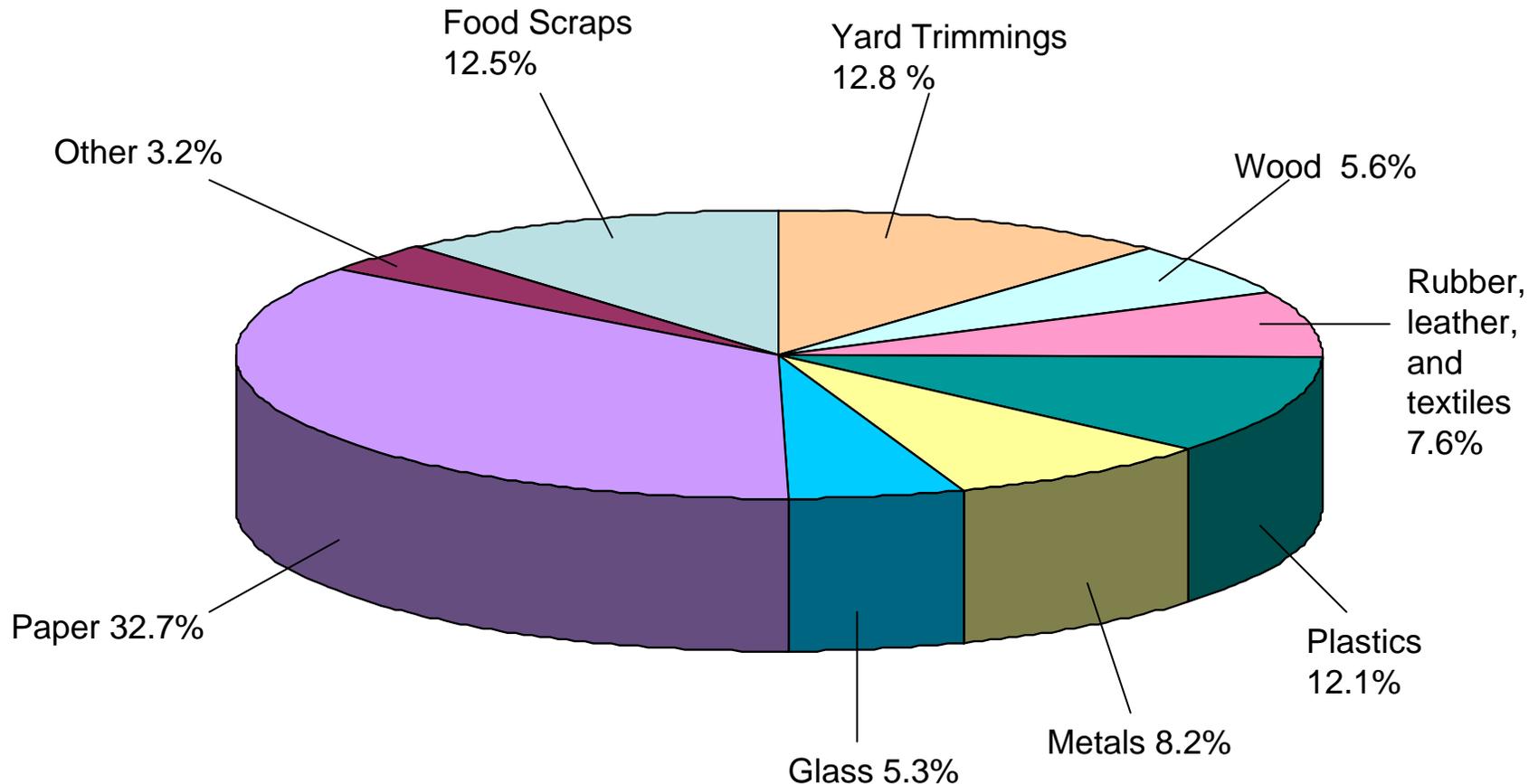
- **Land Disposal**  
**54.0%**
- **Combustion**  
**12.6%**
- **Recovery**  
**33.4%**

MSW Management in the U.S.

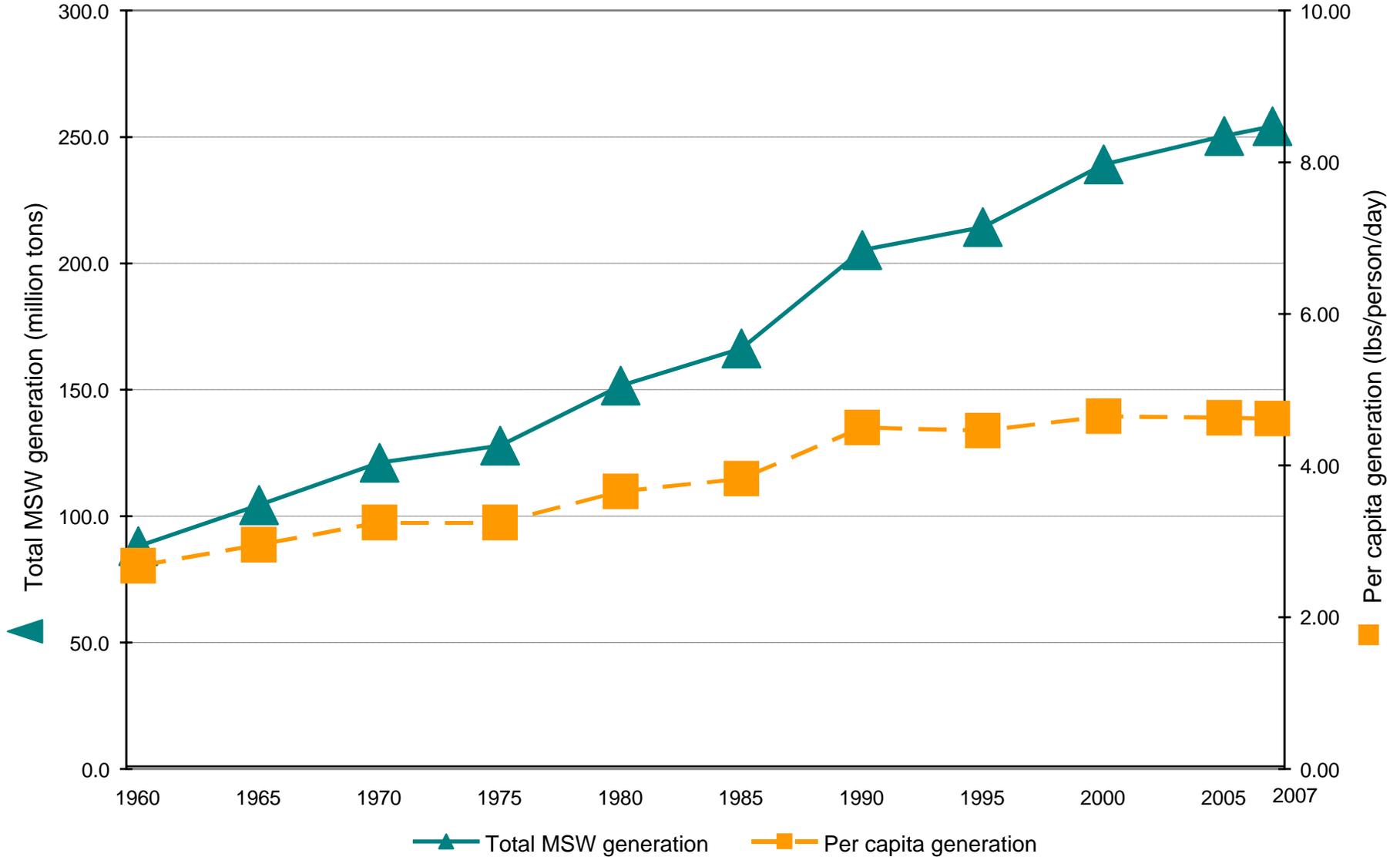


# Municipal Solid Waste Generation in 2007

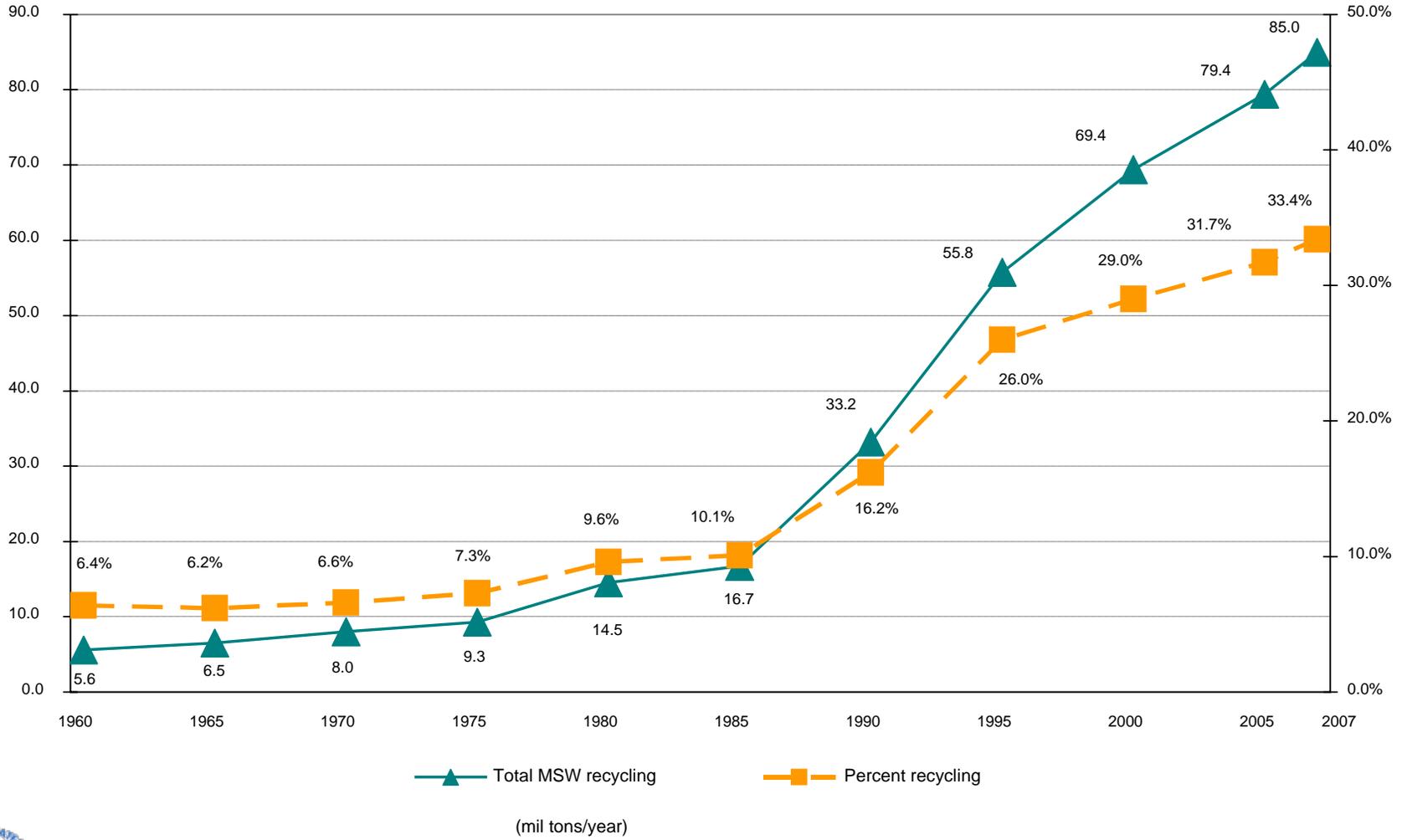
## 254 Million Tons



# MSW Generation Rates 1960 to 2007



# MSW Recycling Rates 1960 to 2007

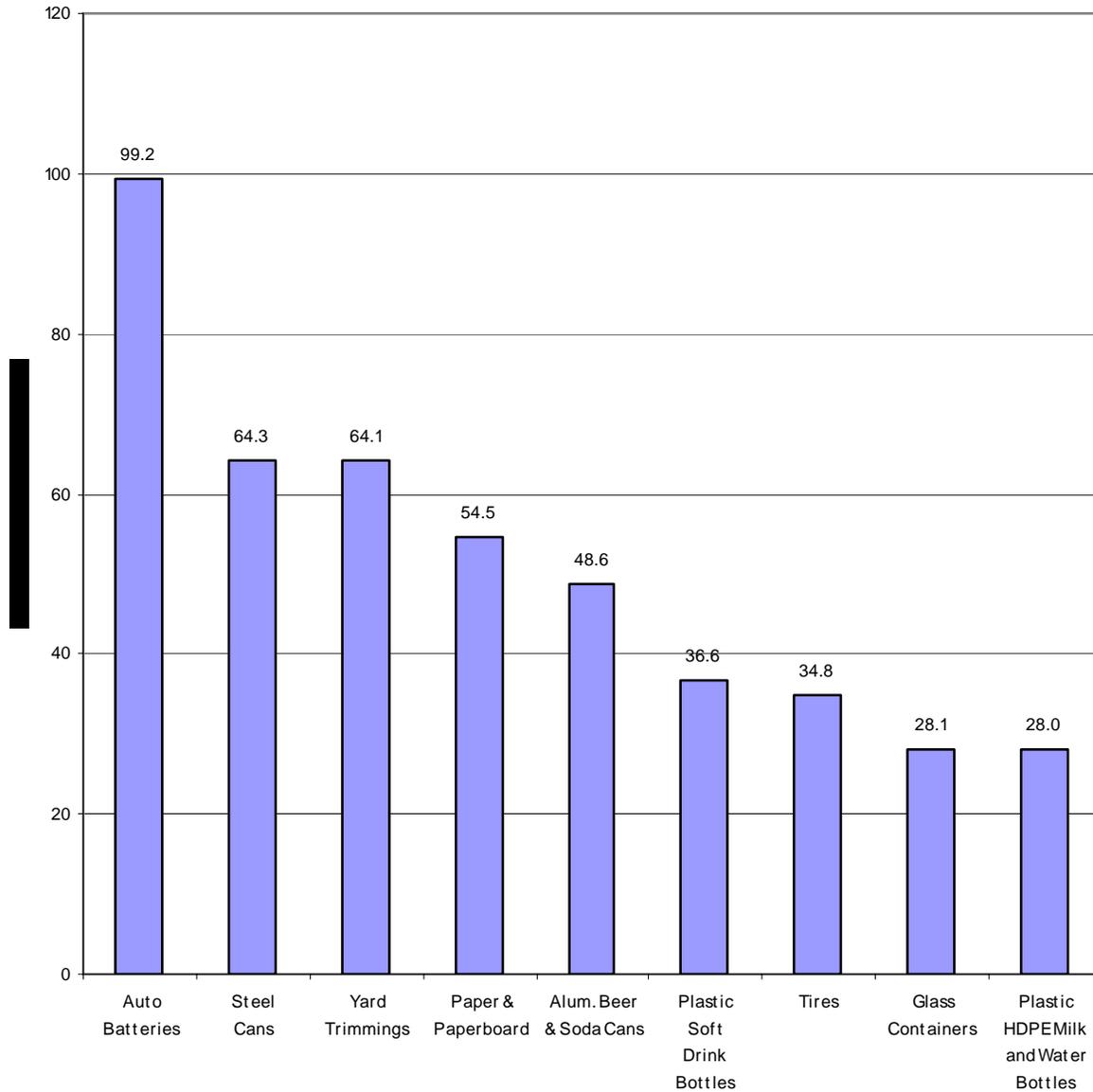


# Products Generated in MSW, 2007

254 million tons before recycling



## Recycling Rates of Selected Products, 2007



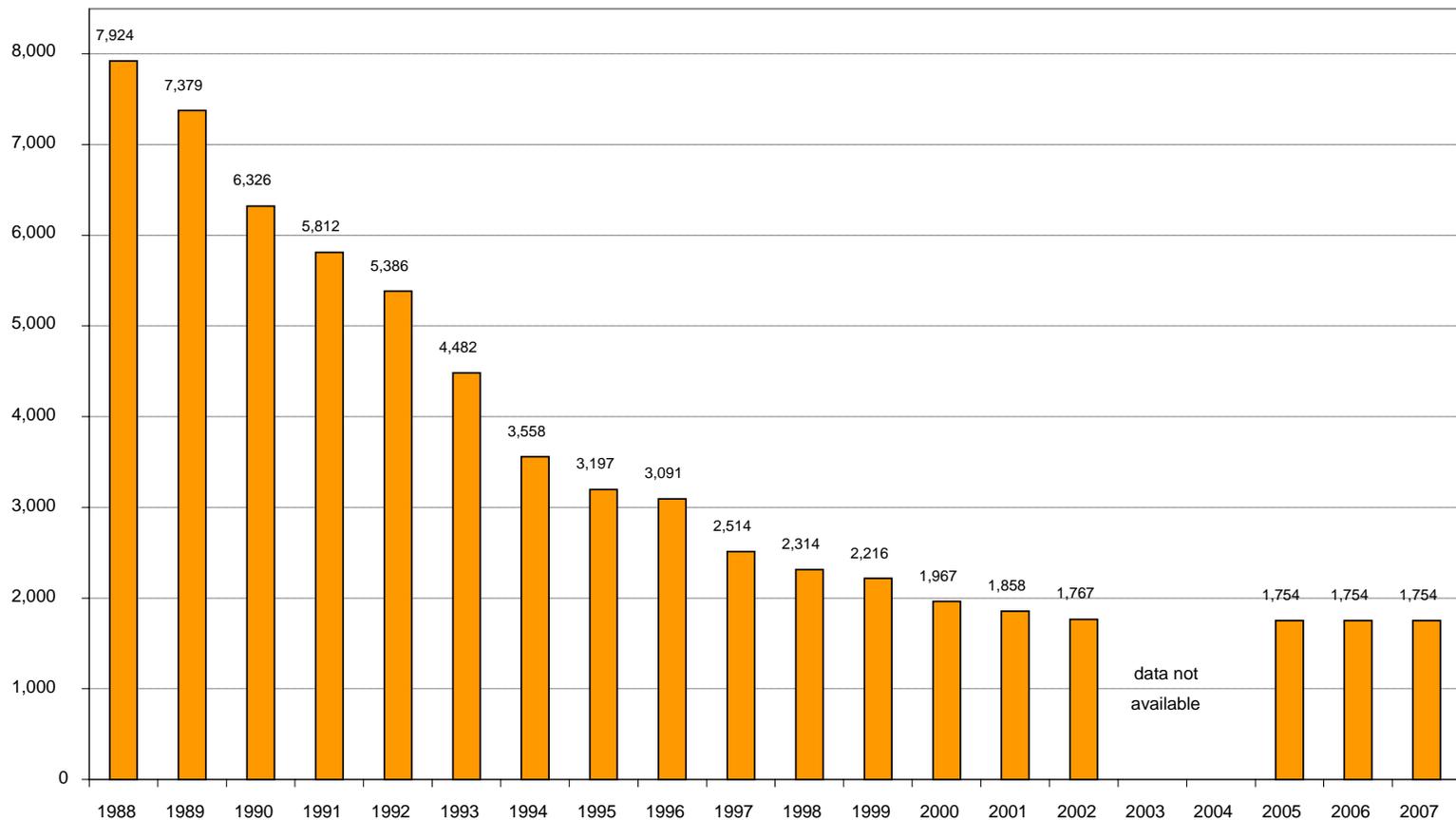
# Commodity Recycling Trends

	1970	1980	1990	2000	2007
Paper and paperboard	15%	21%	28%	43%	55%
Glass	1%	5%	20%	23%	24%
Metals	4%	8%	24%	35%	35%
Plastics	Neg.	<1%	2%	6%	7%
Yard trimmings	Neg.	Neg.	12%	52%	64%
Rubber tires	13%	6%	12%	26%	35%
Lead-acid batteries	76%	70%	97%	93%	99%

Neg. = less than 5,000 tons or 0.05 percent.



# Number of Landfills in the United States 1988-2007



# Overview of the Methodology

- The report characterizes the waste stream of the *nation as a whole*
- Uses a materials flow methodology, relying heavily on a mass balance approach

# Sources of Data

- Industry associations
- Government data sources
  - Department of Commerce
  - U.S. Census Bureau
- Other sources of data supplement the information

# Scope of MSW

- Includes materials historically handled in the MSW stream and sent to municipal landfills
  - product packaging
  - newspapers
  - office and classroom paper
  - bottles and cans
  - boxes
  - wood pallets
  - food scraps

# Scope of MSW, cont.

- grass clippings
- clothing
- furniture
- appliances
- automobile tires
- consumer electronics
- batteries

# Not included in MSW

- Abatement debris
- Construction and demolition debris
- Biosolids (sewage sludge)
- Industrial process waste
- Agricultural waste
- Automobile bodies
- Combustion ash
- Oil and gas waste
- Mining waste

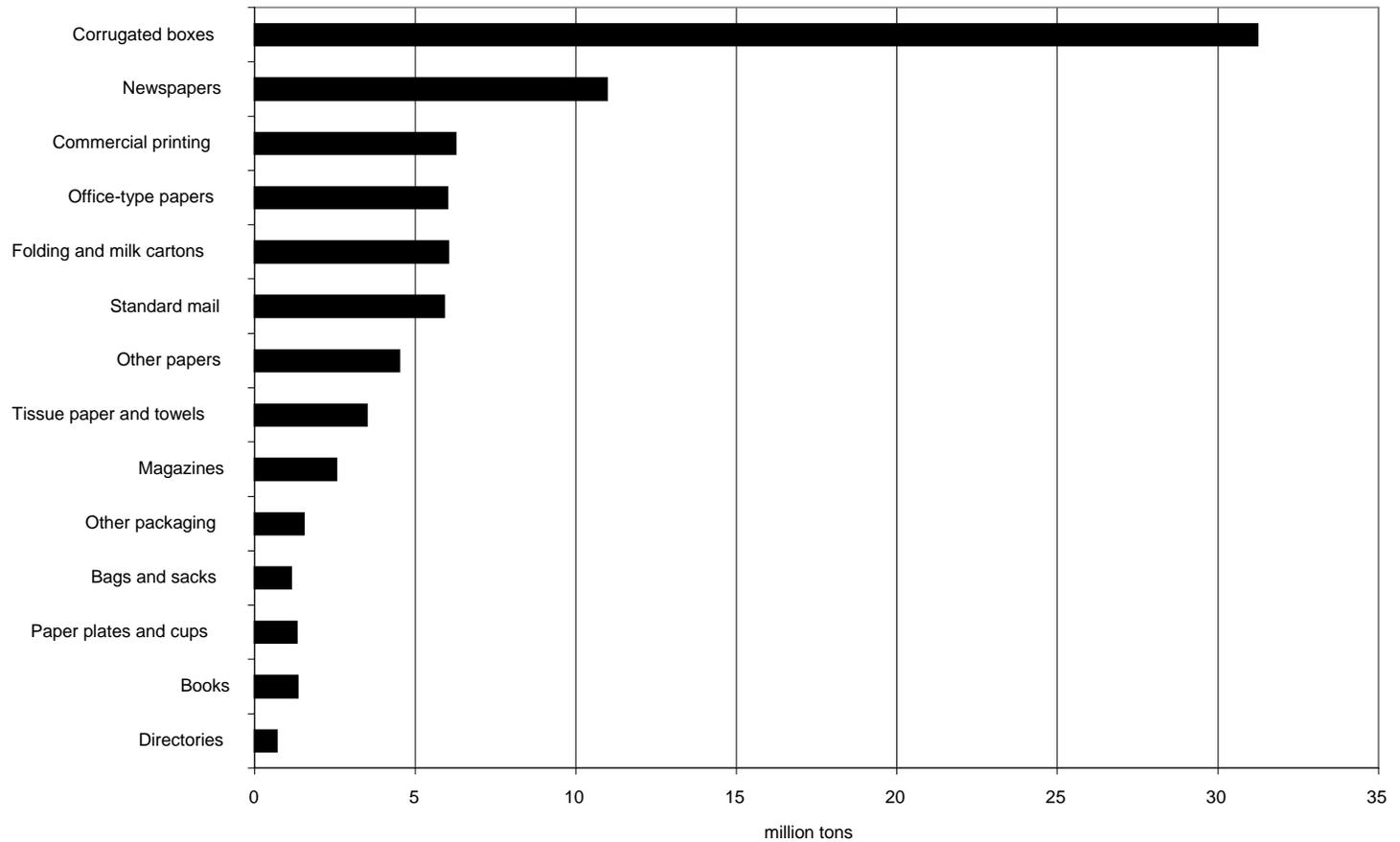
# Sources of MSW

- Homes
- Institutions such as schools or prisons
- Commercial sources such as restaurants, office buildings, retail and wholesale establishments

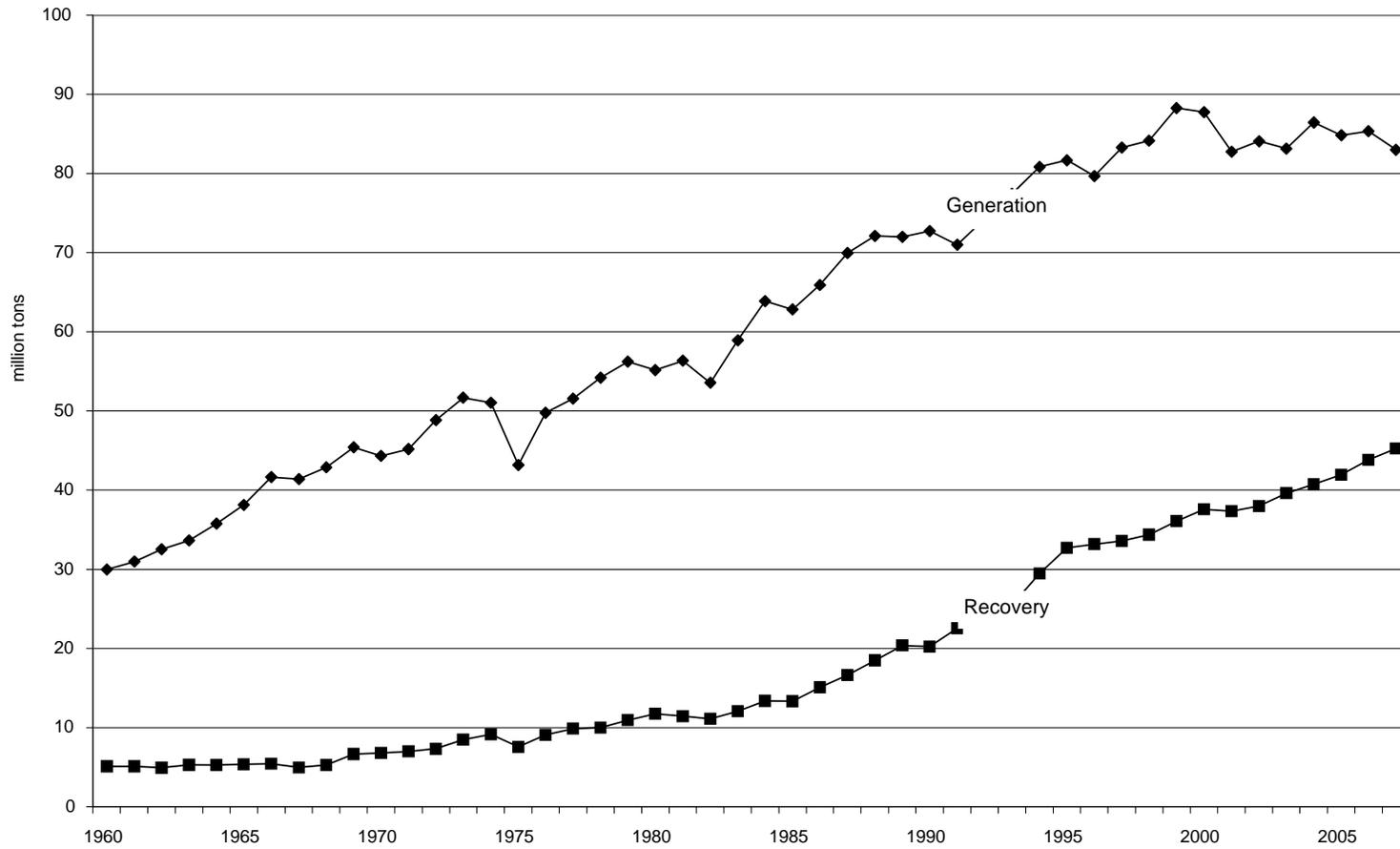
# Imports and Exports

- When estimating generation, production data are adjusted by imports and exports from the U.S.

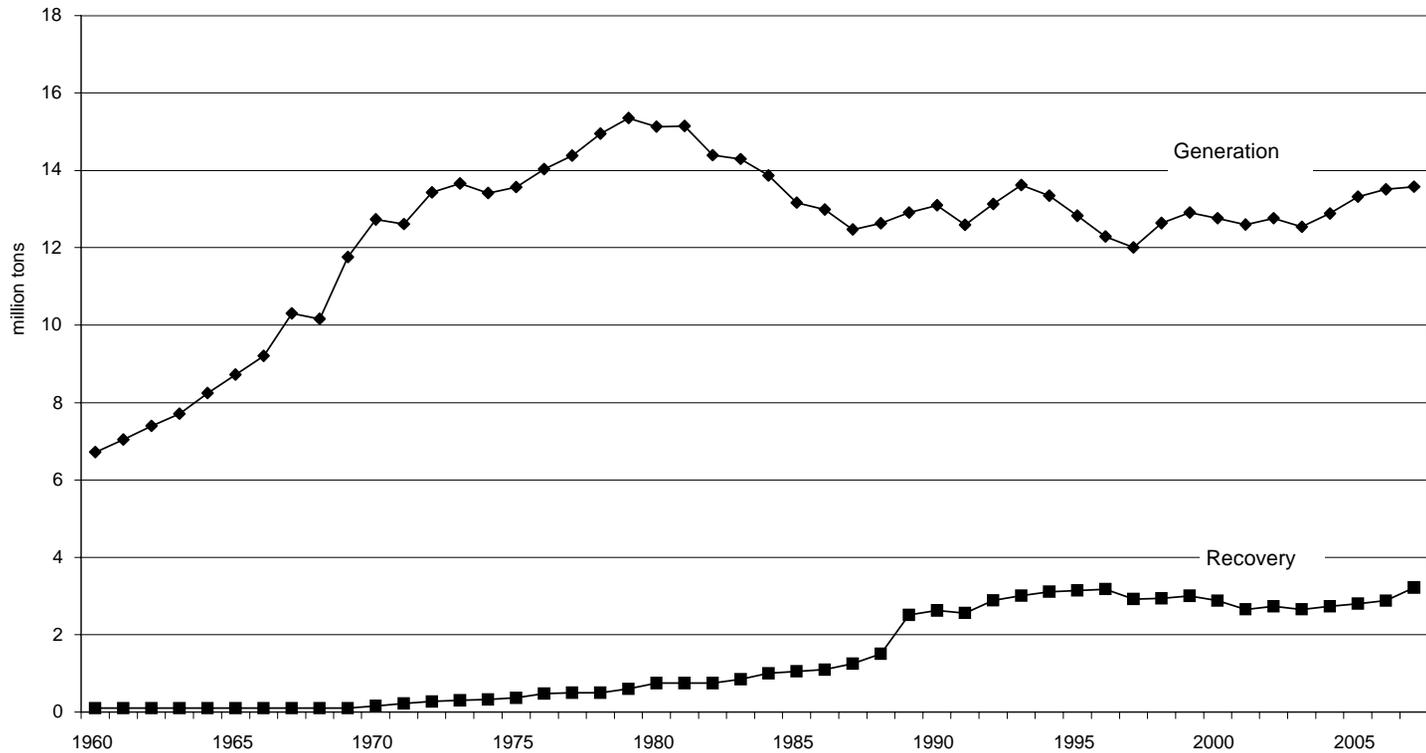
## Paper and paperboard products generated in MSW, 2007



# Paper and paperboard generation and recovery, 1960 to 2007



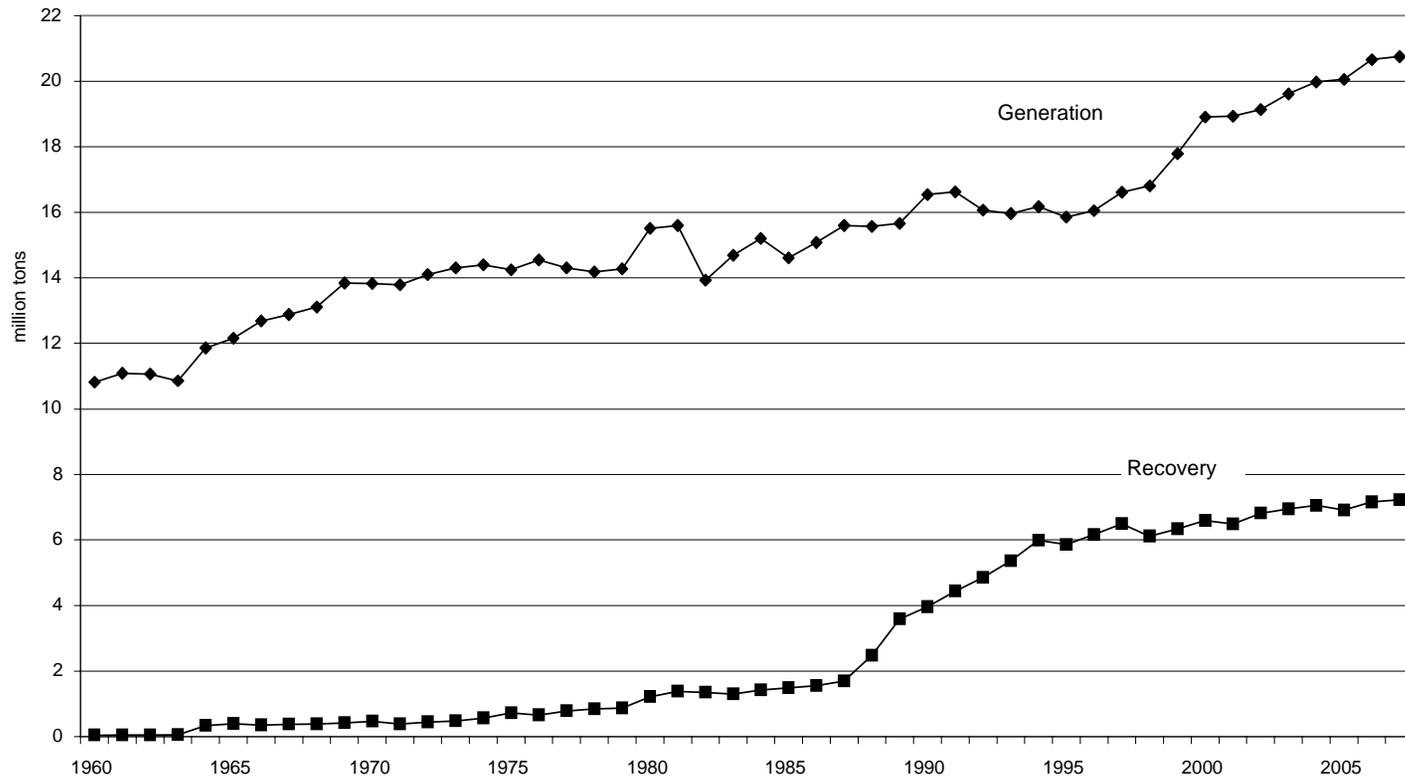
## Glass generation and recovery, 1960 to 2007



# Glass

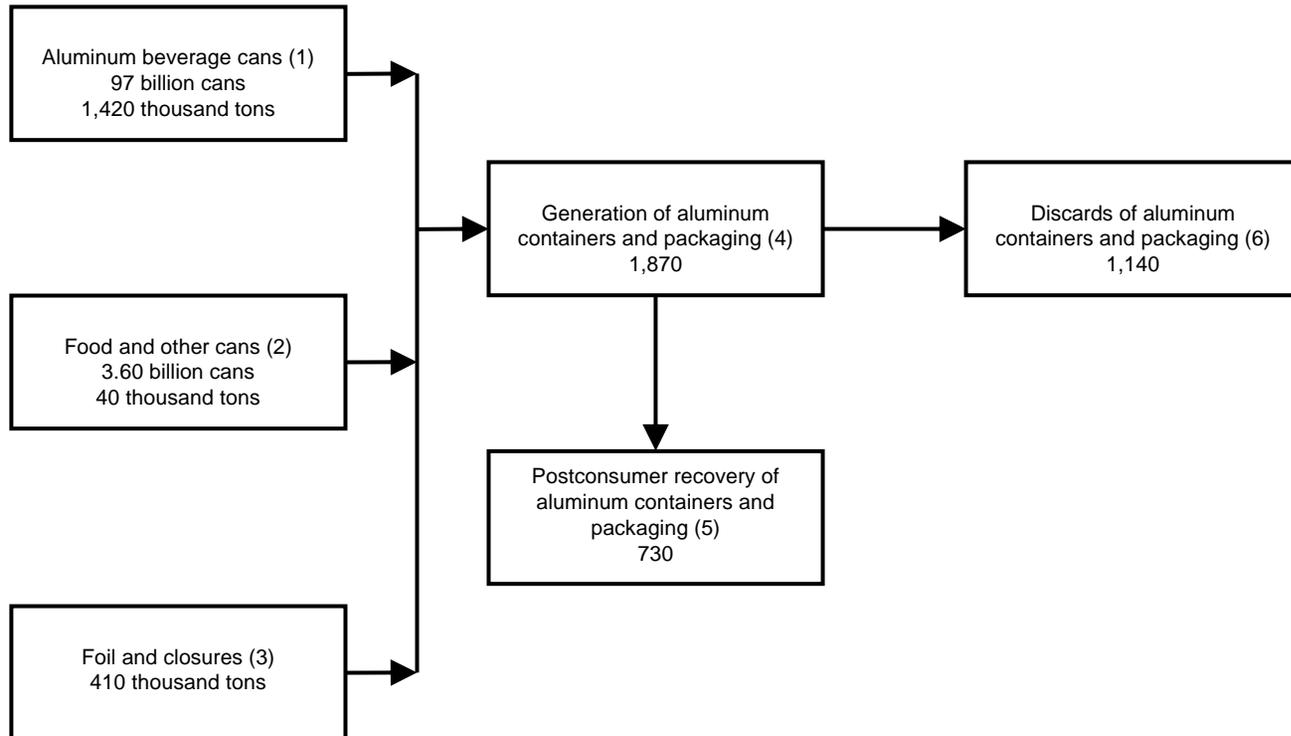
- Recovered glass bottles are used to make new bottles and other uses such as fiberglass insulation, aggregate, and glassphalt.
- Data source for recovery had been the Glass Packaging Institute in the '90's but now the data source is industry and state agencies.

## Metals generation and recovery, 1960 to 2007



# MATERIAL FLOWS METHODOLOGY FOR ALUMINUM CONTAINERS AND PACKAGING, 2007

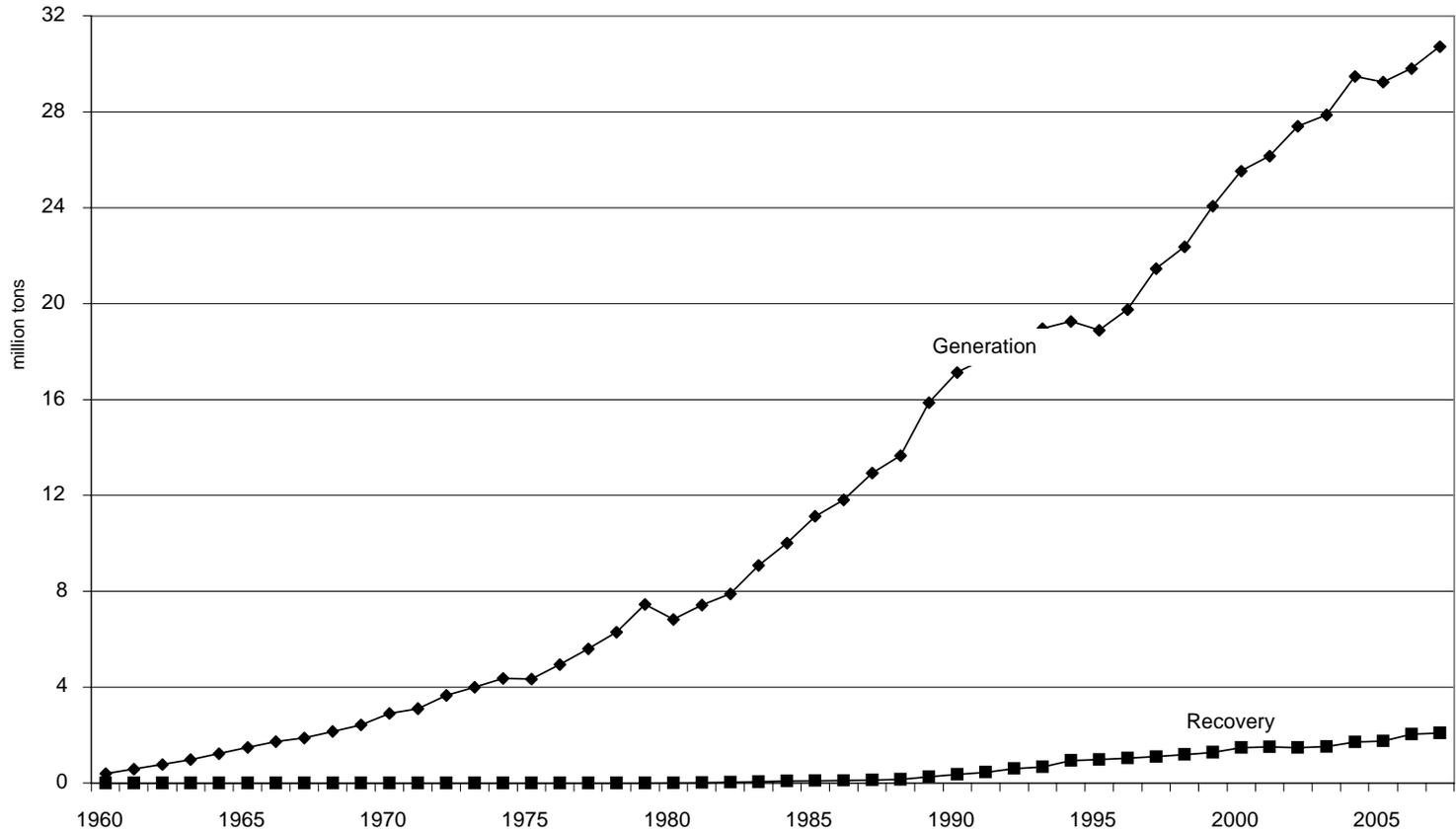
(In thousands of tons except where noted)



# FLOW CHART SOURCES

- 1 Shipments plus imports minus exports. The Aluminum Association. Aluminum Can Reclamation.  
U.S. Bureau of the Census, Merchandise Trade (7612901030) unfilled cans exported and imported.  
Conversion factor 34.17 cans per pound. [www.aluminum.org](http://www.aluminum.org).
- 2 The Aluminum Association. Aluminum Statistical Review. Shipments by Major Markets. Sheet and plate for containers and packaging minus 25% scrap loss minus beverage cans in (1).
- 3 The Aluminum Association. Aluminum Statistical Review. Shipments by Major Markets. Foil for containers and packaging minus a 1 percent fabrication loss.
- 4 Beverage cans plus food and other cans plus foil and closures.
- 5 Cans melted by domestic end users plus exported used beverage containers (UBCs) minus imported UBCs.
- 6 Discards equal generation minus recovery.

# Plastics generation and recovery, 1960 to 2007



# Plastics Data

- Generation—Production data from the American Chemistry Council (ACC)
- Recovery—Recovery data on plastics from ACC and NAPCOR, the National Association for PET Container Resources.

# Rubber and Leather

- Rubber and leather is 3% of MSW generation
- Only recovery for recycling is tires – 1.1 million recovered in 2007, or 34.8% of the rubber in tires.
- Overall the category of rubber and leather in MSW had a 14.7% recovery rate in 2007.

# Textiles

- An estimated 11.9 million tons of textiles were generated in 2007 (4.7% of MSW generation)
- The recovery rate for all textiles is 15.9% in 2007 (1.9 million tons).

# Wood

- Generation of wood in MSW is 5.6% of total MSW generation
- Recovery is estimated at 1.3 million tons for 2007 or a recovery rate of 9.3%.

# Food Scraps

- Sources of food waste
- Preconsumer food waste
- Generation
- Food scraps from residential and commercial sources
  - sampling studies
  - demographic data

# Food Scraps, cont.

- Generation of food scraps is estimated to be 31.7 million tons in 2007 (12.5% of total MSW generation)
- Recovery data
- Total recycling equals 810,000 tons of food scraps and other organic materials composted in 2007, or a recovery rate of 2.6%.

# Yard Trimmings

## Generation

- Current legislation has been tabulated, showing that 21 states and the District of Columbia have legislation reducing yard trimmings, representing about 50% of the nation's population.
- An estimated 32.6 million tons of yard trimmings were generated in 2007. This is 12.8% of MSW generation.

# Yard Trimmings, cont.

## Recovery

- What's included and excluded
- Recovery for composting of yard trimmings was estimated using existing information from state composting programs that estimated tonnages composted or mulched in 2007.
- Estimated 20.9 million tons of yard trimmings removed for composting or mulching in 2007 (15.8 million tons in 2000)
- In 2007 64.1% of yard trimmings were composted.

# EPA's Voluntary, Standard Method for Measurement of State Recycling Rates

Published in 1997

- Core elements
- Flexible elements
- Implementation

# EPA's Voluntary, Standard Method for Measurement of State Recycling Rates

Core elements:

- Performance measure (recycling rate)
- Recycling rate equation
- Scope of MSW
- Definitions
- Standard measurement year
- Standard volume-to-weight conversion factors
- Standard unit of measure (tons)

# EPA's Voluntary, Standard Method for Measurement of State Recycling Rates

## Flexible elements

- Reporting lines
  - States counties or cities may have primary responsibility for collecting data
- Reporting forms

# EPA's Voluntary, Standard Method for Measurement of State Recycling Rates

Implementation through guidance document with

- Tips
- Forms
- Worksheets

# For more information

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