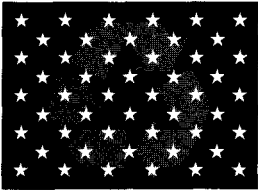


Recycling in the States

1990 Review



More than 140 recycling laws were enacted by 38 states in 1990. All but two states, Idaho and South Carolina, enacted some type of recycling law in 1989-1990. Thirty-three states and D.C. have comprehensive laws, which require detailed statewide recycling plans and/or separation of recyclables, and which contain at least one other provision to stimulate recycling.

WHAT IS RECYCLING?

Recycling involves four basic steps:

- Separating reusable products from other trash, often at curbside, but sometimes at a central facility.
- Processing them so that they can be substituted for virgin raw materials at manufacturing plants.
- Returning them to commerce, usually as part of other products. Common examples include newsprint, which can be reprocessed to make new newsprint or tissue, and aluminum cans, which can be melted to make new containers.
- Having recycled products bought and used by consumers.

Significant trends in 1990 recycling legislation included mandates to product manufacturers and the growth of disposal bans for common recyclables, not just "problem wastes" such as used oil, batteries and appliances. States are beginning to go to the source — the product maker — with requirements to use recycled content, reduce toxins, avoid unsubstantiated environmental claims on packaging, and even collect and recycle problem materials. This trend is likely to continue as states look for ways to share the financial burdens of establishing a recycling infrastructure. States are also emphasizing recycling in their own procurement policies by allowing price preferences for recycled products and setting goals for recycled product purchases.

The drive to recycle is a result of many forces:

- The rising costs of waste disposal as old landfills are closed and new state-of-the art landfills and waste-to-energy plants are built according to stringent new environmental regulations.
- The drive to conserve natural resources and existing landfill capacity.
- The difficulty of siting new waste disposal facilities.

Comprehensive laws make recycling part of state-wide waste management practices through detailed planning requirements and/or separation mandates. These laws also commonly include recycling goals, grants, education programs and market development incentives. Seven states (**Arizona, Delaware, Georgia, Indiana, Missouri, New Mexico, and Oklahoma**) enacted new comprehensive recycling laws in 1990, compared to 11 states that did so in 1989. The number of new comprehensive laws enacted each year will probably continue to decline since the states with the greatest incentives to pass them have already done so.

Also in 1990, **Connecticut** and **Wisconsin** enacted significant revisions of earlier comprehensive laws. Connecticut dropped its 1987 disposal ban on recyclables, which had not yet taken effect, in favor of source separation requirements. Wisconsin beefed up its 1983 "opportunity to recycle law" with a major legislative package that banned common recyclables from landfills unless communities implement source separation programs. The new 1990 comprehensive recycling laws are summarized below.

Arizona. Chapter 378 requires local governments to provide residents with the opportunity to recycle and practice waste reduction. A recycling program is created within the Department of Environmental Quality that will be funded in part from a landfill disposal fee. Recycling program responsibilities include public education, technical assistance, status reports, market studies and developing a recycling emblem. The law also grants a five percent price preference to recycled paper products, requires plastic bottles to be coded and requires newspapers to use recycled content. By November 1, 1991, state

COMPREHENSIVE RECYCLING LAWS* AS OF DECEMBER 31, 1990

Legend:

- 1990 Law (Stippled pattern)
- Pre-1990 Law (Solid black)
- Major Revision of Pre-1990 Law (White)

*Comprehensive recycling laws require detailed statewide recycling plans and/or separation of recyclables, and contain at least one other provision to stimulate recycling.

Georgia. The “Georgia Comprehensive Solid Waste Management Act” (S.B. 533) sets a goal of reducing the amount of municipal solid waste received at disposal facilities by 25 percent of 1992 per capita waste amounts by July 1, 1996. A new state waste management plan was due in January 1991. Counties must then create their own plans modeled after the state document. After July 1992, if a county wants to transport its waste to other jurisdictions, it must be “actively involved” in a plan to meet the state recycling goals. Grants and loans for new solid waste equipment and facilities are also linked to county participation in waste reduction efforts. Other features of the law include plastic bottle coding, state procurement measures

Missouri. S.B. 530 establishes a goal of 40 percent weight reduction in solid waste by 1998 through recycling and waste minimization. Each district or county must have a solid waste management plan that includes specified recycling and waste reduction strategies. Solid waste districts must submit plans within 18 months of their formation; counties not in districts must submit plans by

June 1995. Lead-acid batteries, major appliances, waste oil, and whole waste tires are banned from landfills effective January 1991; yard waste is banned in January 1992, and small quantities of hazardous waste are banned in January 1994. A 50-cent tax on new tire sales will help fund a tire cleanup program. Market development initiatives include setting mandatory content standards for newspapers, allowing minimum recycled and post-consumer content levels to be increased for state procurement programs, and using waste tires in highway improvement projects. One million dollars in grant money for market development will be available during FY 1992-1997.

New Mexico. Signed by the governor on March 6, 1990, S.B. 2 relies on detailed planning to establish a new "environmentally safe" waste management system. The plan must set a goal of diverting 25 percent of the waste stream from disposal facilities by July 1, 1995, and 50 percent by July 1, 2000. Other components include a waste characterization study, landfill capacity assessments, provisions for siting disposal facilities, and a public education program. The state regulatory board must adopt regulations to establish source reduction and recycling programs to meet the state recycling goal. The law gives municipalities the authority to impose environmental taxes on businesses to help finance programs.

Oklahoma. H.B. 1905 directs the State Department of Health to prepare a detailed integrated waste management plan by July 1, 1993. The plan will set 5-, 10- and 20-year waste reduction and recycling goals. Other department responsibilities include providing technical assistance for recycling, creating a secondary materials market database, conducting public education programs, and providing an agenda for studies. An annual fee of up to \$3.00 per waste generator and a \$1.50 per ton surcharge

at disposal facilities will help fund new programs. The fee will be reduced in communities that substantially reduce their waste streams.

Source Reduction: The First Step

The first priority of the U.S. Environmental Protection Agency's recommended national waste management strategy is reducing the amount and toxicity of the waste stream. While this goal sounds straightforward, creating new policies to implement it has proved to be a challenge because source reduction involves changes in the manufacturing process. States have tried bans on the sale and disposal of products, and taxes on products that are not recycled, which mostly impact products after they are part of the waste stream.

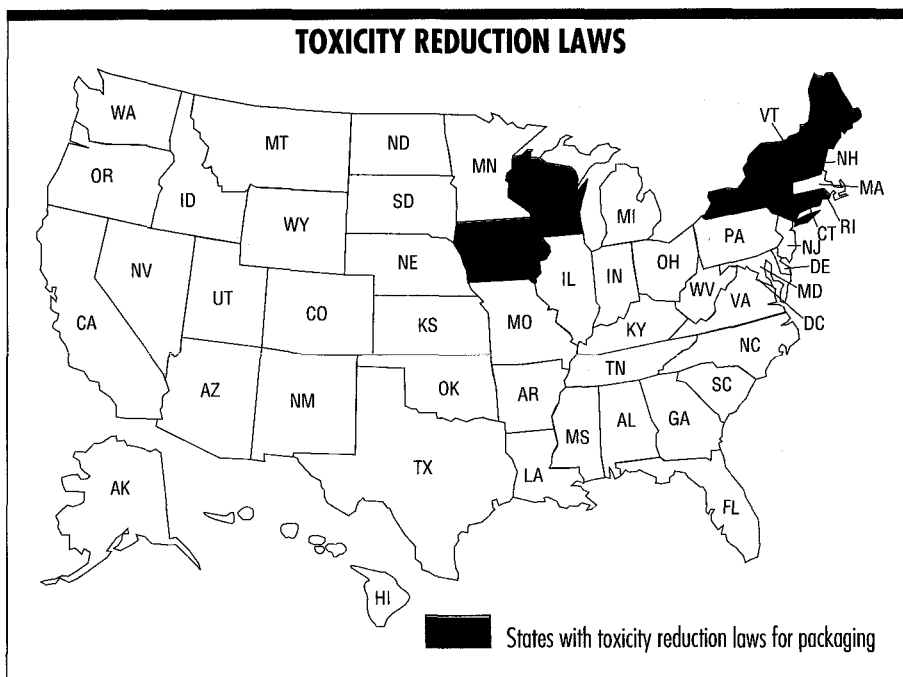
Outright, unconditional bans on the sale of certain manufactured products were among the earliest legislative attempts to implement waste reduction. A few states have enacted bans against such products as plastic bags, polystyrene food packaging, aseptic beverage containers and plastic bags with metal components.

Recently, more state legislatures have begun using the *threat* of a ban as leverage to force either reduction or recycling of wastes. The threats have been used to try to limit the sale of products that contain certain toxins and to require stronger proof of environmental claims.

The first true "source reduction" laws were enacted in 1990 by eight states (**Connecticut, Iowa, Maine, New Hampshire, New York, Rhode Island, Vermont, and Wisconsin**) that set limits for certain toxins in packaging and banned the sale of products that exceed those limits. Packaging in these states cannot be sold if it contains more than 600 parts per million by weight of lead, cadmium, mercury or hexavalent chromium, which are used in red

and yellow pigments and in plastic as stabilizers. Permissible concentration levels decline to 100 parts per million by weight by the mid-1990s. After 1992, these metals cannot be intentionally added to a product or packaging. Packaging that contains recycled material may have longer to comply.

Some states have considered placing a disposal tax or fee on products to create incentives for people to reduce waste and to buy recyclable materials. The product taxes and fees that have been enacted to date, however, function more as sources of revenue for state waste management programs than as mechanisms for changing consumer behavior. **Florida** passed a law in 1988 that imposes a one cent per container retail tax on



containers made from glass, aluminum, metal, plastic, and plastic-coated paper if recycling rates for the products do not exceed 50 percent by 1992 and two cents if the 50 percent rate is not achieved by 1992. The tax is refundable if the containers are brought to a drop-off center for recycling.

A study required by a 1989 **California** law recommends levying a fee on all products at the point of first sale in California (when the finished product is sold to a distributor or retailer). The amount of the fee would be based on the monetary and environmental costs of solid waste management for the product. (Legislation based on these findings was introduced in 1991.)

Problem wastes, such as tires and batteries, are more likely to be subject to a disposal tax or fee than is packaging¹. In **Wisconsin**, retailers may place a \$5.00 deposit on new lead-acid batteries, although that fee will be refunded if the consumer brings in a used battery. Consumers bringing in used batteries without making a purchase must pay retailers a \$3.00 handling charge. **Utah** and **Kansas** both place fees on new tire sales to fund tire recycling programs.

Supply Side Mandates

Of the 33 states with comprehensive recycling laws, 21 and the District of Columbia have "supply side" mandates, i.e., they essentially require separation of recyclables. The other 12 states require state and/or local governments to prepare recycling plans. Separation requirements generally take one of four forms:

- Opportunity to recycle — municipalities must offer all citizens the opportunity to recycle, by supplying either curbside collection or drop-off centers. **Wisconsin** and **Oregon** first adopted these laws in the early 1980s.

- Community separation — municipalities may choose whether to implement a curbside collection program or to have the materials separated from other trash at a central location. Municipalities are often required to meet a recycling goal as well.

- Mandatory goals — the state sets a mandatory recycling goal, but imposes no particular requirement on how a municipality meets it.

- Source separation — generators (residences and/or businesses and institutions) must separate recyclables from their other trash. These laws are usually carried out through curbside collection.

Separation mandates create a large supply of secondary material, which helps to show manufacturers that they can count on secure supplies for producing goods with recycled content. Many municipalities require source separation; however, only **Connecticut**, **Rhode Island**, **New Jersey**, **New York**, and **Pennsylvania**, plus the **District of Columbia** have state-wide source separation laws. **Maine** has a limited source separation law that applies only to offices. Most separation mandates will take effect over the next four years. If statutory deadlines are

TYPES OF RECYCLING LAWS

State	Year Enacted	Type of Plan
Arizona	1990	Opportunity to recycle only
Arkansas	1989	Recycling plans only
California	1989	Mandatory goals*
Connecticut	1990	Source separation
Delaware	1990	Opportunity to recycle only
District of Columbia	1989	Source separation
Florida	1988	Mandatory goals*; community separation
Georgia	1990	Community separation
Hawaii	1988	Opportunity to recycle only
Illinois	1988	Community separation
Indiana	1990	Recycling plans only
Iowa	1989	Recycling plans only
Maine	1989	Source separation**
Maryland	1988	Mandatory goals*; community separation
Massachusetts	1987	Recycling plans only
Michigan	1988	Recycling plans only
Minnesota	1989	Mandatory goals*; community separation
Missouri	1990	Recycling plans only
New Hampshire	1988	Recycling plans only
New Jersey	1987	Mandatory goals*; source separation
New Mexico	1990	Recycling plans only
New York	1988	Source separation
North Carolina	1989	Community separation
Ohio	1988	Mandatory goals*; community separation
Oklahoma	1990	Recycling plans only
Oregon	1983	Opportunity to recycle only
Pennsylvania	1988	Source separation
Rhode Island	1986	Mandatory goals*; source separation
Tennessee	1989	Recycling plans only
Vermont	1987	Recycling plans only
Virginia	1989	Mandatory goals*
Washington	1989	Community separation
West Virginia	1989	Recycling plans only
Wisconsin	1990	Community separation

*Note: "Mandatory" can be subject to different interpretations.

**For offices only

1. This report does not cover bottle bills, which place a deposit on beverage containers and refund the money to customers that return the containers to retailers. Between 1972 and 1983, bottle bills took effect in nine states. While the laws were enacted to reduce roadside litter, they are now being promoted as a method of encouraging recycling. California enacted a modified bottle bill in 1987 that requires manufacturers to pay a processing fee for containers which are brought back to recycling centers across the state.

SOURCE SEPARATION REQUIREMENTS

State	Who Must Separate	Materials
District of Columbia	Residences, businesses	Glass containers, metal cans, newspapers, yard waste ¹ , paper ²
Connecticut	All generators	Glass and metal food containers, newspaper, cardboard, office paper, used oil, car batteries, nickel cadmium batteries, leaves, scrap metal
Maine	Businesses	Office paper, corrugated cardboard
New Jersey	Residences, businesses, institutions	Three materials ³ + leaves
New York	Residences, businesses, institutions	Paper, glass, metal cans, plastic containers, yard waste ⁴
Pennsylvania	Residences	Three materials + leaves
	Businesses, institutions	High-grade office paper, corrugated cardboard, aluminum cans ⁵
Rhode Island	Residences, businesses	Glass food & beverage containers, newspaper, tin & steel cans, aluminum, some plastics, large appliances
	Businesses	Cardboard, office paper

Note: This chart does not include separation requirements that only apply to state government agencies and institutions.

1. Residential separation only.

2. Separation by offices only.

3. Municipalities choose three materials to be recycled from a state list.

4. If "economically feasible."

5. Municipalities may require businesses to separate additional recyclables.

met, programs in **New Jersey, Connecticut and Pennsylvania** should be fully implemented by the end of 1991.

As comprehensive laws have spread inland from the East and West Coasts, states have been more likely to require plans and to ban selected materials from disposal facilities than to require communities to implement source separation programs. Reasons for the fall-off in separation mandates may include:

- A reaction to flooded markets and low prices for newspaper and colored glass — two staples of curbside programs.

- Less opportunity to recycle as a result of lower population densities and distant markets, which make source separation programs more expensive.

- Less pressure to recycle as a result of less severe landfill capacity shortages.

- Less economic incentive to recycle as a result of low disposal costs.

Disposal Bans

Disposal bans are becoming increasingly common as a method of preventing bulky or toxic products from entering landfills and incinerators and of increasing the recycling of such products. The burden of complying with a ban is usually placed on the disposal facility and the hauler, even though neither one has any control over what is put in the trash. For some products (lead-acid batteries, tires, etc.), retailers may be required to accept and recycle banned products. Separation laws, on the other hand, place responsibilities on the generators and communities to do the recycling. Since disposal is usually the last resort for

products that can't be recycled, care must be taken to ensure that a well-publicized and well-enforced alternative for handling the restricted wastes exists, or illegal dumping may result.

In 1990, 45 product disposal bans were enacted by 12 states (**Georgia, Kansas, Kentucky, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New York, Vermont, Virginia, and Wisconsin**). To date, at least 100 product disposal bans have been enacted by 29 states and the District of Columbia. Ten of the bans took effect in 1989, 26 took effect in 1990, and 22 bans are scheduled to take effect in 1991. Many of the disposal bans are on products coming from automobiles: 27 states ban lead-acid batteries; 14 states ban tires; 12 states and D.C. ban used oil. Product retailers are usually required to accept these items from customers when replacements are purchased, although tires may often be landfilled if they are shredded. Other banned materials include yard waste (13 states)² and large appliances (8 states). Yard waste is likely to be collected separately at curbside in the Northeast (because of source separation laws for other materials), but people living in the Midwest and the South may have to transport the material to central compost facilities themselves or else start backyard compost piles.

The large number of product disposal bans enacted in 1990 is due in part to a new **Wisconsin** law and a new **Massachusetts** regulation that target common recyclables, such as glass, plastic and metal containers, and many paper products, in addition to problem wastes. The Wisconsin bans take effect between 1991 and 1995, but

2. In addition, New York and the District of Columbia require yard waste to be source separated.

communities can be exempted from the law if they implement source separation programs approved by the state. The Massachusetts ban takes effect in 1992 for all but undefined "de minimis" quantities of aluminum, glass and metal containers and in 1994 for plastics and paper. Disposal facilities must file plans for complying with the restrictions. The state is scheduled to provide more information about how to comply with the bans six months before they take effect.

Capturing the Commercial Waste Stream

The nation's attention has been focused on recycling programs for residential waste. But about half of a municipality's waste comes from businesses, schools and government agencies. For a locality to reach a high recycling goal, the commercial sector will have to recycle its waste as well.

At least seven states (Connecticut, Maine, New Jersey, New York, Pennsylvania, Rhode Island, and Wisconsin) plus the District of Columbia already have laws that will require commercial businesses to separate recyclables. Businesses may also be required to recycle in 11 other states that either ban most recyclables from landfills or require municipalities to set up programs or to meet a recycling goal.

Many businesses have been recycling for years because it saved them money and markets were readily available. More than half of the 23 million tons of material recycled in 1988 was corrugated boxes, office paper and lead-acid batteries recovered from businesses. Now, legislation will require more businesses to begin separating and more materials to be separated. Since new manufacturing capacity for recycled printing and writing

DISPOSAL BANS

State	Lead-acid Batteries	Yard Waste	Unprocessed Tires	Used Oil	Large Appliances	Other
California	■					
Connecticut	■	■ ¹		■		A
D.C.				■		
Florida	■	■ ²	■	■	■	B
Georgia	■					
Hawaii	■					
Illinois	■	■	■			
Iowa	■	■	■	■		C
Kansas	■		■			
Kentucky	■					
Louisiana	■		■	■	■	
Maine	■					
Massachusetts	■	■	■	■	■	D
Michigan	■	■		■		
Minnesota	■	■	■	■	■	E
Missouri	■	■	■	■	■	
New Hampshire	■					
New Jersey		■ ¹				
New York	■					
North Carolina	■	■ ²	■	■	■	
Ohio	■	■	■			
Oregon	■		■			F
Pennsylvania	■	■ ¹				
Rhode Island			■ ³			G
Tennessee	■					
Vermont	■		■	■	■	
Virginia	■					
Washington	■					
Wisconsin	■	■	■ ⁴	■ ⁴	■	H
Wyoming	■					

Notes: 1. Yard waste disposal bans only apply to leaves.
2. Ban applies to lined landfills only.
3. Banned only from incinerators.
4. Can be incinerated with energy recovery.

Other: A. Nickel-cadmium batteries.
B. Construction & demolition debris.
C. Non-degradable grocery bags; beverage containers returned to wholesalers through the state's mandatory deposit law.
D. Aluminum, glass, and metal containers, single polymer plastics, and recyclable paper.
E. Dry cell batteries that contain mercuric oxide or silver oxide electrodes, nickel-cadmium, or sealed lead-acid. Mixed unprocessed waste in metro area.
F. Recyclable material that has already been separated.
G. Loads of commercial waste containing more than 20 percent recyclables.
H. Non-degradable yard waste bags plus aluminum, plastic, steel and glass containers, cardboard, foam polystyrene packaging, magazines, newspaper and office paper are banned from disposal unless municipalities are certified as having an "effective" source separation program.

PRODUCTS RECYCLED 1988

Product	Millions of Tons Recycled	% of Product Generated
Corrugated boxes	10.5	45.4
Newspapers	4.4	33.3
Office paper	1.6	22.5
Lead-acid batteries	1.5	90.0
Glass beer & soda bottles	1.1	20.0
Aluminum cans	0.8	55.0
Books & magazines	0.7	13.2
Junk mail	0.6	14.6
Compost	0.5	1.6
Steel food & beverage cans	0.4	13.8
Glass food containers	0.3	8.1
Folding cartons	0.3	7.7
Paper bags & sacks	0.2	7.0
Major appliances	0.2	7.0
Glass wine & spirits bottles	0.1	5.0
Plastic soft drink bottles	0.1	21.0
Rubber tires	0.1	4.8
Other	0.1	—

TOTAL 23.5

Source: *Characterization of Municipal Solid Waste in the United States: 1990 Update*. Prepared for the U.S. Environmental Protection Agency by Franklin Associates, Prairie Village, Kansas, June 1990.

paper is not expected to come on-line for at least three to four years, the increased collections will likely flood the markets for office waste paper, just as the residential programs glutted the old newspaper market. In addition, many smaller companies are likely to face higher waste disposal bills because the cost of additional collection service for recyclables will be much greater than the revenue from materials sales and avoided disposal costs.

Two 1990 laws go beyond requirements for business to recycle their own waste: **Connecticut** and **Rhode Island** require telephone book distributors to make their product recyclable and also hold them responsible for both *collecting* and recycling the used books. Previous such laws for beverage can redemption and problem wastes like tires, lead-acid batteries and used oil only required retailers to *accept* the used items from their customers.

Creating an Infrastructure

In the mid-1980s it was not clear whether the American public would accept recycling. The first laws and mandates focused on public participation. Many parts of this country have fervently embraced recycling, so

states increasingly face the problem of figuring out what to do with all of the material being collected. Recycling has become a major component of the waste management system, and it requires new facilities, processes, machinery and markets. Developing this infrastructure is a costly process. On the collection and sorting level, trucks, containers, balers, materials recovery facilities (MRFs) for processing, demonstration projects and market studies all take capital. Using collected material will require new manufacturing capacity (e.g., deinking plants for newsprint) but businesses are unlikely to make the investment unless people demand products with recycled content.

Grants and Loans

Most states provide grant money to local governments to help them contract for or establish recycling programs. Low-interest loans are less common, and directed primarily to businesses. State grant and loan programs may be financed through federal oil overcharge funds, surcharges on disposal facilities, taxes on problem wastes, taxes on businesses or a combination of such sources.

At least 40 states provide grant money for recycling. Most of the funds are earmarked for municipalities to help them prepare plans, conduct market studies, buy equipment and create public education programs. The total amount of money available in FY 1990 ranged from approximately \$.03 per person in **Nevada** to \$5.80 per capita in **Maine**. The median expenditure was 50 cents per capita. At least 11 states (**Arizona, Illinois, Iowa, Michigan, Minnesota, New Jersey, New Mexico, New**

WHY ARE THESE PROBLEM WASTES?

■ About 180 million gallons of used motor oil and 390 million gallons of oil from businesses are thrown in the trash or poured down sewers each year (an amount 57 times greater than the Exxon Valdez spill). Cheap oil prices and liability concerns have resulted in only a 10 percent recycling rate for used motor oil in recent years.

■ Only 14 percent of the 234 million vehicle tires discarded each year are recycled or incinerated with energy recovery. An additional 44.5 million tires are reused. The remainder, about 200 million tires a year, are thrown in stockpiles, joining the estimated two to three billion tires already there. Such stockpiles can be breeding grounds for disease-carrying mosquitoes. Another hazard is tire pile fires, which send noxious gases into the air and can take months to extinguish.

■ Even though about 90 percent of the lead acid batteries sold in the U.S. are recycled each year, a recent EPA report found that the discarded ones are still a major source of lead in municipal waste. New laws aim to capture the remaining 10 percent for recycling.

■ Only seven percent of the three million tons of large appliances, e.g., stoves, washing machines and refrigerators, discarded each year are recycled. Scrap dealers are often reluctant to accept appliances because some older models contain PCBs, which make them too expensive to handle.

GRANTS AND LOANS

This map of the United States illustrates the distribution of recycling financial support. States providing both grants and loans for recycling are shown in solid black, while states providing only grants are shown with a stippled pattern. The legend at the bottom clarifies these categories.

States that provide grants and loans for recycling (Solid Black): CA, WA, OR, NV, ID, MT, ND, SD, IA, NE, KS, MN, WI, IL, IN, OH, WV, VA, NC, SC, TN, MS, AL, GA, FL, HI, AK, VT, NH, MA, CT, RI, NJ, DE, MD, DC.

States that provide grants for recycling (Stippled): WA, OR, ID, MT, WY, UT, CO, AZ, NM, OK, TX, AR, LA, AL, GA, FL, VT, NH, MA, CT, RI, NJ, DE, MD, DC, NC, VA, WV, OH, IA, SD, NE, KS, MN, WI, IL, IN, TN, MS, AL, GA, FL, HI, AK.

Legend:

- States that provide grants and loans for recycling
- States that provide grants for recycling

PROFILES: GRANT AND LOAN PROGRAMS

California — Eight communities will win recycling market development zone status from the state. To qualify, the municipality must have an adequate supply of secondary materials, suitable land and infrastructure, and must provide tax and regulatory incentives to attract manufacturers. Businesses within these zones are eligible for up to \$1 million in low-interest loans from the state and are given preference for R&D money. Revenues from the Beverage Redemption Act fund \$8 million in grants to local conservation groups and \$10 million worth of incentive payments to glass manufacturers that use recycled content.

New Jersey — Municipalities receive up to \$10 per recycled ton in rebates from the state. Recycling processors and manufacturers are eligible for \$50,000 to \$3 million in low-interest loans depending on the type of material processed. Processors and manufacturers of post-consumer plastics, tires and low grade paper are eligible for the higher amounts.

Michigan — A Quality of Life bond issue provides businesses in Michigan with \$100,000 to \$5 million in low-interest loans for processing and manufacturing equipment, research and development and product marketing. Some matching funds are required.

Utah — The state will pay tire recyclers \$21 per ton for tires that are made into new products or incinerated with energy recovery.

Vermont — Municipalities that adopt source separation ordinances before July 1993 are eligible for grants to reimburse some of the capital costs of implementing collection and processing systems. If the law is adopted before July 1991 and contains enforcement provisions, up to 80 percent of costs may be reimbursed.

Wisconsin — Manufacturers that use waste as a raw material are eligible for rebates up to \$300,000 per facility. Separate grants up to \$75,000 are available to demonstrate the feasibility of an innovative technique for waste recycling (50% matches are required).

TAX INCENTIVES FOR RECYCLING

California — Banks and corporations may take a 40 percent tax credit for the cost of equipment used to manufacture recycled products. Development bonds for manufacturing products with recycled materials.

Colorado — Individual and corporate income tax credits for investments in plastics recycling technology.

Florida — Sales tax exemption on recycling machinery purchased after July 1, 1988. Tax incentives to encourage affordable transportation of recycled goods from collection points to sites for processing and disposal.

Illinois — Sales tax exemptions for manufacturing equipment.

Indiana — Property tax exemptions for buildings, equipment and land involved in converting waste into new products.

Iowa — Sales tax exemptions.

Kentucky — Property tax exemptions to encourage recycling industries.

Maine — Business tax credits equal to 30 percent of cost of recycling equipment and machinery. Subsidies to municipalities for scrap metal transportation costs. Taxpayers are also allowed a credit equal to \$5.00 per ton of wood waste from lumber production that is incinerated for fuel or to generate energy. The total credit may not exceed 50 percent of the tax liability.

Maryland — From their state income taxes, individuals and corporations can deduct 100 percent of expenses incurred to convert a furnace to burn used oil or to buy and install equipment to recycle used freon.

New Jersey — Businesses may take a 50 percent investment credit for recycling vehicles and machinery. They are also eligible for a six percent sales-tax exemption on purchases of recycling equipment.

North Carolina — Industrial and corporate income tax credits and exemptions for equipment and facilities.

Oregon — Individuals and corporations receive income tax credits for capital investment in recycling equipment and facilities. Special tax credits are available for equipment, property or machinery necessary to collect, transport or process reclaimed plastic.

Texas — Sludge recycling corporations are eligible for franchise tax exemptions.

Virginia — Individuals and corporations may take a tax credit worth 10 percent of the purchase price of any machinery and equipment for processing recyclable materials. The credit also applies to manufacturing plants that use recycled products.

Washington — Motor vehicles are exempt from rate regulation when transporting recovered materials from collection to reprocessing facilities and manufacturers. Tires and certain other hard-to-dispose materials are exempt from portions of sales and use taxes.

Wisconsin — Sales tax exemptions for waste reduction and recycling equipment and facilities; business property tax exemptions for some equipment.

York, Pennsylvania, Vermont, Wisconsin) give grants to the waste services industry as well as manufacturers, but not all types of companies are eligible in all states. For example, **Utah, Minnesota and Rhode Island** give grants to businesses that can recycle problem wastes.

Twelve states (**California, Illinois, Indiana, Kentucky, Maine, Maryland, Michigan, Minnesota, New Jersey, New York, Pennsylvania, Wisconsin**) make recycling loans available — mostly to businesses — for research and development, equipment purchases and market studies.

Grant and loan money for recycling in FY 1991 is contingent on favorable resolution of the current budget crises in many states. By recent estimates, 30 states had revenue shortfalls or accumulated deficits for fiscal 1991, and state budgets were projected to be even tighter during 1992. Several states cut recycling program staff early in 1991. Without state subsidies, communities will have to focus on how much recycling they want to pay for, and recovery goals may be re-evaluated.

Tax Incentives

Some states provide tax incentives — reductions in sales, income and property taxes — to encourage new private sector investment in recycling. In 1990, **Virginia** created tax credits for manufacturers that use secondary materials, while **Maine and Maryland** provided tax credits for businesses that recycle problem wastes.

States Demand Recycled

The recent glut of old newspapers in many parts of the country illustrated the dangers of collecting recyclables before finding markets for them. New state laws are addressing the demand side of the equation with a variety of market-stimulating measures.

Seven states now require manufacturers to use recycled materials. **Connecticut and California** were the first states to enact these laws with mandates that responded to the glut of old newspapers in 1989. In 1990, mandates spread to five other states and four other products. Now, **Arizona, California, Connecticut, Illinois, Maryland, Missouri and Wisconsin** all require newsprint publishers to use specific amounts of recycled newsprint; **California** also requires recycled content in trash bags and in glass food and beverage containers. Telephone books in **Connecticut** and plastic containers in **Wisconsin** are also required to have recycled content.

Forty states plus the District of Columbia have now passed laws (and the rest have other, non-legislative provisions) to stimulate markets by encouraging state agencies to purchase products with recycled content. (State and local expenditures account for about 12 percent of our country's GNP.) **Arizona, Hawaii, Kansas, Kentucky, Georgia, Nebraska, New Mexico and Utah** passed such laws for the first time in 1990. New procurement laws are much stronger than their predecessors from the 1970s, which simply encouraged state agencies to buy recycled products whenever feasible. Twenty-three states now allow agencies to spend from 5 percent to 10 percent

more for products with recycled content; however, in almost half of these states, the price preference applies only to paper and/or paper products. Sixteen states have set goals for the amount of recycled products (usually paper) that must be purchased. In **California, Louisiana, and Vermont**, the procurement goals apply to all products purchased by the state. In **Oregon**, state agencies may only purchase recyclable and/or degradable products.

In the rush to inform consumers about products that contain recycled content or are otherwise "environmentally friendly," some companies ran afoul of regulators. Eleven states (**Arizona, California, Connecticut, Illinois, Iowa, New Hampshire, New York, North Carolina, Rhode Island, Washington, Wisconsin**) have passed laws that affect the type of environmental claims that can be used on product labels. The laws typically allow or require the state to develop definitions and logos. Only three states have developed any final standards. **New York** is the first state to develop logos for recycled, reusable and recyclable products as well as conditions for their use. The terms "degradable," "biodegradable," "photodegradable," "environmentally safe," and their equivalents can't be used on retail packaging in **Rhode Island** after September 1, 1990. **California** requires manufacturers claiming that products are "green," "earth friendly," "environmentally safe," etc., to document any significant environmental impacts created during the product's life cycle and any measures taken by the company to reduce those impacts. The information must be available to the public upon request. Claims such as

"ozone friendly," "bio- and photo-degradable," "recyclable" and "recycled" must also meet state definitions.

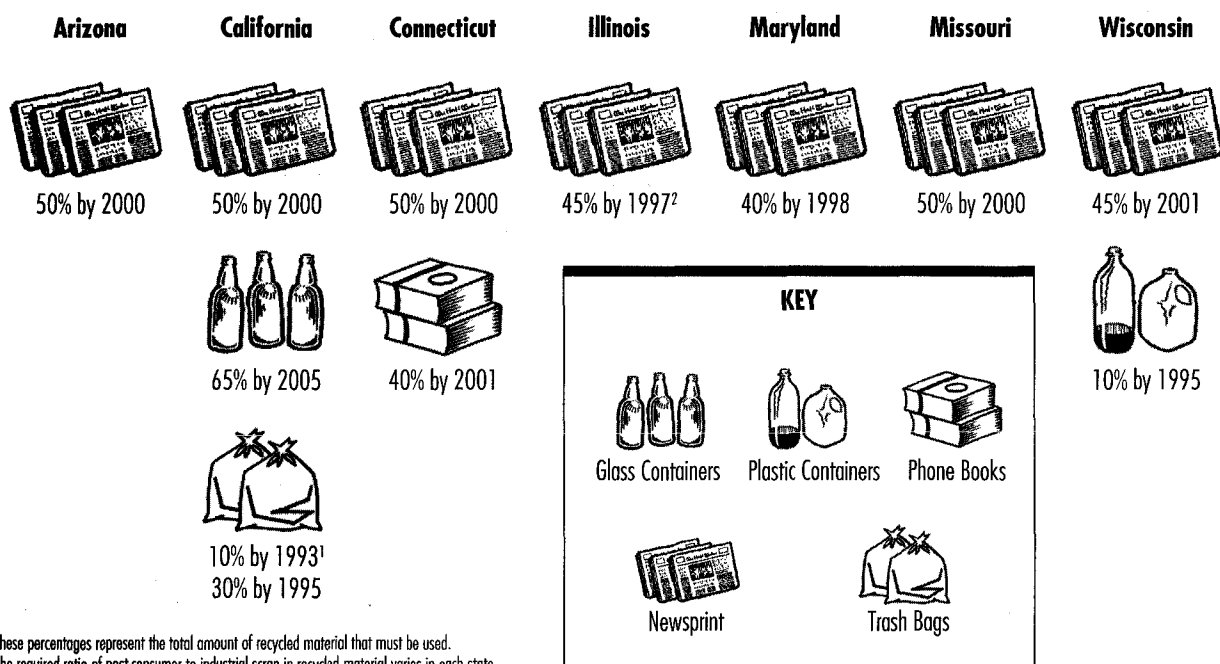
One impediment to adding plastics to the recycling infrastructure has been the many types of resins used to make plastic products. At least 27 states now require codes on plastic containers to identify the types of resin they are made from so that consumers and industry can readily sort them for recycling. Ten states (**Alaska, Arizona, Georgia, Hawaii, New Hampshire, New Jersey, Oklahoma, Rhode Island, Tennessee, Virginia**) enacted such laws in 1990. The deadlines for coding range from January 1990 to July 1992.

Are Recycling Goals Being Reached?

How much can be recycled? The U.S. Environmental Protection Agency (EPA) has set a national goal of 25 percent recycling by 1992. The U.S. recovered about 13 percent of its waste in 1988.³ This recycling rate has increased only slowly over the last ten years, partly because, although more material has been recycled each year, more waste has also been generated. Between 1980 and 1988, the amount of waste we recycled increased by more than 60 percent from 14.5 million tons to 23.5 million tons, but the amount of waste we produced rose by 20 percent, from 150 million tons to 180 million tons per

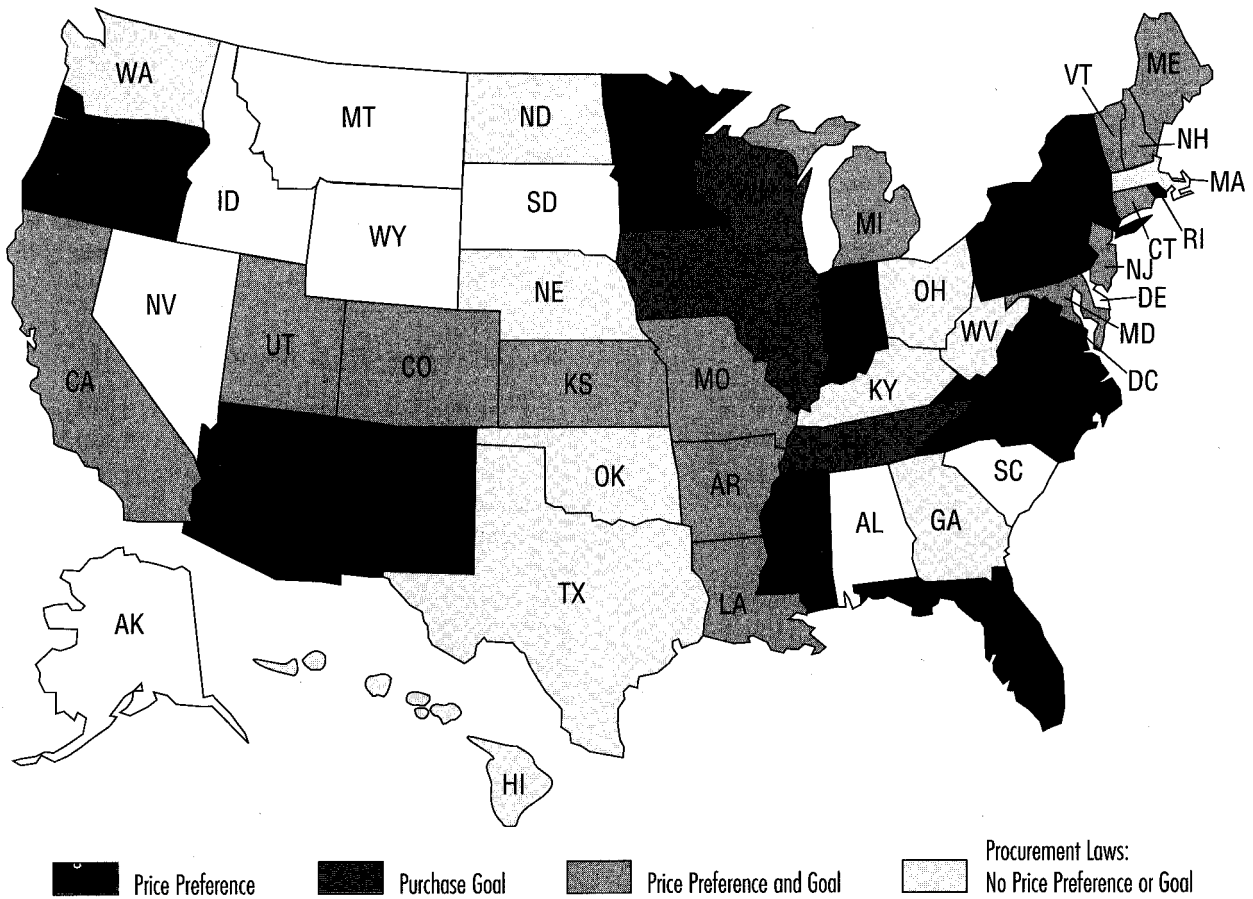
3. The term "recovery" is used interchangeably with "recycling" throughout this report. Statistics for recycling actually report the amount of material recovered from the waste stream for recycling, not the amount of material made into new products, which would be a lower figure.

RECYCLED CONTENT MANDATES

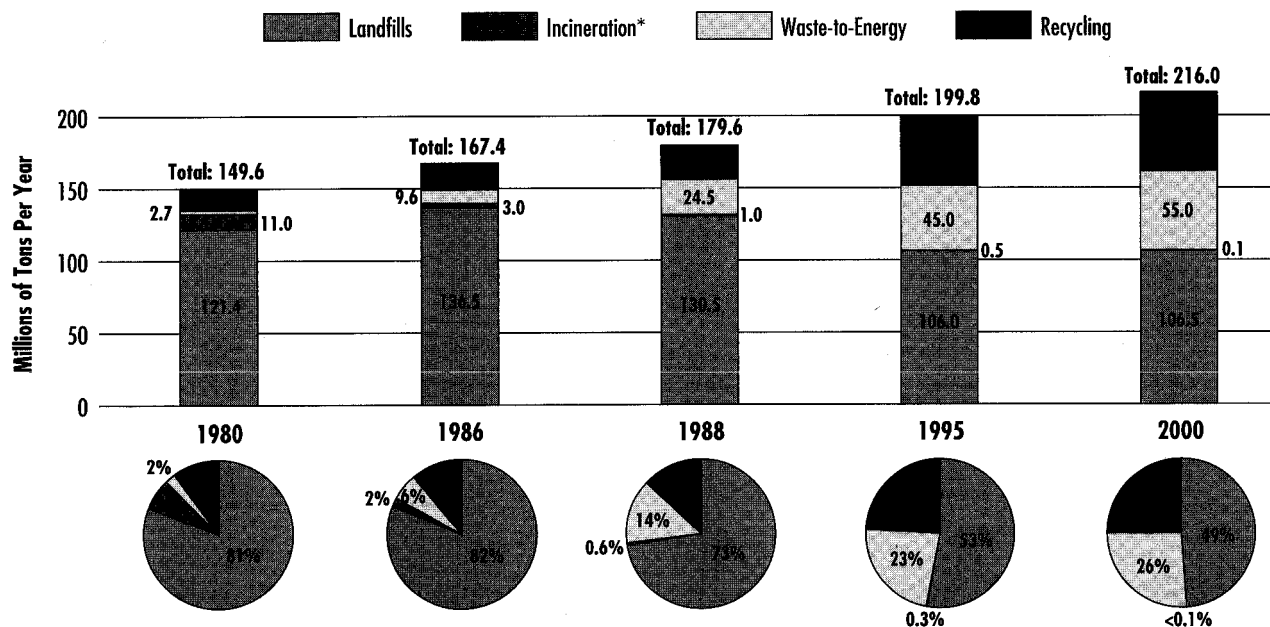


These percentages represent the total amount of recycled material that must be used. The required ratio of post-consumer to industrial scrap in recycled material varies in each state. Note: 1. 10% goal applies to bags 1.0 mil thick; 30% goal applies to bags .75 mil thick. 2. 45% by 1997 is a voluntary goal; the final mandatory goal is 28% by 1993.

STATE PROCUREMENT LAWS



HOW OUR WASTE IS MANAGED



*Incineration without energy recovery

Source: "Characteristics of Municipal Solid Waste in the United States: 1990 Update." Prepared for the Environmental Protection Agency by Franklin Associates, Prairie Village, Kansas. Adapted for publication by NSWMA.

year. To reach our national recycling goal, waste generation rates must be stabilized or the amount of waste we recycle dramatically increased.

States Set More Ambitious Goals

Twenty-nine states and D.C. have laws that set recycling goals, many of which exceed the national target (e.g., Maine requires 50 percent by 1994 and Washington 50 percent by 1995). Most of these goals were established without any data on state recycling activities. According to a January 1991 *Recycling Times* survey, 24 states reported recycling rates ranging from 5 percent to 41 percent, but just 14 of these states based their recycling rates on quantified data. Only six states have compiled data from municipalities to show tonnages of each material recycled.

Lack of uniform standards and definitions for municipal waste and recycling make very difficult any comparisons between states, or between state and national data. State waste generation rates are usually greater than the national average of four pounds per person per day because sewage sludge, construction and demolition debris, non-hazardous industrial waste and scrap metal are accepted at some municipal waste landfills. States also count different materials when calculating recycling rates. Some items, like junked cars, can boost averages because they are very heavy and have such traditionally high recycling rates that many people don't consider them part of the "waste stream."⁴ Thus, recycling percentages may not reflect material diverted from disposal facilities.

The six states that could provide detailed breakouts by material recycled were **California, Florida, Minnesota, New Jersey, Pennsylvania** and **Washington**. All except California and Pennsylvania reported recycling rates higher than the national average. These high rates are due to a combination of factors: all six states report that at least 30 percent of their population receives curbside collection service for recycling; most of the data is more recent than the national figures, and most of the states count at least some non-municipal waste (as measured against the EPA definition) such as food processing waste, C&D material, junked cars and other

HOW ARE WE DOING?

State	Goal	Percent Recycled	Millions of Tons Recycled
California	50% by 2000	11% in 1990	5.486
Connecticut	25% by 1991		
District of Columbia	45% by 1994	8% in 1989/90	0.064
Florida	30% by 1994	15% in 1990	2.8
Georgia	25% by 1996 ¹		
Illinois	25% by 2001 ²	5% in 1989/90	0.717
Indiana	50% by 2001		
Iowa	50% by 2000		
Louisiana	25% by 1992		
Maine	50% by 1994	17% in 1988	0.227
Maryland	20% by 1994 ³		
Massachusetts	56% by 2000 ⁴		
Michigan	40-60% by 2005		
Minnesota	25% by 1993 ⁵	23% in 1989/90	0.985
Mississippi	25% by 1996		
Missouri	40% by 1998	7% in 1987	0.347
Nebraska	25%		
New Hampshire	40% by 2000		
New Jersey	25% ⁶	39% in 1990	5.485
New Mexico	50% by 2000		
New York	50% by 1997 ⁷	15% in 1989	3.0
North Carolina	25% by 1993		
Ohio	25% by 1994	1% in 1989	0.144
Pennsylvania	25% by 1997	4% in 1989	0.378
Rhode Island	15%	12% in 1990	0.043
South Dakota	20% by 1995		
Vermont	40% by 2000	18% in 1990	0.070
Virginia	25% by 1995		
Washington	50% by 1995	28% in 1990	1.574
West Virginia	30% by 2000		
Wisconsin	—	41% in 1988 ⁸	2.0

This chart only lists final recycling goals; many states have interim goals as well. Most states do not have separate targets for source reduction or composting; exceptions are noted below. Recycling rates are listed for states that could provide actual tonnage figures.

Notes: 1. 25% of 1992 per capita waste generation.

2. This goal only applies to counties with populations less than 100,000. For counties with populations greater than 100,000 and metro areas with populations greater than one million, the goal is 25% by 1997.

3. 20% recycling is the optimum goal. Counties with populations greater than 150,000 must recycle at least 15% of their waste. Counties with populations under 150,000 must recycle at least 5% of their waste.

4. The goal calls for a 46% recycling rate and a 10% reduction in 1990 per capita waste generation rates by 2000.

5. Metro area counties must recycle 35% by 1993. Tons recycled in 1989/90 were projected to one year totals based on data collected over a nine month period.

6. A law is pending that will change the goal to 60% recycling of the entire waste stream within five years. The 39% recycling rate is projected for 1990 based on 1988 data and includes the "entire" waste stream. The DEP has also reported that 6.3 million tons of waste were recycled in 1989 (a 42 percent recycling rate), but tonnage breakouts by materials were not available at time of publication.

7. The goal combines a 10% source reduction target and a 40% recycling target. Amount recycled includes 1 million tons of ferrous scrap and auto bodies.

8. Tonnage includes auto bodies.

4. Junked cars usually go to dismantlers and scrap yards, where usable parts are reclaimed and the remainder is shredded so that metals can be collected for recycling. (About 80% of the average 3,200 lb. car is recyclable metal.)

MATERIALS RECYCLED: SELECTED STATES

Material	California		Florida		Minnesota		New Jersey		Pennsylvania		Washington	
	tons	%	tons	%	tons	%	tons	%	tons	%	tons	%
Yard Waste	219,616	0.4	247,000	1.3	124,304	3.9	439,000	3.1	49,169	0.5	64,090	1.1
Food Waste	98,259	0.2	4,000	<.1	*		43,000	0.3				
Wood Waste	20,854	<.1			*		162,000	1.1			1,320	<.1
Total Organics	338,729	0.7	251,000	1.3	124,304	3.9	644,000	4.5	49,169	0.5	65,410	1.2
Newsprint	843,526	1.7	376,000	1.9			389,000	2.8	94,765	1.0	160,600	2.9
Corrugated	982,723	2.0	282,000	1.5			316,000	2.2	81,694	8.9	272,820	4.8
Office Paper	177,418	0.4	77,000	0.4			149,000	1.1	12,086	1.3	53,670	0.1
Mixed Paper	418,518	0.8	28,000	0.1			0	0			64,100	1.1
Total Paper	2,422,185	4.8	763,000	3.9	162,272	3.7	854,000	6.1	188,545	2.0	551,190	8.9
Glass Containers	236,237	0.5					131,000	0.9	27,222	0.3	60,820	1.1
Other Glass	39,760	0.1					0	0			0	0
Total Glass	275,997	0.6	88,000	0.5	28,786	0.9	131,000	0.9	27,222	0.3	60,820	1.1
Plastic Containers	3,884	<.1	9,000	<.1			2,000	<.1	7,944	0.1	410	<.1
Other Plastic	1,040	<.1	6,000	<.1			0	0	925	<.1	180	<.1
Total Plastic	4,925	<.1	15,000	<.1	1,468	<.1	2,000	<.1	8,869	0.1	590	<.1
Aluminum Cans	114,236	0.2	69,000	0.4			12,000	0.1	8,252	0.1	18,100	0.3
Steel/Bi-metal Cans							17,000	0.1	18,644	0.2	5,700	0.1
Major Appliances	3,360	<.1	82,000	0.4	*						26,720	0.5
Other Metal Scrap	1,121,917	2.4	704,000	3.6			1,899,000	13.5	*		740,670	13.2
Total Metal	1,239,513	2.4	855,000	4.4	64,218	4.8	1,928,000	13.7	26,896	0.3	791,190	14.1
C&D Debris	606,733	1.2	683,000	3.5			1,884,000	13.4	0	0	0	0
Tires	48,858	0.1	60,000	0.3			5,000	<.1	*		13,400	0.2
Car Batteries							37,000	0.3	*		33,280	0.6
Used Oil									0	0	51,360	0.9
Total Special Wastes	655,591	1.3	743,000	3.8	*		1,926,000	13.7	*		98,040	1.7
Other	549,929	1.1	111,000	0.6	604,199	14.0	0	0	77,551	0.8	6,821	0.1
Total Recycled	5,486,869	10.9	2,826,000	14.5	985,247	27.3	5,485,000	38.9	381,292	4.0	1,574,061	27.1

Percent of population
served by curbside collection

31%

40%

51%

60%+

50%

30%

* = Amount recycled is included in general "other" category.

0 = Although this material may be recycled, it is not included in the state recycling rate calculations.

Source: Interviews with state recycling officials and state recycling reports.

TRASH TOTALS: WHO COUNTS WHAT

	CA	FL	MN	NJ	PA	WA
Total Waste Generated*	50.0	19.4	4.4	14.1	9.2	5.6
Per Capita (lbs/person/day)	7.0	8.0	5.5	10.2	4.2	6.6
Residential	●	●	●	●	●	●
Commercial	●	●	●	●	●	●
Auto Bodies	◐	○	○	●	○	●
White Goods	●	●	●	●	◐	●
Other Metal Scrap	◐	◐	◐	●	◐	●
Auto Batteries	●	●	●	●	○	●
Used Oil	●	●	●	○	○	●
Tires	●	●	●	●	◐	●
C&D Debris	●	●	◐	●	○	●
MSW Ash	●	●	○	●	●	○
Agricultural	○	○	○	●	○	●
Municipal Sludge	○	○	○	○	○	○
Industrial Non-Hazardous Sludge	○	○	○	●	●	**

* In millions of tons per year

● = All the waste generated included in tonnage figure

◐ = Some of the waste generated included in tonnage figure

○ = None counted

** = Information not available

as much plastic (15,000 tons) as the next leading state and **New Jersey** composts twice as much yard waste (439,000 tons) as the other states.

■ The amount and type of material reclaimed will be far more important to market development than the recycling percentage reported by the states. **California**, which reports only a 10.9 percent recycling rate, recovers the most material (5.5 million tons). **Pennsylvania**, whose accounting most resembles EPA's, had the lowest documented recycling rate among the six states profiled, but recovered the most steel cans.

Conclusion

State legislators showed continued strong interest in recycling in 1990, as laws from previous years were revised and new statutes were enacted. The 1990 legislation illustrated diverging approaches to building a waste reduction and recycling infrastructure.

industrial metal scrap. Communities in these states also surveyed recycling in the commercial sector, which may account for the inclusion of non-municipal material. As states develop more detailed guidelines for reporting recycling figures, the quality of the data should improve. Of course, data from different states are not likely to be comparable until national guidelines for measuring recycling are agreed upon.

Here are the results from the states that could provide detailed breakouts on the material they recycle.

■ States documenting the most tons recycled are **California** (5,486,868 tons) **New Jersey** (5,485,000 tons) and **Florida** (2,826,000 tons).

■ States with the highest documented percentages of their waste recycled are **New Jersey** (38.9 percent) **Washington** (28 percent) and **Minnesota** (22.6 percent).

■ Scrap metal contributes 14 percent of the total tons recycled in **New Jersey** and 13 percent of the total in **Washington** (both of which count junked cars). **California** also includes some scrapped autos in its recycling tonnage.

■ **New Jersey** recycles almost three times more C&D waste than the other two states that report recycling the material. The 1.9 million tons of material recycled represent 13 percent of the total waste stream recycled.

■ Amounts of common recyclables recovered vary greatly. **California** recovers almost three times as much paper (2.4 million tons) and more than twice as much glass (275,997 tons) as other states. **Florida** recycles twice

■ The growth of disposal bans symbolizes the "supply side" approach — a belief that markets will develop to reclaim recyclables that have nowhere else to go. These laws typically do not rely on community involvement through separation mandates, and they may spur illegal dumping if suitable disposal alternatives are not found.

■ On the demand side, states are paying more attention to markets by providing grants, loans and tax incentives for processing and manufacturing facilities, enacting mandatory recycled content laws and strengthening their procurement policies.

Finally, if 1990 trends continue, businesses will be held increasingly responsible for reducing the impact of their products and services on waste management systems. So far, the relative successfulness of different states' recycling laws has been difficult to measure due to inconsistency in how recycling has been counted. And by including material that does not normally go to municipal disposal facilities in recycling statistics, states may give an exaggerated impression of accomplishment which indirectly helps to perpetuate shortages of disposal capacity. Nevertheless, the nineties are likely to represent a new era in waste management, where responsibilities for reducing the amount and toxicity of our trash, and safely disposing of the remainder, are shared among many groups — manufacturers, retailers, consumers, local governments, and the waste industry.

For more information, contact:

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Printed on Recycled Paper

107138
September, 1991

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