

Recycling North Carolina's Resources: The Long Campaign to Cut Tar Heel Waste

By Mike McLaughlin and Amy Carr

Through its adoption of landmark legislation, the 1989 General Assembly laid the groundwork for an ambitious assault on the state's bulging waste stream, with recycling the major weapon to be deployed in the battle. The new law sets a goal of diverting 25 percent of waste from the state's landfills by 1993. But the architects of the law agree that more work is needed if local governments are to have a chance of meeting this goal. What must be done to move the state past the current crash waste reduction diet to a lastingly leaner solid waste stream?

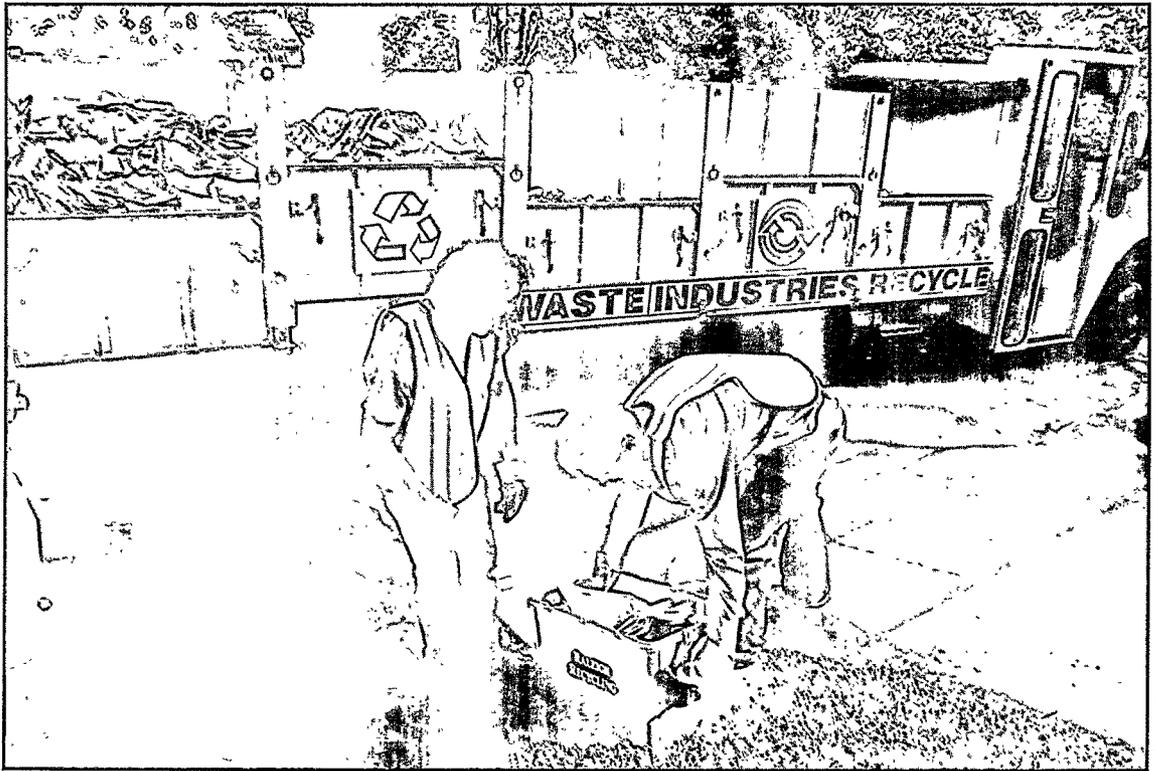
Eddie Hill maneuvered his 23-foot custom-designed recycling truck to the curb along a shady narrow street in central Raleigh. What happened next was a blur. Hill raced to a 14-gallon green plastic bin and picked out paper, cans, and bottles, and flipped them to his assistant, Stephen Whitley, who slam-dunked them into the proper compartments on the specially designed "Eager Beaver" truck body.

Less than 30 seconds later, both men were back in the truck and headed towards the next green bin. The two would collect from 409 homes

before the day was over, leaving the route only long enough to haul the materials to market.

Welcome to curbside recycling, Raleigh style. The pilot program was an instant hit when it was introduced to 4,000 households in October 1989. And residents still greet the truck with

Mike McLaughlin is associate editor of North Carolina Insight. Amy Carr, a 1989 summer intern at the N.C. Center for Public Policy Research, is a graduate student at the London School of Economics. This edition of North Carolina Insight was published on recycled paper, which increased paper costs by 4.9 percent.



Karen Tam

Eddie Hill (r) and Stephen Whitley grab a bin full of recyclables on one of Raleigh's curbside recycling routes.

questions and curious stares. But because of a law passed by the 1989 General Assembly, the recycling truck will become as much a fixture in many North Carolina communities as the meter reader or the postal carrier.

That law is called the Solid Waste Management Act of 1989.¹ The legislature thought it so important that Democrats and Republicans alike laid aside partisan bickering to enact it on the last day of the longest session on record.

"Most of our landfills over the next 10 years will be closed down because they are full," said Rep. James Craven (R-Moore) in legislative debate over the law. "Our counties are going to find themselves buried in waste. Garbage is the greatest problem in our state today."

Rep. David Redwine (D-Brunswick) declared the bill "one of the most important pieces of legislation we will look at this year" before the House passed it after debate in numerous meetings of a subcommittee chaired by Rep. Dennis Wicker, (D-Lee). Sen. Dennis Winner (D-Buncombe) says he only wishes his Senate colleagues had been left time to scrutinize the bill. With adjourn-

ment nigh, the Senate could only give the bill the green light and tack on a few changes in conference committee. "It got to the Senate so late, and there was such pressure to get it passed, that I felt like the Senate had no voice in it," says Winner.

The legislation, according to Rep. Joe Hackney (D-Orange), was actually "20 or 30 bills" rolled into one, which he says justified the length of time the House spent on it. Much of that time was spent in Wicker's subcommittee, which, under Wicker's guidance, worked to shape legislation that ultimately would win broad support. "His having the confidence of both the environmental community and the business community helped tremendously," says Hackney.

The law's most sweeping provision is summed up in a single sentence: "It is the goal of this state that at least 25 percent of the total waste stream be recycled by January 1, 1993."² With that sentence, the legislature committed the state to behavior modification on a grand scale, enacting into law the notion that Tar Heels can be taught to stop tossing out so much trash.

In so doing, the General Assembly joined an



Stephen Whitley and Eddie Hill separate glass, aluminum and newspapers into appropriate compartments of a specially designed truck body.

increasing number of states that are stepping up to the plate to take their cuts at a mounting problem—what to do with an overflow of solid waste. And the 25 percent waste reduction goal is consistent with that of the federal government. But the legislation was more like a long single than the towering home run supporters initially sought. To get the state home on solid waste, future General Assemblies also must go to bat on the issue.

That's because the legislation establishes lofty goals but does not chart a clear course for reaching them. Indeed, the new law raises troubling questions. How will the counties reach the 25 percent waste diversion goal? And what will become of the waste that is diverted? Will it be recycled and put to productive use? Or will it simply be warehoused, with no market for a huge influx of would-be raw materials that used to be rubbish? Policymakers readily concede they do not have all the answers, but they say the counties—facing huge increases in the cost of landfilling waste—are ready to face the questions. In a sense, local governments will become laboratories for change, nurturing what works and discarding what doesn't as they search for solutions to their solid waste problems. But if local officials have the leeway to tailor programs that meet

their particular needs, they cannot escape one clearcut directive in the law. All must ultimately depend upon recycling to help them meet their waste diversion goals.³

Many North Carolina counties and municipalities already are turning to recycling to defuse the solid waste dilemma. To determine the scope of these efforts—and the distance left to travel if the state is to reach its 25 percent waste diversion goal—the North Carolina Center for Public Policy Research conducted a survey of the state's 100 counties and selected municipalities.⁴ The Center survey, conducted in July 1989, found ambitious recycling efforts in towns and counties across North Carolina. Yet even the most intensive programs fall well short of the 25 percent waste diversion goal set by the state. And many towns and counties have not yet made a start. For those that are doing little or nothing, the state's goal may seem an impossible dream. But they can take a comforting lesson from history. There is nothing new about the concept of recycling.

A Short History of Recycling

The nation's first paper makers depended on textile rags and waste paper for raw materi-

"Garbage. All I've been thinking about all week is garbage I've gotten real concerned over what's going to happen with all the garbage The last time I felt this way was when that barge was going all over the place. . . . I started imagining a garbage can that just keeps producing garbage. . . . It just seemed so stupid, especially when we don't know what to do with all the garbage. . . ."

—Ann Millaney [Andie MacDowell] in
"sex, lies, and videotape"
Cannes Film Festival Palm D'Or Award winner, 1989

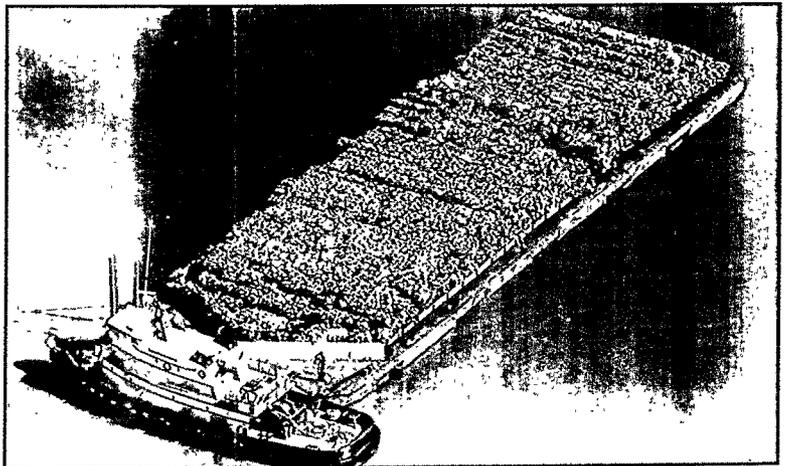
als. After the Civil War, battlefield scrap, classified as either "Yankee shot" or "Rebel shot," was cleaned and melted for reuse.⁵ And during World Wars I and II, living by the waste-not-want-not adage was considered one's patriotic duty. Scarcity of vital resources necessitated the recycling of everything from kitchen grease to toothpaste tubes. *Chapel Hill Herald* columnist Rolland Wrenn, a lifelong resident of rural Orange County, writes that as a child during World War II, she provoked her parents with an unsuccessful plan to sell all of the family's rubber boots to the salvage dealer during his monthly pickup.⁶

But post-war prosperity ushered in an attitude of wastefulness. Except for a brief resurgence during the early 1970s, recycling was left to people of exceptional environmental consciousness, civic groups, and the desperately poor. Disposable products replaced reusable razors and cloth diapers. Returnable soft drink bottles were replaced by plastic containers the size and

shape of howitzer shells. Elaborate packaging and convenient individual serving containers became standard fare at grocery stores and fast food outlets, and ultimately helped pack the nation's landfills. The figures speak plainly. In 1960, each person in the United States contributed an average of 2.65 pounds of trash a day to what were then rat-infested open dumps, according to the U.S. Environmental Protection Agency. By 1986, the average American produced 3.58 pounds of solid waste daily, or more than half a ton a year for every man, woman, and child.⁷

While the nation indulges its new-found taste for trash, the places to put all the waste actually are diminishing. The thousands of open dumps that could be found across the nation a few decades ago were prohibited by the federal government in favor of the sanitary landfill, essentially a hole in the ground in which waste is buried under daily layers of soil. But these disposal sites in many cases have caused environmental problems of their own. More than a fifth of the sites on the EPA Superfund Priority List—a ranking used to parcel out federal cleanup dollars for the nation's most potent toxic waste sites—are municipal solid waste landfills.⁸ Recent environmental concerns and the stigma that always has been associated with living next to a garbage dump have made a political nightmare of siting these facilities. And the EPA has responded to environmental problems with new requirements that will drive up the cost of landfilling dramatically. These requirements include installing plastic or clay liners to prevent leakage, installing and operating systems

This wandering garbage barge, originally bound for North Carolina in April 1987, became a symbol of the nation's solid waste woes.



Wide World Photos

Table 1. Selected Sample Tipping Fees by State

State	Dollars per ton
Alabama	\$10.50
California	10.00
Connecticut	35.00
Florida	27.40
Georgia	13.50
Indiana	15.15
Maryland	40.00
Massachusetts	65.00
South Carolina	4.75
Tennessee	7.50

Source: National Solid Waste Management Association. Figures represent 1988 median local tipping fees reported to the association through a telephone survey. North Carolina was not included in the survey. Fees for solid waste disposal here range from nothing—the amount charged by most counties—to as much as \$46 a ton in Buncombe County.

to monitor groundwater contamination around the landfill and gas buildup within it, installing leachate collection and treatment systems, and establishing an escrow account to ensure that any environmental damage can be cleaned up after the landfill closes.

Although most North Carolina towns and counties have not yet run out of places to put their waste, some municipalities in other states are shipping their garbage hundreds of miles by rail to find a place to dump. The problem came to a head in the public consciousness with the infamous garbage-laden barge from Islip, N.Y., which in 1987 could find no place to unload its cargo along the entire East Coast. The wandering barge, which originally was bound for North Carolina, has since become a symbol of the nation's solid waste woes.

The North Carolina Problem

How serious is the problem in North Carolina? In March 1988, the Center reported that

about a third of the state's 119 landfills had five years or less of life remaining and 13 would be full in less than two years.⁹ The Center asked for updates on those figures in its July 1989 survey on recycling. The results show the problem has gotten worse. Of the 112 municipal and county landfills identified in the survey, 52—nearly half—will run out of space within five years. And 20, nearly a fifth of those operating, will fill up within two years. (See Table 3, pp. 20-26, for a complete list of municipal and county operated landfills and their estimated life.) This pressing problem of rapidly depleting landfill capacity was one of the driving forces behind the Solid Waste Management Act.

"I don't think it's reached a crisis for the most part in this state yet," says Senator Winner. "In New Jersey and Connecticut, it's almost beyond crisis. What we're trying to do is get the problem dealt with before it becomes a crisis."

Still, no one is arguing that siting new landfills to replace those that are running out of room will be a simple task. Even in rural areas, the siting of new landfills is often stymied by local opposition. The problem in most cases is not a lack of acceptable land, but mounting public concerns about landfills. A recent study of water quality near 71 coastal landfills in North Carolina revealed considerable pollution. Groundwater quality standards for heavy metals and hazardous organic compounds were violated at more than half the sites.¹⁰ Educated about the risks of groundwater contamination, the dumping of hazardous waste, and the possibility of methane gas leaks and explosions, residents not only shout, "Not in my backyard," but also "Not in my neighbor's backyard, not near my schools, and not near my water supply!"

But for most North Carolinians, once the garbage is out of sight, it is out of mind. Many counties and municipalities include the cost of landfilling in their general operating budgets. Consequently, residents and businesses have no idea of the full costs of garbage disposal. That will soon change, as counties move towards tipping fees to help recoup the cost of waste disposal. A tipping fee is a charge for dumping, usually assessed on a per-ton basis. Gordon Layton, chief of the Solid Waste Section in the new Department of Environment, Health, and Natural Resources, says about a third of North Carolina's counties regularly impose tipping fees for the disposal of solid waste. (See Table 1 for a sampling of tipping fees across the nation.) Orange County is



Robert Llewellyn

Landfills like this one have become the state's least preferred option for disposing of solid waste. But can North Carolina break its bad habits regarding garbage?

among those counties that have implemented tipping fees for landfill users. The revenues generated by the fee finance an ambitious recycling program. Fees range from \$3 for dumping a carload of trash to \$15 per ton of waste for industries and municipal and commercial haulers, and run as high as \$100 a ton for disposing of certain hard-to-manage wastes such as asbestos.

"The tipping fee encourages people to think about their discards" and remove recyclable material to save money, says Blair Pollock, solid waste planner for Orange County, Chapel Hill, and Carrboro. Besides the waste-reduction incentive, the tipping fee provides local government a revenue source for its overall solid waste management plan. At \$23 for a ton of waste that has the recyclable industrial and commercial cardboard removed, and double that for loads containing more than 25 percent cardboard, Buncombe County has one of the most aggressive tipping fee schedules in the state. Neighboring counties have complained that Buncombe's high rates are making their own landfills attractive to the county's commercial haulers. County officials also worry that aggressive tipping fees could encourage lit-

tering. The Solid Waste Management Act addresses this problem by authorizing severe fines and the levying of one point on the driver's license of anyone caught using a motor vehicle to litter. The law even allows authorities to impound the vehicles of offenders in the worst cases.¹¹

County officials say the courts have not always taken violations of the state litter law seriously enough. "The prohibition against littering hasn't been actively enforced in the counties," says Ed Regan, associate director of the North Carolina Association of County Commissioners. Consequently, Regan says, there is widespread concern that increasing disposal fees at landfills will encourage more illegal dumping. Still, Regan says county officials agree that tipping fees are essential as an economic incentive to waste reduction and recycling and as a source of revenue for solid waste management.

A Solid Waste Management Hierarchy

As the costs of landfilling increase, alternative methods of handling solid waste look more attractive. What are these alternatives? North

Carolina has now adopted a variation on the EPA's hierarchy of disposal methods. In descending order of preference, the state's hierarchy consists of:

- waste volume reduction at the source;
- recycling and re-use;
- composting;
- incineration with energy production;
- incineration for volume reduction; and
- disposal in landfills.¹²

Although it is listed at the top of the waste management hierarchy, waste reduction actually gets less attention in the act than recycling. This fact has not escaped the law's critics, but Hackney says the state has little means of forcing industry to reduce its waste or to market fewer throwaway products. "I don't think we in this state have a good way to enforce waste minimization other than cost," says Hackney. "What it gets down to is a technician from the state signing off on a manufacturing process. We don't have the people or the technical expertise to do that. It's sort of a tough nut to crack." But industry will reduce waste if a savings can be demonstrated. That's

where aggressive tipping fees play a role, giving industry a financial incentive to reduce its waste. And proponents of so-called advance disposal fees say these fees, which amount to additional taxes on certain kinds of packaging or on disposable products, also can encourage waste reduction, as can outright bans on objectionable packaging or products. Finally, consumers could contribute greatly to waste reduction if they would spurn products with excessive packaging.

If reduction of industrial waste is the ideal, the next best thing is finding another manufacturer that can use the waste in its production process. The Southeast Waste Exchange, sponsored by the Urban Institute at the University of North Carolina at Charlotte, specializes in putting waste generators in touch with potential users. The non-profit agency's bimonthly catalogue, *Waste Watcher*, reaches more than 18,000 readers. Director Mary McDaniel says one participating company earns \$54,000 annually on the sale of 60 tons of plastic waste, while the buyer saves \$90,000 on the cost of raw materials.¹³ And the transaction diverts the plastic from the landfill.

How You Can Cut Waste Production

Towns and counties have the primary responsibility for cutting the flow of solid waste to landfills, but private citizens must do their part as well. Susan Hassol and Beth Richman provide a common sense guide to home waste reduction in their handbook, "101 Practical Tips for Home and Work Recycling." Here is a sampling of their advice:

- Avoid items with excessive packaging, or, better yet, buy in bulk and avoid packaging altogether.
- Use cloth products instead of disposable paper alternatives. Examples include cloth napkins, cloth cleaning rags, cotton handkerchiefs, and, of course, cotton diapers.
- Avoid disposable products such as razors and lighters.
- Choose returnable beverage containers where available.

- Use a lunchbox or canvas bag, rather than disposable paper lunch bags.
- Re-use grocery bags and refuse a shop's bag when items can be carried out by hand.
- Re-use envelopes, boxes, and packing materials such as foam peanuts.
- Donate used goods such as clothing and small appliances to charitable groups, rather than throwing these items away.
- Use a live Christmas tree which you can plant outside after the holidays.
- Compost yard and kitchen waste to improve soil health and replace chemical fertilizers.

Source: Susan Hassol and Beth Richman, "101 Practical Tips for Home and Work Recycling," A Windstar Earth Pulse Handbook, August 1989, pp. 27-68. Call (800) 669-4777 for ordering information.

Re-use of products represents another important waste management strategy. Washing and re-using glass containers saves more energy and expense than does crushing old glass to produce new containers. And many items such as furniture and appliances are tossed on the trash heap when they still have value.

For waste that cannot be re-used, recycling is the preferred management option, because it saves both energy and natural resources. Recycling means not only the collection, separation, and processing of recyclable material, but also its eventual use for making new products, and the purchase of these new products by the consumer.

Using organic wastes to produce mulch or compost, the third-ranking process in the state's hierarchy and really a form of recycling, also offers tremendous potential for waste diversion. Yard waste, food waste, and wood account for almost 30 percent of the typical waste stream. Some local governments in North Carolina already use tub grinders to chip wood wastes and yard debris into mulch for landscaping and other uses, and counties that don't soon will have to consider this option. The law bans yard trash from landfills effective Jan. 1, 1993.¹⁴

Burke County recently invested \$150,000 in a tub grinder to generate mulch, which is sold to county residents for \$3 a pickup truck load. County commissioners expect the revenues to cover the purchase price within two years, and the machine will extend the life of the county's new landfill. Counties can also encourage citizens to use food and yard waste for backyard compost, and can invest in sophisticated machinery to compost on a larger scale.

Incineration reduces the volume of waste that requires disposal and can convert garbage into useful energy. But incinerators are expensive, air emissions must be carefully monitored, and the ash that results from incineration must be disposed of in specially designed landfills, so the state ranked incineration next to last in its waste management hierarchy. Sanitary landfilling ranks last because of its expense and because of environmental problems.

Recycling: "An Idea Whose Time Has Come"

With its adoption of recycling as the engine driving its waste reduction efforts, North Carolina recognizes "an idea whose time has come," says Hackney. Politically speaking, he appears to be right on target. As constituents become more aware of environmental issues, more and more elected officials of both parties are putting on green-colored glasses.¹⁵ But even Hackney, the chief architect of the Solid Waste Manage-



ment Act of 1989, says he was surprised the sweeping law won enactment in a single session.

The legislature is not alone in its push for more recycling. Republican Gov. Jim Martin also has shown strong interest. Martin participated in the dedication of the Reynolds Aluminum Recycling facility in Raleigh in August 1989 and declared October Recycling Month in North Carolina. "For the sake of our environment, and for the generations to come, all North Carolina citizens and businesses must join in increasing our recycling efforts," Governor Martin said at the dedication of the Reynolds facility. And Martin promised to follow his words with action, both at home on Blount Street and in his statewide Adopt-a-Highway litter-control program. "We've decided to set an example at the Executive Mansion by recycling all our glass and aluminum products," said Martin. On a grander scale, Martin announced cans and bottles picked up by thousands of volunteers along hundreds of miles of North Carolina highways also would be recycled.

In a Nov. 1, 1989, speech to the National Recycling Congress in Charlotte, Martin endorsed recycling in all state government offices and advocated a state preference for supplies with recycled content. "Recycling paper and aluminum cans in state government snack bars and offices may encourage our state employees to bring recycling home and help develop community support for the idea," Martin said. "By purchasing recycled goods, we may also help create a demand and reduce the cost of recycled goods in the marketplace."

But Bill Holman, a lobbyist for the Conservation Council of North Carolina and the N.C. Chapter of the Sierra Club, says the Martin administration opposed several significant features of the Solid Waste Management Act in its draft form, including state procurement price preferences for supplies with recycled content and fees that would have encouraged recycling and helped to finance solid waste management. "Martin's Department of Administration and Department of Transportation opposed procurement provisions in Senate Bill 111 [The Solid Waste Management Act]," says Holman. "The Martin Administration also opposed advance disposal fees. In short, the Martin administration contributed little to 1989 solid waste legislation."

But if the administration opposed particulars of the bill, Martin still has voiced strong support for recycling. And recycling seems to merit all the attention from politicians and public officials. Experts say besides saving landfill space, recycling saves precious natural resources and energy used in the manufacturing process. Proponents of recycling say substituting a ton of recycled newsprint for newsprint made from virgin wood pulp saves 17 trees. It takes 170 tons of newsprint to produce a typical Sunday edition of *The News and Observer* of Raleigh, the state's second largest newspaper with a Sunday circulation of more than 180,000.¹⁶ Producing recycled paper uses half the energy and half the water used in producing paper from virgin wood pulp, and manufacturing recycled paper results in fewer pollutants being released into the air and water.

Recycling metals also saves resources. "Processing scrap metal takes 80 percent less energy than using virgin ore," says Poly Cohen, president of Lee Iron and Metal Company in Sanford. Cohen cites industry figures which claim each 12 ounce aluminum beverage can recycled saves the energy equivalent of six ounces of gasoline.¹⁷ Scrap dealers across North Carolina have been processing waste for recycling for years, forming a partnership with other industries, says Cohen. Companies are paid for their industrial waste, and scrap dealers make a profit from collecting, processing, and marketing the waste for re-use in manufacturing. Most scrap dealers also



Amy Carr

Poly Cohen of Lee Iron and Metal, a scrap dealer in Lee County.

accept consumer waste such as appliances, cars, and aluminum cans for recycling. "We're the original recyclers," says Cohen. Last year, Cohen says, the 2,000 members of his industry's trade organization, the Institute of Scrap Recycling Industries, Inc., handled more than 80 million tons of recyclables nationwide.

What's in the Trash?

The first step toward setting up an effective recycling program is determining what goes into the local landfill. This is called a *waste stream analysis*. By weight, the nation's waste is 41 percent paper and paperboard, 6.5 percent plastics, and 25.8 percent food and yard waste (see Table 2). Experts are quick to point out that these numbers are general, and that many factors can influence the composition of a local solid waste stream. Alamance County, for example, found through its waste stream analysis that corrugated cardboard cartons, mostly from furniture showrooms, comprised 31 percent of the waste that reached its landfill.¹⁸ The county responded by banning the disposal of recyclable commercial cardboard. County officials say the flow of cardboard reaching the landfill had been cut by 80 percent one month after the ban was enacted in

**Table 2. Gross Discards in the United States,
Measured by Weight**

Product	Amount (millions of tons)	Percentage of the Waste Stream
Paper and Paperboard	64.7	41.0%
Yard Waste	28.3	17.9
Metals	13.7	8.7
Glass	12.9	8.2
Food Waste	12.5	7.9
Plastics	10.3	6.5
Rubber, leather, and textiles	6.8	4.3
Wood	5.8	3.7
Other	2.7	1.7
Total	157.7	99.9%

Source: U.S. Environmental Protection Agency, 1986 data

May 1988. Other North Carolina counties have found the percentages of textile manufacturing waste and furniture industry wood waste are higher than the national average.

What Products are Recyclable?

Experts say as much as 80 percent of the solid waste stream theoretically could be recycled, and a growing list of products are made with recycled materials. Proctor and Gamble markets Spic and Span cleaner in bottles made of recycled plastic. Eggs may arrive at the market in cartons made of recycled plastic or paper. And bleached denim scraps and clean cotton fibers have long been used in making U.S. currency.

Aluminum cans are the most heavily recycled consumer product. More than half the aluminum cans shipped by manufacturers in 1988 were melted for re-use, according to industry estimates. Recycling aluminum saves tremendous amounts of energy; manufacturing cans with recycled aluminum uses 95 percent less energy than manufacturing cans from bauxite ore.¹⁹ But basic econom-

ics accounts for the success of aluminum recycling. For consumers who collect and sell aluminum cans, there really is cash in trash. Each can is worth more than a penny.

Since paper—at 41 percent of the waste stream—takes up so much space in landfills, its collection is crucial for the success of any recycling program. Waste paper can be sorted into different quality grades. Computer printout paper and office paper command the highest prices and are used in making new stationery, writing paper, toilet tissue, and wallboard. Corrugated cardboard also is highly marketable, and has become a target for solid waste planners because of its bulk. Alamance and Buncombe counties have banned industrial and commercial cardboard from sanitary landfills altogether. The Orange County answer has been the collection and marketing of commercially generated cardboard from businesses and institutions in Carrboro and Chapel Hill through

a program managed by the town of Chapel Hill. Although this pilot project has not paid for itself directly in cash and landfill space savings, Pollock, the solid waste planner for Orange County, Chapel Hill, and Carrboro, says Chapel Hill plans to continue the program in order to recycle 25 percent of its waste stream by 1993.

Newspaper recycling, on the other hand, has been the victim of its own success. Across much of the nation, the market is weak or glutted. Until mid-October of 1989, Mecklenburg County was having to pay a contractor \$5 a ton to haul its newspapers away—still cheaper, county officials pointed out, than burying the newspapers in the landfill.

Paperstock dealers believe the problem is a temporary one, and innovative uses that could increase demand for reclaimed newspapers are cropping up across North Carolina. Sealed Air Corporation buys all of the old newspapers collected at the City of Greensboro's drop-off recycling sites to produce padded envelopes. Many newspapers print on recycled newsprint, including the *Winston-Salem Journal*, which uses newsprint made



Amy Carr

Worker prepares a bale of aluminum cans for market at Lee Iron and Metal in Sanford.

of 38 percent recycled paper—more than any other other paper in the state, according to the N.C. Press Association.²⁰ Orange and Chatham counties are experimenting with shredded newsprint as a substitute for traditional animal bedding. “We will have to find new markets,” says Pollock. “There is no excuse for newspapers not to be gearing up for printing on recycled paper. And there is no reason that our state can’t look at shredded paper for animal bedding.”

Glass composes 8 percent of the waste stream and also is widely recycled. Glass jars and bottles can be cleaned and re-used or crushed into cullet and employed in making new glass. Cullet melts at a lower temperature and emits fewer pollutants than other raw materials used in glass making. The Carolinas Glass Recycling Program, sponsored by the glass industry, promotes glass recycling in North and South Carolina. When the program began in 1986, a handful of processors recycled 3 million glass bottles and jars monthly. By 1988, more than 70 organizations in the Carolinas handled more than 12 million glass containers a month.²¹

Plastics recycling is still in its infancy, but is rapidly developing with the help of corporate giants like DuPont and General Electric. Reclaimed plastics can be processed into insulated filling for sleeping bags and ski jackets, and plastic lumber for railroad ties, parking lot car stops, and park benches. After July 1, 1991, all plastic containers sold in North Carolina must be molded with a label identifying the plastic resin used to make the product. The imprint will facilitate the separation and recycling of plastics.²²

Many other common household products are recyclable. Tin cans, which are really 99 percent steel, can be detinned and re-used in manufacturing, although there is virtually no market for tin cans in North Carolina. Aluminum recyclers buy old canoes, aluminum siding, and window frames. Textile scraps are re-used in manufacturing or to make rags and automobile floor mats.

Used tires and oil, which present major disposal problems, also can be recycled. North Carolinians discard an estimated 11 million tires annually.²³ Products from recycled tires can be used to make mud flaps for trucks or added to

asphalt to reduce stress and cracking in new roads. One Iredell County company cuts old racing tires into worm-like strips and weaves them into welcome mats. Tires can also be a valuable energy source when safely burned in an incinerator. A number of counties are shipping scrap tires to a facility in Atlanta at a cost of 70 cents to \$1 per tire. The firm produces crumb rubber from the tires for use as a fuel source.

Used oil, a potentially serious pollutant, can also be a valuable renewable resource when correctly handled. It can be re-refined for use as a lubricant or wood preservative. It can even be used in the production of artificial logs.

Collection Techniques

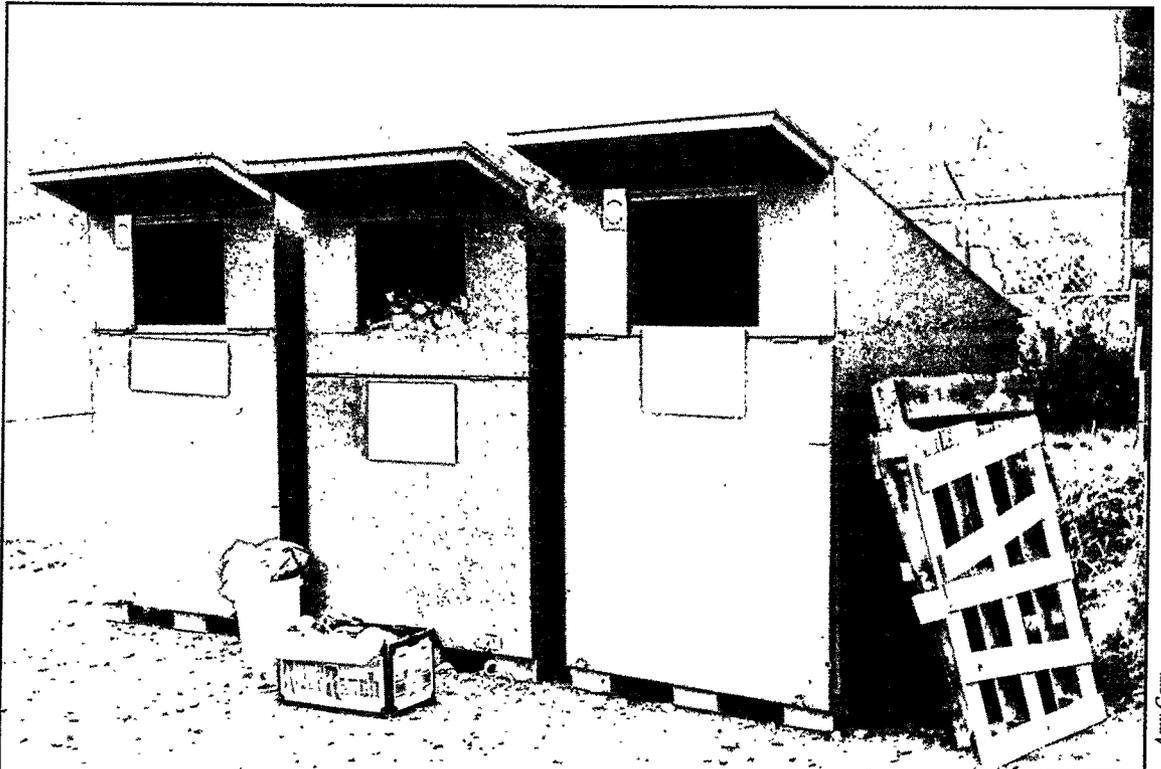
Techniques for collecting recyclables vary in their waste diversion potential, ease of implementation, and net cost. The Center's survey found that a full range of collection methods already have been put into practice by public and private recycling program operators across North Carolina. These can be grouped into three major

types of operations: 1) buy-back and drop-off centers for recyclables; 2) curbside collection programs; and 3) salvage centers located at landfills to divert metals and bulky materials such as old appliances.

Buy-back centers encourage recycling with a cash incentive. These centers primarily purchase materials such as glass and aluminum that command a high enough price to make it worth the consumer's while to recycle. Reynolds Aluminum Recycling Company alone has collected 2.6 billion cans since the company began operating buy-back centers in North Carolina in 1974, according to company officials. In 1988, North Carolinians earned \$4.5 million through recycling at 50 Reynolds buy-back centers across the state.

The convenience of curbside collection of recyclables boosts participation rates, but is also the most expensive recycling option. The Center's survey found local governments in eight North Carolina counties—Alamance, Catawba, Cumberland, Durham, Mecklenburg, Moore, Orange, and Wake—already provide or contract for limited curbside collection of recyclables.²⁴

Drop-off boxes like these in Orange County are becoming commonplace across North Carolina as more and more residents take up recycling.



Amy Carr

"I unfolded the bag cuffs, released the latch and lifted out the bag [of garbage]. The full stench hit me with shocking force. Was this ours? Did it belong to us? Had we created it? I took the bag out to the garage and emptied it. The compressed bulk sat there like an ironic modern sculpture, massive, squat, mocking."

—Don DeLillo
White Noise

National Book Award Winner, Fiction, 1985

Mecklenburg County's "Curb It" program serves 16,000 Charlotte households and will expand to pick up recyclables from more than 100,000 homes by January 1990. Charlotte residents participating in a pilot project tote red plastic tubs full of plastic drink bottles, aluminum cans, glass, and newspapers to the curb weekly for collection. Curbside collection makes recycling as easy as taking out the trash for these residents.

Curbside recycling was introduced in Raleigh in October 1989, and the program was an immediate hit. "We were talking about getting 35 to 40 percent participation," says Steve Goode, Waste Industries regional manager. "We're probably averaging 70 percent." Goode says some Raleigh citizens have been so eager to recycle that some who are not yet being served are taking their bottles, cans, and newspapers to the homes of people who *are* on the pilot routes, which serve 4,000 homes. "By the second day, we were putting a second truck on every route," says Goode.

Many counties salvage recyclable materials from the landfill. Bulky items, such as appliances, and marketable waste such as corrugated boxes and aluminum, can easily be separated from other garbage. Keep Wayne County Beautiful, a non-profit corporation with no funding outside of recycling proceeds, culls scrap aluminum, glass, and paper from the Wayne County landfill. Half of the proceeds from the monthly sale of 90 tons of mixed paper, 7,600 pounds of aluminum, and 2,100 pounds of glass goes to the five workers who collect the materials, and half is plowed back

into the Keep Wayne County Beautiful budget. And the city of High Point has signed a contract with Delta Waste, Inc. to separate recyclables from city garbage *before* it gets to the landfill. City officials believe they can easily exceed the state's waste diversion goal through this privately operated materials recovery facility.

Drop-off centers are local government's least costly option for recycling residential waste. In 48 North Carolina counties, some site is offered where residents can deposit accumulated recyclables, the Center's survey found. Some counties are consolidating their green box dumpster sites to economize on collection, and are adding drop-off recycling centers at the consolidated sites. Rowan County's 35 unstaffed dumpster sites, for example, will soon be consolidated into six staffed sites where residents will deposit both recyclables and garbage. Although cheaper to operate than curbside programs and buy-back centers, drop-off sites do have disadvantages. Participation is lower, *so less waste gets diverted from landfills*, litter and overflow can be a problem at unstaffed sites, and non-recyclable household trash may be thrown in with the recyclables.

Periodic community recycling days using temporary drop-off sites are one way to spur community interest and to educate residents about recycling. The Carolinas Glass Recycling Program coordinates "R-days" in many communities. The proceeds from the temporary drop-off centers are donated to local charities, says program director Jim Heimberger. Rowan County collected 50 tons of newspaper during a one-day recycling effort in its school system. Two elementary schools averaged 13 pounds of newspapers collected per student.

The State of the Counties' Recycling Efforts

Rowan County's program in its schools is one example of a number of innovative recycling efforts in North Carolina. According to the Center's survey, residents in 34 of North Carolina's 100 counties have access to an established recycling program. In these counties, more than \$10,000 a year is spent on recycling programs. Where budget figures were unavailable, counties were placed in this survey category if local entities in the county offered three or more recycling options or employed a full-time recycling coordinator. But 38 counties—a clear plu-

rality—provide *no* recycling services, and 28 counties provide only minimal services. These latter counties offer only one or two services or spend \$10,000 or less on recycling. The survey clearly indicates that in *most* counties—those offering minimal services and those offering none at all—there is little opportunity for citizens to recycle. Even among the 34 counties with established programs, the level of activities varies greatly. Recycling budgets total at least \$100,000 in only 11 counties—Alamance, Buncombe, Burke, Caldwell, Catawba, Durham, Gaston, Mecklenburg, Onslow, Orange, and Wake.

City and county administrators and sanitation officials were asked how many years of useful life remained in their current landfills, whether their

county or municipality paid a full-time recycling coordinator, how much money was budgeted for recycling during the past two years, what recycling activities they engaged in, and what revenues were generated through their recycling programs. (See Table 3, pp. 20-26, for a complete listing of the survey findings.)

One indicator of a strong commitment to recycling is the employment of a full-time recycling coordinator. According to the Center survey, 18 counties and six cities have a paid, full-time recycling coordinator. Mecklenburg has a recycling division manager who supervises a staff of 23 in an aggressive and highly visible program that includes curbside and drop-off center collection, a salvage operation, and processing of materials for

Mecklenburg County: An Urban County as a Model Manager of Solid Waste

Local government officials looking for a solid waste management success story need look no further than Mecklenburg County. "Our philosophy in this county is that we have an integrated waste management system," says Fred Remington, recycling division director. "Built into the system is a series of options for waste disposal. The first option in this community is recycling."

Residents and businesses in this densely populated south Piedmont county on average produce an 1,800-ton mountain of garbage daily, enough to load a 10-mile line of half-ton pickup trucks. Mecklenburg, through a contractual agreement, is responsible for disposing of the waste of six of seven municipalities within the county, including that of Charlotte, the state's largest city and the producer of some 80 percent of the county's waste. This responsibility for disposal means operating the county landfill, which brings with it all the political headaches and expense of siting a new landfill when the old one is filled. The county's current landfill has two years of life remaining. A 574-acre site has been purchased for a new

landfill near the South Carolina border, but South Carolina is suing to block its opening. It is this burden of siting new landfills that during the past decade has propelled recycling from a marginal fundraising scheme for schools and civic groups to an integral component of a model waste management system.

In January 1990, Charlotte will go city-wide with curbside collection of recyclables. The city has set aside more than \$2 million for this expansion, by far the state's most generous budget for recycling. The expansion is the fruit of a successful county pilot program that currently serves about 16,000 homes. Under this program, residents toss aluminum, glass, and plastic containers into 20-gallon bins, then top the bins off with newspapers and place them at the curb for weekly pickup. Remington says some 70 percent of residents in neighborhoods served actually participate by setting out their bins for collection at least once a month, and about 36 percent set out their bins every week. City collectors separate the materials at curbside and haul them to a county-operated

—continued on next page

market. (For more on recycling in Mecklenburg County, see sidebar, page 15). The Town of Chapel Hill operates an extensive recycling program with drop-off facilities throughout Orange County and recently awarded a contract to expand its curbside collection services. The towns of Newton and Long View in Catawba County offer curbside collection through a private contractor. Other metropolitan areas in North Carolina are planning large recycling programs. Raleigh re-

cently launched its pilot curbside program, and Wilmington also plans a curbside program.

Rural counties are tackling recycling on a smaller scale, but in some cases with equal enthusiasm. Chatham County's recycling program has grown from a one-Saturday-a-month pilot project into a full-fledged program with four permanent drop-off sites for recyclables and a full-time recycling coordinator, Judy Ingram. Ingram says the county collected 61,000 pounds of newspaper,

Mecklenburg County, *continued*

facility, where cans are flattened, glass is deposited into roll-off containers for shipment to buyers, and plastic is granulated.

Curbside programs operate in the much smaller municipalities of Huntersville, Cornelius, and Davidson, and Remington says Pineville and Mint Hill, by signing the county's waste management plan, also have committed to provide curbside recycling. The town of Matthews has contracted with a private hauler for waste collection and disposal. Besides the curb-side program, Mecklenburg maintains 10 drop-off boxes for recyclables and diverts appliances and metals such as aluminum, copper, and brass through a salvage operation at the county landfill. County workers also operate two tub grinders at the landfill, which grind scrap wood and yard waste into mulch sold for \$5 a cubic yard and used for landscaping. "We made \$27,000 last year just on our relatively small mulch generation," says Alan Giles, a county resource recovery specialist. County residents currently must bring yard waste to the landfill, but those served by curbside recycling programs also will be able to place yard waste at curbside beginning in July 1990. "Everyone is recycling everything they can—everything that is economically viable," says Remington, adding that the next target is the commercial sector.

Residents who participate in the curbside programs have little incentive other than civic mindedness spurred by an ongoing public relations campaign. But residents and commercial haulers who bring waste directly to the

landfill do have an incentive. The landfill charges a tipping fee designed to recoup waste disposal operating costs. Small load dumpers can get the fee waived or reduced by bringing recyclables to the landfill. A resident bringing a trunk full of garbage in his car, for example, would have to bring along three bags of newspapers for recycling or pay \$5 for dumping. Commercial haulers pay \$23 a ton for dumping, so any material that is recycled rather than dumped results in a direct savings for the hauler.

Mecklenburg's waste management strategy also includes a trump card that puts it well ahead of the game compared to most North Carolina counties—a waste-to-energy incinerator that already consumes all of the backyard garbage produced by the city of Charlotte—about 190 tons a day. Steam produced through incineration is used to heat buildings on the campus of the University of North Carolina at Charlotte in the winter, and steam-generated electricity is sold to Duke Power Company in the summer. County officials say the incinerator produces five megawatts of electricity a day—enough to power 20,000 homes. Ash from incineration currently is hauled to the county landfill, where it is being stored until the county gets a permit for its specially engineered landfill.

Remington says waste-to-energy ranks second in the county's three-tier management hierarchy for non-hazardous waste, and landfilling ranks last. "If it has no economic value and no energy value, then you have to landfill it," says Remington. Mecklenburg traces its solid waste management program to planning efforts that began in the early 1970s.

glass, and aluminum during June 1989. (See sidebar, page 18, for more on recycling in Chatham County.) Watauga County has recycled about 250 tons of waste annually through its buy-back center for aluminum, glass, non-ferrous metals, and paper. "Our little system has worked well, and it hasn't been too costly," says recycling coordinator F. Mark Combs. "We believe in recycling, but at the same time we are pragmatic about the system's limitations. Labor, commodities mar-

kets, and public participation are some tough obstacles."

Nonprofit groups coordinate recycling in many areas of North Carolina. The N.C. Recycling Association, founded in 1988, already claims more than 200 members, including concerned citizens, industries, environmental groups, and solid waste professionals. The group promotes recycling and provides technical assistance to both government and private recycling efforts.

The county's experiment with recycling started modestly in 1977 with a Charlotte Women's Club proposal for four drop-off sites at public schools. Former County Commissioner LaFontaine "Fountain" Odom, now a state senator (D-Mecklenburg), championed the hiring of a part-time recycling coordinator in 1981. From there the program blossomed into a national model with a \$1 million annual budget and a staff of 23.

Although Charlotte now collects recyclables, the county still holds responsibility for processing and marketing these materials. The county—faced with heated neighborhood opposition to its site—scrapped plans for a high-volume materials recovery facility to process the surge of recyclables anticipated from curbside expansion. Instead, the county contracted with a private firm, which will open its own facility. Mecklenburg will pay the contractor \$7.50 a ton for accepting recyclable materials, but officials say that's cheaper than the \$7.80 a ton it would cost the county to operate a processing center.

Mecklenburg has set a goal of diverting 30 percent of its solid waste from landfills by 1994. That exceeds the state goal of 25 percent set in the Solid Waste Management Act, and the county's long-range plans are much more ambitious. By the year 2006, the county hopes to recycle 30 percent of its waste and incinerate 40 percent. That would mean burying only 30 percent of the county's waste in sanitary landfills. "We think it's realistic to assume that 30 percent of waste will always have to be landfilled because we believe at least 30 percent of the waste stream is innocuous, non-combustible, and not economically

recyclable," says Remington.

Comparing those projections to the present, it becomes evident that even Mecklenburg—among the state's best waste managers—has a way to go before its problems are solved. The county currently captures about 10 percent of its waste through recycling and salvaging, and burns another 10 percent in its incinerator. But the county plans to add a second, larger incinerator, to expand recycling even further by targeting multi-family residences and commercial establishments such as restaurants and bars, and to open up a 35-acre facility for producing mulch and compost from wood and yard waste. Remington says the county hopes to divert as much as 18 percent of its current landfilled waste to this facility, 12.5 percent of which could count toward the state's 25 percent waste diversion goal. The remaining 12.5 percent would be achieved through recycling and salvage, Remington says. "I'm confident we will be able to make the waste management goals," says Remington.

Although he concedes that Mecklenburg has gotten a head start, Remington says the state's 25 percent goal is achievable for most North Carolina counties. The key to success, he says, is providing the financial incentive to recycle—an aggressive tipping fee at the landfill. "The challenge is particularly great in an area where there is no or very little tipping fee in the disposal area," says Remington. "Where there is no charge, there is very little economic incentive to recycle. Some incentive *has* to be developed to encourage people to recycle."

—Mike McLaughlin

Chatham County: A Rural County with a Big Recycling Effort

Residents of rural Chatham County are so anxious to recycle that Recycling Coordinator Judy Ingram has a hard time keeping up with their demands. "I can't move as fast as the citizens want," says Ingram. "Our recycling program is an example of a successful grass-roots effort. It's the residents who are pushing the government to do something about solid waste."

It all began in the spring of 1987, when the loosely organized Solid Waste Management Task Force, armed with environmental enthusiasm and a grant from the Governor's Waste Management Board, organized a workshop on recycling for more than 100 Chatham County residents. Chatham County Recycling has since grown from a one-Saturday-morning-a-month drop-off program into a flourishing project with four drop-off recycling centers and a full-time coordinator. Revenues from the sale of recyclables normally cover each month's operating expenses. From December 1988 to June 1989, the amount of materials collected increased by 42 percent, from 43,000 to 61,000 pounds. The program has expanded to include the collection of office paper and cardboard.

In the first six-and-a-half months of operation, the system diverted 133 tons of aluminum beverage cans, newspaper, and glass from the landfill. That's more than seven and a half pounds per county resident, but less than 2 percent of the waste buried in the landfill during the same time period. Still, Ingram says the program is successful. If volunteer support is any indication, she's right. A core group of 75 volunteers teaches recycling in the schools, mobilizes support in churches and civic organizations, patrols the collection sites daily, and searches for new markets for recyclable goods.

Despite these efforts, Chatham and other rural counties have a long way to go before

reaching the state's 25 percent recycling goal. Officials in rural counties say they have neither the money nor the personnel to operate extensive recycling programs. Since Chatham is sparsely populated, curbside collection of trash and recyclables would be cost-effective only in the towns and larger subdivisions in the county. For now, Ingram says the next step towards the 25 percent goal is to make recycling more convenient for participants. "Right now, I have about 5 percent of the people in the county participating," she says. "We will add one more collection site soon, and that might help." When the county consolidates its 60 unstaffed dumpsters into seven staffed centers next year, compactors for regular trash and drop-off facilities for recyclables will be added. Each home will have a site within six miles.

A recently implemented \$15-a-ton tipping fee at the Chatham County landfill provides added incentive for area residents and business to reduce and recycle their waste. The county commissioners, recognizing the strength of support for recycling and alarmed that the landfill has less than seven years of remaining life, have increased county funding for recycling by 62 percent, from an initial \$25,000 in 1988 to \$40,544 for the 1989-90 fiscal year.

Public outreach programs have taught school children to be "good stewards of the land," says Ingram. Last year, second grader Brian Craft claimed first prize in a poster contest with his slogan "Thumbs up for recycling!" One schoolgirl had to be reprimanded for climbing into one of the county's trash dumpsters to retrieve clean newspapers carelessly deposited by a newspaper carrier. "And the enthusiasm is contagious," says Ingram. "We're only making a dent, but we're doing something.... We saw a problem and jumped in in a low-tech way. While we're learning, people are learning to recycle. It is the change in attitudes that is most important."

—Amy Carr

Sun Shares, a nonprofit organization started in 1979, operates the Durham Recycles program. The group's 14 employees manage recycling centers and curbside collection for city and county residents. Sun Shares' funding is provided through tipping fees at the City of Durham's landfill and a grant from the Mary Reynolds Babcock Foundation in Winston-Salem. Nonprofits also have played an important role in recycling in Orange County. Chapel Hill Boy Scouts, for example, have constructed a permanent storage building where they process more than 30 tons a month of glass, paper, and aluminum cans for recycling and operate a buy-back center on Saturday mornings. The Town of Chapel Hill provides incentive for Troop 39's efforts by paying the troop the equivalent of the tipping fee for each ton of waste diverted from the landfill.

Some counties in North Carolina have joined forces with their neighbors to adopt regional solid waste management strategies, an idea now encouraged in state law.²⁵ In sparsely populated rural counties, an efficient "wasteshed" might transcend county lines. The benefits of sharing

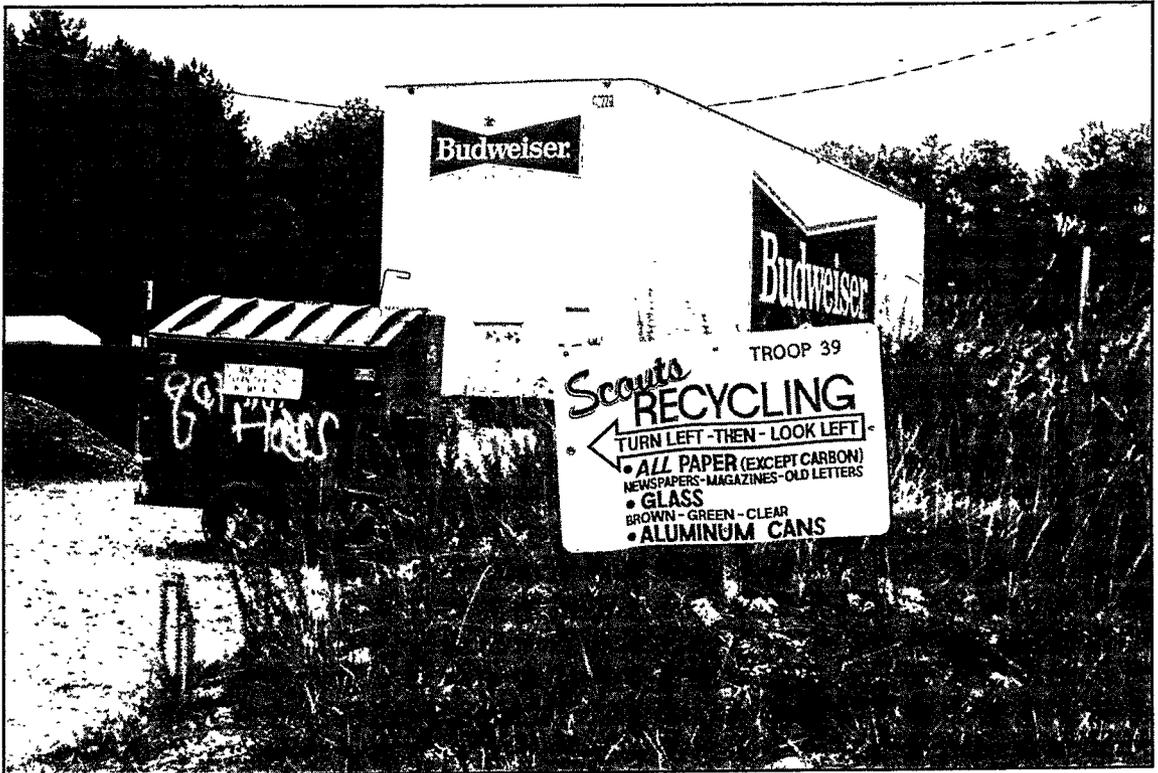
facilities and marketing a larger volume of materials could offset the increased transportation and administrative costs of implementing a regional solid waste management plan, says Phil Prete, waste reduction and recycling coordinator at the University of North Carolina at Chapel Hill.

The regional approach to solid waste management has worked well in the Land-of-Sky Regional Council in western North Carolina, council officials say. The Council of Governments' three-year-old program assists local governments with recycling efforts in Buncombe, Madison, Henderson, and Transylvania counties. The results of the COG's research on the feasibility of regional equipment sharing will be useful statewide, says Land-of-Sky solid waste planner Robin Sexton. Steve Heiselman, recycling coordinator in Buncombe County, says, "Small counties are the ones that will benefit most by regionalization of collecting and marketing processes."

Lee is a good example of those 28 counties making a minimal recycling effort. The county allocated only \$10,000 of its \$565,000 sanitation

— continued on page 27

Boy Scout Troop 39 in Chapel Hill is one of a host of nonprofit groups making major contributions to recycling efforts in North Carolina.



Amy Carr

Table 3. County and Municipal Recycling Efforts in North Carolina

	Remaining Years of Life In Landfill	Paid Recycling Coordinator	Current Recycling Activities	Fiscal Year 1989-1990 Funding
ALAMANCE				
Alamance County	3+	yes	DO,LL,O,S	\$140,000
Burlington	—	no	CS,LL	\$6,000
ALEXANDER				
Alexander County	3+	yes	BB	\$22,000
ALLEGHANY				
Alleghany County	7+	no	none	—
ANSON				
Anson County	2	no	DO	N/A
ASHE				
Ashe County	10+	no	none	—
AVERY				
Avery County	2	no	none	—
BEAUFORT				
Beaufort County	5+	no	DO	N/A
Washington	—	no	CS	N/A
BERTIE				
Bertie County	3+	no	none	—
BLADEN				
Bladen County	2+	no	S	—
BRUNSWICK				
Brunswick County	5+	no	none	—

Key

- BB: Buy-back center where customers are paid for recyclable materials
- CS: Curbside collection of recyclables on a regular schedule
- DO: Drop-off center where residents may deposit recyclables
- LL: Leaf or limb collection and diversion from the sanitary landfill
- O: Other recycling activity (office paper collection, for example)
- S: Salvage of bulky goods from landfill

- +: More than
- : Less than

N/A: Specific amounts not available; recycling expenditures contained within overall solid waste budget or general expenditures

Planning: Recycling program in planning stages

#: Joint city/county program

Table 3. County and Municipal Recycling Efforts in North Carolina, cont.

	Remaining Years of Life In Landfill	Paid Recycling Coordinator	Current Recycling Activities	Fiscal Year 1989-1990 Funding
BUNCOMBE				
Buncombe County	2+	yes	DO,LL,O	\$200,000
BURKE				
Burke County	30+	yes	BB,DO,LL,O,S	\$260,000
Morganton	—	no	DO	N/A
CABARRUS				
Cabarrus County	15+	yes	DO	\$31,552
Concord	—	no	S,LL,	N/A
CALDWELL				
Caldwell County	2+	no	DO,LL,S	\$150,000
CAMDEN				
Camden County	—	no	none	—
CARTERET				
Carteret County	5+	no	DO	N/A
CASWELL				
Caswell County	5+	no	S	—
CATAWBA				
Catawba County	12	—	* BB,CS,DO,LL,S	\$100,000
Conover	—	no	DO,LL,S	\$15,500
Hickory	—	no	DO,LL,S	N/A
Long View	—	no	CS	\$18,000
Newton	—	no	CS,DO,LL	N/A
CHATHAM				
Chatham County	5+	yes	DO,O	\$40,544
CHEROKEE				
Cherokee County	2-	no	LL,S	N/A

This table includes county and municipal recycling efforts and is organized by county. All 100 counties are listed, even those with no recycling programs and no landfills. Cities which operate a landfill or which participated in the Center's recycling survey are also included.

Bold type indicates a combined total of five years or less of life remaining in one or more municipal- or county-operated landfills.

Notes

* Rocky Mount lies in both Edgecombe and Nash counties.

** Private landfills and landfills not currently in use are excluded from the list. If a county or municipality operates more than one landfill, the remaining life of each landfill in its jurisdiction is listed.

*** Macon County has a volunteer recycling coordinator.

**** Rutherford County has a part-time recycling coordinator.

Table by Amy Carr

Table 3. County and Municipal Recycling Efforts in North Carolina, cont.

	Remaining Years of Life In Landfill	Paid Recycling Coordinator	Current Recycling Activities	Fiscal Year 1989-1990 Funding
CHOWAN				
Chowan/Gates/ Perquimans	10+	no	DO	—
Edenton	—	no	LL,O	\$10,000
CLAY				
Clay County	10+	no	none	—
CLEVELAND				
Cleveland County	10+	no	DO,O	—
Shelby	—	no	DO,LL	N/A
COLUMBUS				
Columbus County	10	no	DO	\$10,000
CRAVEN				
Craven County	10	no	none	—
CUMBERLAND				
Cumberland County	10+	yes	CS,DO,LL	\$24,644
Fayetteville	—	no	LL	N/A
Hope Mills	—	no	DO,O	N/A
CURRITUCK				
Currituck County	5	no	none	—
DARE				
Dare County	5	no	none	—
DAVIDSON				
Davidson County	2+	no	none	—
Lexington	1	no	none	—
Thomasville	3+	no	LL	N/A
DAVIE				
Davie County	5+	no	LL,S	N/A
DUPLIN				
Duplin County	2+	no	none	—
DURHAM				
City of Durham	2+	yes	* CS,DO,LL,O,S	\$759,000
EDGECOMBE				
Edgecombe County	10+	no	none	—
Tarboro	—	no	DO,LL	N/A
Rocky Mount*	—	no	DO,LL,S	N/A
FORSYTH				
Forsyth County	—	no	none	—
Winston-Salem **	10-, 2+	no	BB, DO, LL, S	N/A
Kernersville	1-	no	DO	N/A
FRANKLIN				
Franklin County	1-	no	DO,LL,O,S	N/A

Table 3. County and Municipal Recycling Efforts in North Carolina, cont.

	Remaining Years of Life In Landfill	Paid Recycling Coordinator	Current Recycling Activities	Fiscal Year 1989-1990 Funding
GASTON				
Gaston County	10+	yes	BB,DO,LL,O,S	\$250,000
GATES				
Gates/Chowan/ Perquimans counties	10+	no	none	—
GRAHAM				
Graham County	1-	no	DO	N/A
GRANVILLE				
Granville County **	1+, 1+	no	none	—
GREENE				
Greene County	20	no	none	—
GUILFORD				
Greensboro	4+	no	DO,LL	\$13,794
High Point **	2+, 10+	no	DO,LL, O	N/A
HALIFAX				
Halifax County	10+	no	none	—
HARNETT				
Harnett County **	10+, 10+	no	none	—
HAYWOOD				
Haywood County	1-	yes	DO,O	\$30,000
Canton	10+	—	—	—
Waynesville	—	—	LL	—
HENDERSON				
Henderson County	15	yes	DO,S	N/A
Hendersonville	—	no	DO,S	N/A
HERTFORD				
Hertford County	1-	no	LL	—
HOKE				
Raeford	4+	no	planning	—
HYDE				
	—	no	DO	N/A
IREDELL				
Iredell County	2+	no	planning	—
Mooresville	—	no	LL,S	N/A
JACKSON				
Jackson County	5+	no	BB	\$30,000
JOHNSTON				
Johnston County	2+	no	none	—
JONES				
Jones County	26	no	none	—
LEE				
Lee County	7	no	DO	\$10,000
Sanford	—	—	LL	N/A

Table 3. County and Municipal Recycling Efforts in North Carolina, cont.

	Remaining Years of Life In Landfill	Paid Recycling Coordinator	Current Recycling Activities	Fiscal Year 1989-1990 Funding
LENOIR				
Lenoir County	5+	no	none	—
LINCOLN				
Lincoln County	15+	no	none	—
MACON				
Macon County **	1-, 1-	no ***	DO	—
MADISON				
Madison County	1-	no	DO	\$10,000
MARTIN				
Martin County	2-	no	none	—
McDOWELL				
McDowell County	5+	no	DO,LL,O	\$5,000
MECKLENBURG				
Mecklenburg County	2+	yes	CS,DO,S,LL,O	\$1,000,000
Charlotte	—	yes	CS	\$2,211,504
Cornelius	—	no	CS,LL	N/A
Davidson	—	no	CS,LL	N/A
Huntersville	—	no	CS,LL	N/A
Matthews	—	no	CS,LL	N/A
Mint Hill	—	no	CS,LL	\$100,000
MITCHELL				
Mitchell/Yancey counties	3+	no	none	—
MONTGOMERY				
Montgomery County	2+	no	none	—
MOORE				
Moore County	10+	no	BB,DO,S	\$7,500
Pinehurst	—	no	CS,DO	\$31,200
NASH				
Nash County	2+	no	none	—
NEW HANOVER				
New Hanover County	50+	yes	planning	—
NORTHAMPTON				
Northampton County	10+	no	none	—
ONSLOW				
Onslow County	5	yes	BB,DO,O	N/A
Jacksonville	—	yes	planning	\$121,400
ORANGE				
Orange County/ Chapel Hill/Carrboro †	8	yes	* BB,CS,DO, LL,O,S	\$326,000
Hillsborough	—	no	CS,LL	N/A

Table 3. County and Municipal Recycling Efforts in North Carolina, cont.

	Remaining Years of Life In Landfill	Paid Recycling Coordinator	Current Recycling Activities	Fiscal Year 1989-1990 Funding
PAMLICO				
Pamlico County	6+	no	LL,O	\$500
PASQUOTANK				
Pasquotank County	10+	no	none	—
PENDER				
Pender County	5+	no	none	—
PERQUIMANS				
Perquimans/ Gates/Chowan counties	10+	no	none	—
PERSON				
Person County/ City of Roxboro #	5+	no	none	—
PITT				
Pitt County	5	no	BB,DO,O	N/A
Greenville	—	yes	DO,LL,O	\$18,000
POLK				
Polk County	10+	no	DO	N/A
RANDOLPH				
Randolph County	8+	no	DO,LL,O,S	N/A
Asheboro	—	no	DO	N/A
RICHMOND				
Richmond County	10+	no	none	N/A
Hamlet	—	no	LL	N/A
ROBESON				
Robeson County	25+	no	none	—
Lumberton	—	no	DO	N/A
ROCKINGHAM				
Rockingham County	2+	no	none	—
Reidsville	—	no	DO,LL	N/A
ROWAN				
Rowan County	30+	yes	DO,LL,S	\$46,640
Salisbury	—	no	DO,LL	\$8,000
RUTHERFORD				
Rutherford County **	5+, 5+	no ****	LL, planning	N/A
SAMPSON				
Sampson County	5	no	none	—
SCOTLAND				
Scotland County	5	no	DO,LL	N/A
Laurinburg	—	no	LL,O	\$90,000
STANLY				
Stanly County	—	no	DO, planning	\$85,151
Albemarle	5+	no	LL	\$10,000

Table 3. County and Municipal Recycling Efforts in North Carolina, *cont.*

	Remaining Years of Life In Landfill	Paid Recycling Coordinator	Current Recycling Activities	Fiscal Year 1989-1990 Funding
STOKES				
Stokes County	12+	no	none	—
SURRY				
Surry County	5+, 5+ **	no	DO	N/A
SWAIN				
Swain County	2+	no	LL	N/A
TRANSYLVANIA				
Transylvania County	1-	no	DO, O	N/A
TYRRELL				
Tyrrell County	—	no	none	—
UNION				
Union County	10	no	DO,LL,S	N/A
Monroe	—	no	LL,DO	N/A
VANCE				
Vance County	2-	no	none	—
WAKE				
Wake County	10, 4 **	yes	planned	\$618,000
Cary	—	no	BB,CS,DO,LL	\$73,000
Garner	—	no	DO,LL	N/A
Raleigh	10+	no	CS,DO,LL,O	\$114,000
WARREN				
Warren County	1-	no	none	—
WASHINGTON				
Washington County	2	yes	O	N/A
WATAUGA				
Watauga County	5+	yes	BB,LL,S	\$71,791
Boone	—	no	DO,O	N/A
WAYNE				
Wayne County **	10+, 10+	no	BB,DO,O	N/A
WILKES				
Wilkes County	2-	no	none	—
WILSON				
Wilson County	2+	no	BB	—
YADKIN				
Yadkin County	3	no	none	—
YANCEY				
Yancey/Mitchell counties	3+	no	BB,DO	\$10,000

—continued from page 19

budget for recycling in 1989. A single drop-off site for recyclables is located at the landfill, and only batteries, metal appliances, and aluminum cans are accepted. County activities are supplemented by leaf and limb collection in the City of Sanford, and by the private sector, including a local paper recycler and a local scrap dealer.

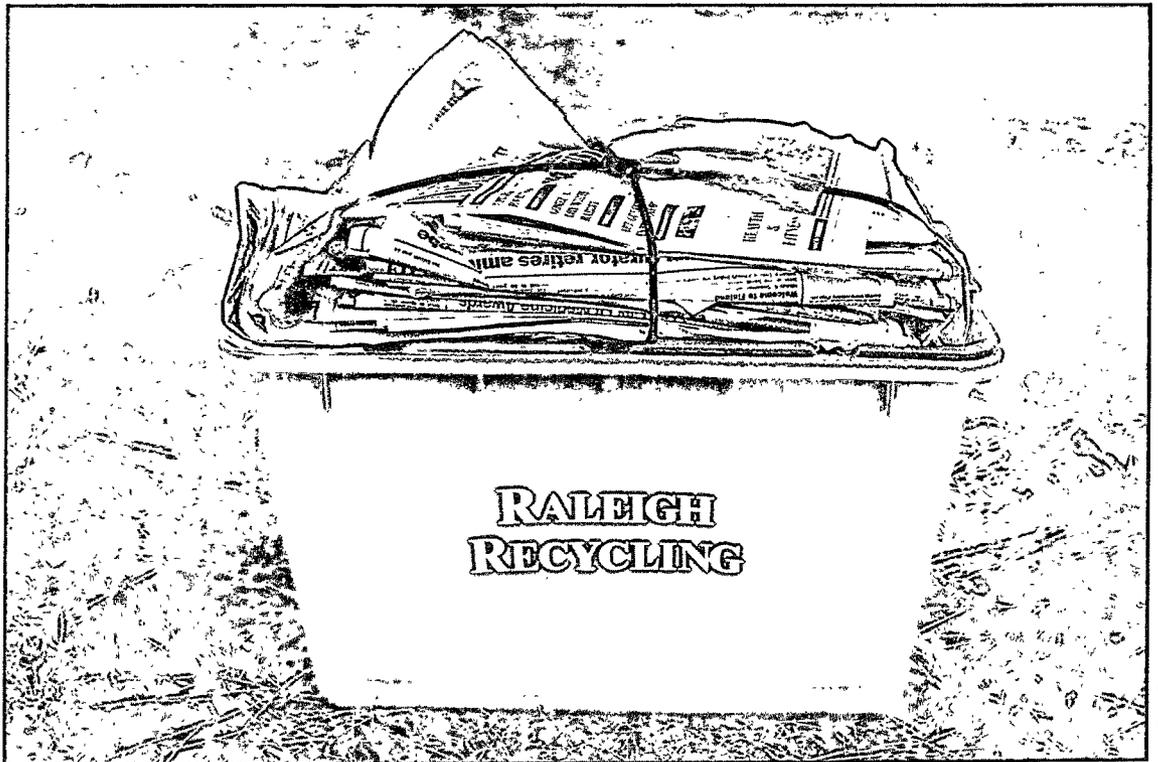
"We're looking at a couple of different options right now," says Lee County Public Works Director Bobby Johnson. "We started out with recycling dumpsters at the container sites, but people were dumping their regular trash in there."

At least Lee has begun experimenting with recycling. The list of counties that reported *no* recycling activities cuts across the entire state. It includes Ashe, Alleghany, and Avery in the west, Lincoln and Person counties in the Piedmont, and Brunswick, Camden, and Currituck in the east. Most of the counties with no recycling activities are small and rural, many are among the state's poorer counties, and more than half—20 of the 38—have more than five years of life left in their landfills. But even more of the counties with well-developed recycling efforts—24 of 34—had more than five years of life remaining in their landfills.

For the most part, the survey found North Carolina's more affluent and urbanized counties to be the recycling leaders, with the heaviest concentrations of non-recyclers in the extreme western and eastern parts of the state, where access to markets may be a greater problem than in the more industrialized Piedmont. It is these non-recycling counties which will face the greatest challenge when the full implications of the Solid Waste Management Act are realized. That challenge is to divert 25 percent of waste from landfills. The enforcement mechanism is the potential withholding of certain state funds.²⁶

How Much Can Be Recycled?

In determining whether the waste diversion goal has been met, county officials can count only half of the 25 percent in the form of yard trash, appliances, tires, and construction and demolition debris. That's because with the exception of tires and appliances, much of this waste winds up in demolition landfills, separate landfills for bulky materials from such activities as construction, land clearing, and demolition that represent less of an environmental threat than sanitary



Jack Betts

landfills. And much of the wood and yard waste can easily be diverted through mulch and compost operations, which many cities and counties already have in place. The other half represents the greater challenge and the more expensive proposition for local government. This 12.5 percent must be achieved through diversion of such recyclables as paper, glass bottles, and aluminum cans—items that might ordinarily wind up in the kitchen garbage pail—and commercial waste such as office paper and cardboard. Solid waste from industrial, mining, or agricultural operations diverted from sanitary landfills cannot be counted towards the goal at all. Given these restrictions, can the goal be met? “I doubt it,” says Hackney, “but goals are something you shoot for.” Chapel Hill’s Pollock says the goal is “realistically optimistic. It is a numbers game. Chapel Hill has an aggressive program, but recycles 2.5 percent of the waste stream. If I include all the yard waste that is diverted from the landfill, I still only push the rate up to 8 or 9 percent.”

Theoretically, high recycling rates are plausible. Japan recycles more than 50 percent of its solid waste, and European countries all have sur-

passed the 25 percent recycling rate, according to the EPA. Using the EPA domestic waste stream figures, if three-quarters of wood and yard waste and half of waste paper, glass, metals, food, and plastics were recovered, North Carolina could recycle more than 50 percent of its waste stream. At least one lawmaker, Rep. James Craven, wanted a 50 percent goal included in the 1989 legislation.

But a gap exists between what is theoretically possible and what is technically and logistically feasible. Although 80 percent of the waste stream is recyclable, material loss due to contamination, a less-than-perfect participation rate, and the fact that some recyclables inevitably end up in the trash cans of participants, push the feasible recovery rate down considerably. Jeremy O’Brien, a solid waste specialist with HDR Engineering in Charlotte, estimates that no more than 21 percent of the residential and commercial waste stream feasibly can be recovered with curbside recycling, although combining curbside with other means of recycling can push the overall recovery percentage much higher.²⁷

Mecklenburg County, with its nationally

Salvage operation at the Mecklenburg County landfill.



Mike McLaughlin

recognized recycling program, plans to recycle 15 percent of its garbage next year. Curbside collection goes citywide in Charlotte in January 1990, but Mecklenburg still aims to recycle only 30 percent of its waste stream by 2006. The popular drop-off sites in Chatham County divert less than 2 percent of the county's waste from the landfill. Such experiences suggest that many of the counties actively promoting recycling will not reach the 25 percent waste reduction goal by 1993. And for the 65 counties exerting little or no recycling efforts, the goal may remain elusive. "They're going to have to get off their duff and do something," says Heimberger. "A conscientious effort may accomplish it, but it depends on how hard the counties push recycling."

What About Cost?

One factor prohibiting many counties from recycling is cost. More than \$3.3 million was budgeted this year for recycling in Mecklenburg County alone, including county and municipal costs, according to the Center survey. And the revenue generated from the sale of recyclables was only \$175,000. A comparable cost-to-revenue ratio exists in other counties with major recycling efforts. Buncombe took in \$25,000 with its recycling program in the 1988-89 fiscal year, but the budgeted cost, at \$150,000, was six times greater. Burke County, with its more modest operation, budgeted \$65,000 for recycling in 1988-89. The county realized only \$3,800 in revenue, a cost-to-revenue ratio of 17-to-1. Many local governments and nonprofit recyclers had hoped residential recycling would function like a stand-alone business, with costs covered by revenue generated. These hopes have been dashed by unstable markets, expensive equipment, and high operating costs. Only unique recycling efforts, like the Keep Wayne County Beautiful program with its abundant source of scrap aluminum, are self-financing. Yet the cost of even the state's most expensive recycling program—Mecklenburg's—represents a fraction of the cost of constructing a new state-of-the-art landfill or a waste-to-energy incinerator.

Mecklenburg's incinerator, which can burn up to 210 tons of garbage a day, cost the county \$27 million. Estimates for constructing a new landfill under EPA's new regulations range from \$100,000 to \$150,000 an acre. Using the more conservative figure, it would take \$20 million to

Table 4. Estimated Per-Ton Cost to Local Governments of Various Waste Disposal Methods

Method	Per Ton Cost	
Landfilling	\$30	to \$ 50 *
Curbside Recycling	\$40	\$ 80
Composting	\$50	\$100
Waste-to-Energy Incineration	\$50	\$100

*Does not include the \$100,000 to \$150,000 an acre cost of building a new landfill when the old one is full.

Source: Technical paper prepared by R. W. Beck and Associates for the N.C. Alternative Energy Corporation. Estimates are based on national average costs and may vary greatly depending on regional and other factors.

build a 200-acre landfill. The City of Charlotte budgeted only \$2.2 million in fiscal year 1989-90 to expand curbside collection of recyclables citywide. But O'Brien cautions that operating costs, rather than capital costs, drive up the cost of curbside collection. O'Brien figures the cost of curbside collection and processing of recyclables at about \$50 a ton—after accounting for revenue from the sale of recyclable materials. But because recycling diverts waste from landfills or incinerators, the per-ton tipping fee at one of these facilities also should be deducted from the cost figure. In addition, a landfill depletion adjustment must be made, because if the ton of waste were landfilled, rather than recycled, it would use up valuable landfill space.

Under one scenario, O'Brien assumed a \$27 per-ton landfill tipping fee and a \$23 per-ton landfill depletion cost, so these costs equaled the \$50 per ton net cost of curbside recycling.²⁸ O'Brien assumed that the landfill would be full within three years and replaced with a more expensive waste-to-energy incinerator. Still, O'Brien says he would not want to soft-pedal the expense of establishing a curbside recycling program. "People are going to be surprised at how

"When we try to pick out anything by itself, we find it hitched to everything else in the universe"

—John Muir

much curbside costs," says O'Brien. "The reason is collection costs. When you recycle, you are really adding another collection service." One way to minimize these costs would be for sanitation workers to collect garbage, yard waste, and recyclables on a single route, O'Brien says. Yard waste and recyclables could be bagged by the resident and separated from garbage at a transfer station.

Another analysis compares per-ton costs for various waste disposal options and finds curbside recycling—at \$40 to \$80 a ton—to be somewhat more expensive than landfilling, which is estimated to cost \$30 to \$50 a ton.²⁹ But this analysis does not consider transportation and collection costs, which can vary considerably, nor does it take into account landfill depletion costs or revenue that can be realized through the sale of recyclables. (See Table 4 on page 29).

Capital costs for recycling can range from a few hundred dollars for a simple drop-off facility to hundreds of thousands of dollars for specially designed collection equipment and processing centers. Typically, the larger the percentage of waste diverted from the waste stream, the larger the cost. A tub grinder for chipping yard waste sets a local government back about \$150,000. A compartmentalized truck for curbside collection may run \$70,000. Shredders, balers, and storage buildings or material recovery facilities are all expensive capital investments. Operating costs such as insurance payments, wages, marketing and public relations costs, interest on loans, and transport costs must be figured into the recycling budget. Even consulting fees and other costs involved in planning a recycling program may be prohibitive for some local governments.

It's next to impossible to predict how much revenue these investments will yield. Markets

are extremely volatile. Graphs plotting the prices offered for aluminum and paper look more like EKG readouts than economic data. Even the price paid for usually lucrative aluminum cans is on a downward track. And the bottom has dropped out of the market for old newspapers, although there are signs of a recovery.

Most experts believe that the market for recyclables is demand driven; the demand for recycled materials determines the price offered for them, which in turn determines the volume of collected recyclables which can be marketed. The current glut of waste newspapers illustrates this idea. The supply of papers exceeds the demand and consequently, many local recyclers are not collecting paper anymore. But other solid waste specialists, particularly in the plastics industry, contend that the market is supply driven; if a stable supply of separated waste were available, entrepreneurs would find ways to process and market recyclables.

If the supply-siders are right, the marketing problem will be corrected when enough recycling programs go on line. Most analysts believe, however, that keeping the market for raw materials healthy will require hard work, particularly as more towns and counties recycle and more materials hit the market. Unless these materials are used in production, there is no recycling—only a tradeoff of above-ground storage for landfilling. "You can pick it up all day long, but you aren't recycling if you don't do something with it," says Jerry Bulla, assistant superintendent of sanitation for the City of Greensboro. Bulla believes some counties are "stockpiling recyclables, and then slipping them into the landfill, because the markets just aren't there." Adds Terry Henderson, director of intergovernmental programs for the N.C. League of Municipalities, "We're at that point now where we don't have markets identified for the products, so we're garbage collecting with the idea of recycling, more than truly recycling."

Uncertain markets and low revenue may make recycling look like a bad bargain until the benefits are totaled. Recycling diverts waste from the landfill and consequently lowers the landfill's operating expenses and extends the useful life of existing landfills. An accurate accounting of these avoided costs is necessary to judge the economic viability of recycling. Mecklenburg, with its \$23-a-ton tipping fee at the landfill, plans to turn responsibility for processing and marketing recyclable materials over to a private company

and pay the company \$7.50 a ton to take the materials.

But in counties with low landfilling costs, the revenue from the sale of recyclables and the expenses avoided by not landfilling may not fully offset the costs of recycling. The state estimates disposal costs in a conventional, unlined landfill at \$10 a ton.³⁰ But with landfill costs skyrocketing in the near future due to the new EPA regulations, rising land costs, and other factors, and with public opposition to siting new landfills, that picture will quickly change. Says Steve Reid, the state's Solid Waste Division spokesman, "You can pay now or you can pay later. And later is going to be a hell of a lot more expensive."

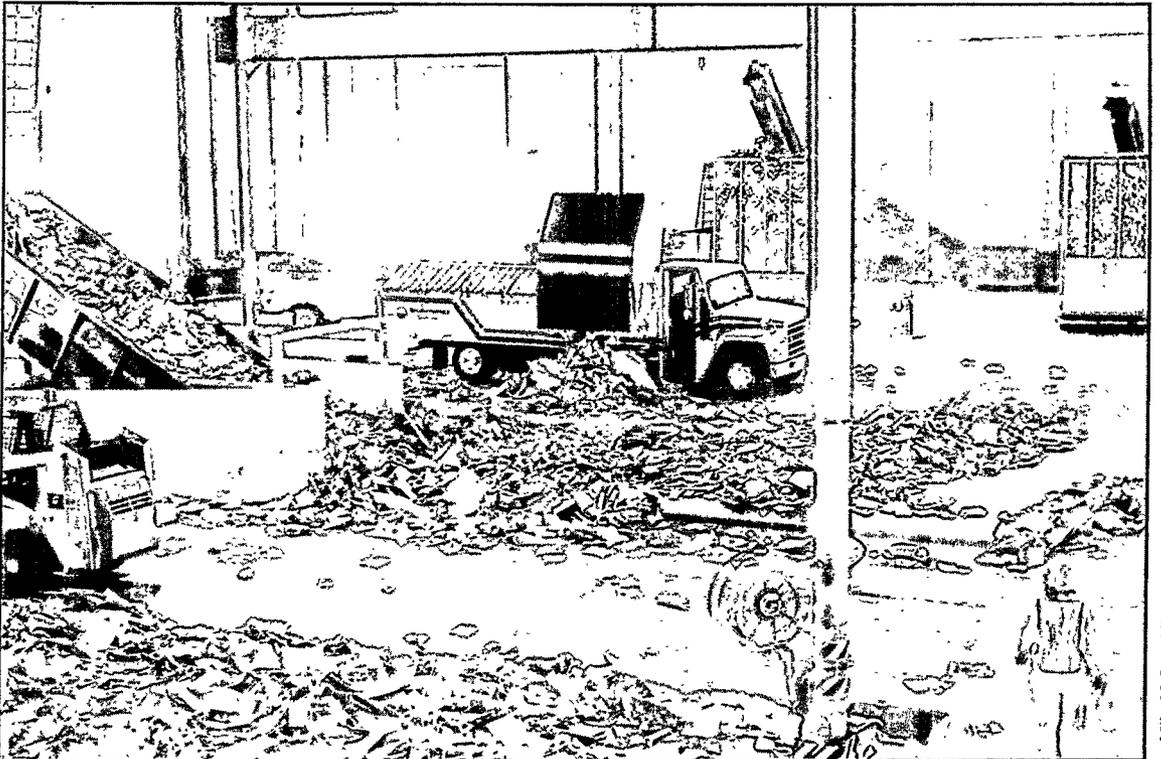
State Policy Shifting on Solid Waste Management

Traditionally, local governments have been left on their own to grapple with solid waste management problems. Estimates are that landfilling costs will at least triple by 1991, but no federal monetary or technical assistance is avail-

able to help local governments defray these spiraling costs. "What used to be an inexpensive service that counties and municipalities voluntarily provided their citizens has become expensive, and will become much more expensive in the near future," says the Legislative Research Commission report to the 1989 General Assembly on solid waste management.³¹ "The clear trend is for states, in the interests of protecting the health of their citizens and their environment, as well as economic growth, to choose to become more involved in solid waste management, to provide leadership to the counties within their state, and to provide financial assistance or incentives to local governments."

Until the 1989 legislative session, North Carolina had only a few policies in place to encourage responsible solid waste management in general, and recycling in particular. Recycling and resource recovery equipment costs have been and remain deductible from franchise taxes or individual income taxes.³² Such tax incentives encourage the purchase of recycling equipment and promote the development of the recycling

Materials processing center in Seattle, where residential garbage collection rates that vary with the amount of waste produced have driven participation in curbside recycling programs to about 80 percent.



Mike McLaughlin

industry. The Pollution Prevention Pays Program, established in 1983, encourages private industries and local governments to reduce or recycle potentially polluting wastes, and offers matching grants of up to \$5,000 to promote such efforts. The program has provided funding for waste stream analyses in some counties and maintains a library of information about recycling. The program also has contracted for two special publications—a statewide directory of recycling programs and contact persons, and a directory of markets for recycled materials.³³

But these limited state efforts were not enough to prevent solid waste problems from getting worse. In 1989, the General Assembly recognized a larger state role in what until then largely had been considered a local concern. In addition to the Solid Waste Management Act, the legislature appropriated \$5 million to set up a financing agency authorized to borrow private money on behalf of local government for capital costs associated with recycling, composting, incinerating, and landfill construction.³⁴ The agency is expected to help local governments tap up to \$50 million in private funds.³⁵

Observers say this recognition of an increased role for the state in solid waste management was one of the most significant developments of the 1989 General Assembly. Holman, the environmental lobbyist, says the loan fund stalled in the House in 1988 on grounds the issue was strictly local. "Here, one year later, you have a loan fund and a solid waste bill that very much involve the state in solid waste management," says Holman.

The Department of Environment, Health, and Natural Resources (DEHNR), for example, was also handed rulemaking assignments on scrap tire disposal, landfill escrow accounts to handle sealing and monitoring after closure, and medical waste collection and disposal.³⁶ The Department of Public Instruction must make educational materials on recycling available to local school systems, although the law does not specify a deadline.³⁷ And by March 1991, two important documents are due. The Department of Economic and Community Development (formerly the Department of Commerce) must issue a report on the recyclables market,³⁸ and DEHNR must complete a statewide solid waste management plan.³⁹ The Department of Transportation also has its homework assignment—a feasibility study on using waste oil in road projects.⁴⁰ And the Department of Administration must complete a report on state procurement of supplies with recycled content.

Finally, all state agencies must initiate their own recycling programs by Jan. 1, 1992.⁴¹

But despite the new state role, the heavy lifting still takes place on the local level, both literally and figuratively. Local government must find new ways of dealing with tires, waste oil, lead-acid batteries, discarded major appliances, and yard trash, all of which will be banned from sanitary landfills by 1993.⁴² That's in addition to the requirement that local governments submit solid waste management plans to the state, institute recycling programs aimed at meeting the state waste diversion goal by Jan. 1, 1991, and actually divert 25 percent of waste from local landfills by the 1993 deadline.⁴³

The two strongest lobbies for local governments—the N.C. League of Municipalities and the N.C. Association of County Commissioners, actively supported the law in its final form. Still,

William Nicholas dumps newspapers for recycling at the Mecklenburg County office building.



Mike McLaughlin

"The earth was the great garbage bowl. Everything discarded was flung on the earth and they did not care. Almost they liked to live in a milieu of fleas and old rags, bits of paper, banana skins and mango stones. Here's a piece torn off my dress! Earth, take it. Here's the combings of my hair! Earth, take them!"

—D.H. Lawrence
"The Plumed Serpent"

both groups say there are unresolved questions. "We like the legislation, but there are some questions about the way it will be implemented," says the League's Henderson. "What is the appropriate role for various levels of government?"

Henderson says the law suggests a four-tiered partnership. The state must find and create markets for recyclable materials, multi-county regions get the role of implementing expensive waste management options that require a pooling of local resources, counties claim responsibility for disposing of waste and getting recyclables to market, and cities collect solid waste and recyclables. "This is truly one area where we are going to have to be intergovernmental and interdependent," says Henderson.

The law also hits the private sector on a number of fronts, including these: all plastic grocery bags must be recyclable by January 1991; imprints that aid recycling will be required on certain plastic containers beginning in July 1991; and polystyrene products—such as plastic foam cups and the clam shell containers that keep hamburgers hot—must be recyclable by Oct. 1, 1991. At least 25 percent of both plastic grocery bags and polystyrene products must be recycled by October 1993, or these products will be banned.⁴⁴

The Missing Link — Money

What's missing is a source of money to pay for these new initiatives. The legislative study commission had recommended that the 1989

General Assembly appropriate funds for 50 new positions to help the Division of Solid Waste Management carry out its new responsibilities. The division got only 13. That's a substantial increase in staff for a tight budget year, but Holman says the agency already faced a year-long backlog of landfill permit applications. Now it must handle a greatly increased workload under the Solid Waste Management Act. The act also includes little money for university research and local demonstration projects, which Hackney says are vital to help the counties develop more efficient recycling programs and to stimulate markets.

The reason for the money omission? No one wanted to pay. Advance disposal fees for containers and newsprint were scrapped in the face of industry complaints that could have scuttled the bill. Fran Preston, a lobbyist for the N.C. Retail Merchants Association, says her trade group believes consumers purchase the container with the product, and therefore hold responsibility for seeing that the container gets recycled. She says merchants in the state's 40 border counties would be placed at a competitive disadvantage through pre-disposal fees, and the fee collection and container redemption system would be difficult to administer. "There are a lot of better ways to do it," says Preston, who favors curbside collection programs.

A bottle-bill-style container deposit provision that would have kicked in if the pre-disposal fee failed to stimulate enough recycling raised the ire of both merchants and soft drink bottlers. Sam Whitehurst, a lobbyist for the N.C. Soft Drink Association, says the whole notion of a fee system was premature. "Somewhere down the road we may have to go to some sort of funding mechanism," says Whitehurst. "There are so many things to get off the ground, we need to take it in steps." (See sidebar on bottle bills, page 34, for more.)

Hugh Stevens, who lobbies for the N.C. Press Association, says the newsprint fee was inequitable as proposed because many North Carolina newspapers do not have ready access to recycled newsprint. The only two newsprint recycling plants in the Eastern United States are owned by newspaper chains, says Stevens. Many of the state's independent newspapers buy their newsprint in Canada, which offers little recycled newsprint. These newspapers, Stevens says, are effectively shut out of the recycled newsprint market. Stevens says the fee would have cost news-

papers only \$25,000 a year statewide—enough to represent a nuisance to publishers but too little to influence printing decisions. And Stevens says the fee singled out newspapers while ignoring certain other problematic paper products, particularly disposable diapers. Yet Stevens says he recognizes the newsprint disposal problem and believes the industry is willing to help solve it. “I think the problem is all of us, and I think it’s silly to claim you are not part of the problem if you are,” says Stevens.

Local governments opposed a 50-cents-a-ton waste disposal fee to be collected at landfills and remitted to the state, calling the fee a raid on a county revenue source. Regan says some counties which already have well-developed solid waste

management programs—such as Mecklenburg—saw no benefit to using part of waste disposal fees to help the state pay its administrative costs or to help set up recycling programs in other counties. Still, Regan says the counties are open to discussion on the subject. “I don’t think we ever take non-negotiable positions,” he says.

Primary sources of funding for the Solid Waste Trust Fund created in the bill are a \$300,000 appropriation from the state’s General Fund, and a 10 percent share of the one fee that did survive the bill—a 1 percent levy on retail tire sales, which will generate \$389,000 annually for the fund. An additional \$500,000 was appropriated to be matched by private money for a study to analyze the state’s waste stream. But compared to

No Bottle Bill for North Carolina—Yet

A July 1989 poll included one finding that should have shaken up North Carolina merchants and soft drink distributors. The poll by FG*I, a Chapel Hill public relations and marketing firm, found 70 percent of the state’s citizens favor a 5-cent deposit on beer and soft drink containers. In other words, they want a bottle bill.

But despite this apparent strong public support, bottle bills have gotten no respect from the General Assembly. A total of 18 bottle bills have been introduced and killed in the legislature since 1969, according to Sam Whitehurst, a lobbyist for the N.C. Soft Drink Association. The latest defeat came when a container deposit provision included in the Solid Waste Management Act was excised by a House panel during the 1989 session.

Yet some lawmakers see the bottle bill as a major piece of the solid waste reduction puzzle. “If you ever want to get serious about solid waste, a bottle bill is the way to do it,” said Rep. David Diamont (D-Surry) during House debate on the Solid Waste Management Act. “We can’t get it passed because the special-interest groups have too much clout in the legislature. They contribute too much to our campaigns.”

Nine states currently have traditional deposit laws on the books, and most appear to be working. The theory behind the bottle bill is simple: people aren’t likely to throw away a container that is worth something. The mechanics of bottle bills are simple too. Distributors charge retailers the deposit. They in turn charge their customers. When the consumer has used up what was in the container, he returns it to the retail store for a refund. The retailer then returns the container to the distributor. California, the tenth state to enact a bottle bill, offers a variation. The state charges beverage wholesalers a penny deposit. Consumers are asked to return the containers to redemption centers, where they get the penny back, along with the scrap value of the container and a share of unclaimed deposits.¹

Although bottle bills target only about 5 percent of the waste stream, they have proven successful at reducing litter and encouraging recycling. Oregon claims a 90 percent redemption rate for beer and soft-drink bottles.² New York state’s bottle bill has resulted in the recycling of aluminum, glass, and plastic beverage containers at rates of 60, 80, and 50 percent, respectively.³

Bottle bill opponents are quick to point out

major increases budgeted for education, roads, and prisons, the General Assembly barely opened its purse for what may be the most significant issue facing the state over the next decade.

"What's needed is money for university research, for grants to the counties, for various kinds of research," says Hackney. "Really, we would like to have—and I think the problem merits it—somewhere in the order of \$5 million . . . It's the perennial environmental problem, which is underfunding."

The North Carolina bill was patterned after Florida's Senate Bill 1192, ratified in June 1988, which set a 30 percent recycling goal by 1994 and placed the responsibility for establishing and enforcing recycling programs on the counties. But

the Florida program is much better financed. A \$25 million Solid Waste Management Trust Fund provides local governments with grants to fund capital expenditures and subsidize initial operations. A 10-cent-per-ton advance disposal fee is imposed on newsprint, with papers receiving a refund if they buy recycled newsprint. The fee increases to 50 cents if less than 50 percent of the newsprint is being recycled by October 1992. Advance disposal fees also will be levied on containers if 50 percent of containers sold are not being recycled by October 1992.⁴⁵

These provisions give the Florida law the teeth some say are lacking in North Carolina by providing strong financial incentives for local

that deposit legislation does not require the recycling by industry of the containers collected. But even though a bottle bill does not mandate the reuse of collected materials, the laws of economics do: manufacturers who collect tons of clean, marketable, sorted recyclables are not going to pay to have them dumped in a landfill.

Retailers, although compensated for the inconvenience of refunding deposits, often oppose bottle bills. They argue that sorting the containers means time, trouble, and increased labor costs, and the deposit adds to the cost of the product. Paying customers may be inconvenienced by having to stand in line behind people who only want to redeem bottles or cans. The bottles and cans also could attract roaches and would require at least some sacrifice of retail space for storage. Container manufacturers are against bottle bills too, and have fought them in part by supporting litter-control efforts and recycling programs. "We don't like bottle bills," says Jim Heimberger of the Carolinas Glass Recycling Program, an industry-sponsored recycling program. "It may have started out as a tactic, but recycling has evolved into an ethic for us. Once you've got a white hat on, it feels good."

Heimberger says a bottle bill in North Carolina would be devastating because it would take the lucrative container recycling

business away from community-based recycling programs and small, private recyclers. "It effectively destroys those programs," he says. "You pass a bottle bill, and you've taken the bread and butter out of it for those small recyclers." Durward F. "Butch" Gunnells, a lobbyist for the North Carolina Soft Drink Association, says coupling a bottle bill with widespread curbside recycling would create a wasteful dual system and would hurt curbside programs.

But Rep. Joe Hackney (D-Orange), who engineered the passage of the Solid Waste Management Act, disputes such arguments. "It's the single most effective way to deal with bottles and cans," says Hackney. "It would be nice not to have to have a recycling program for certain kinds of containers, because recycling programs don't make money. They cost money." Hackney says the most effective argument bottle bill opponents have is a political argument. "Stores don't want to mess with it, and they speak up," he says.

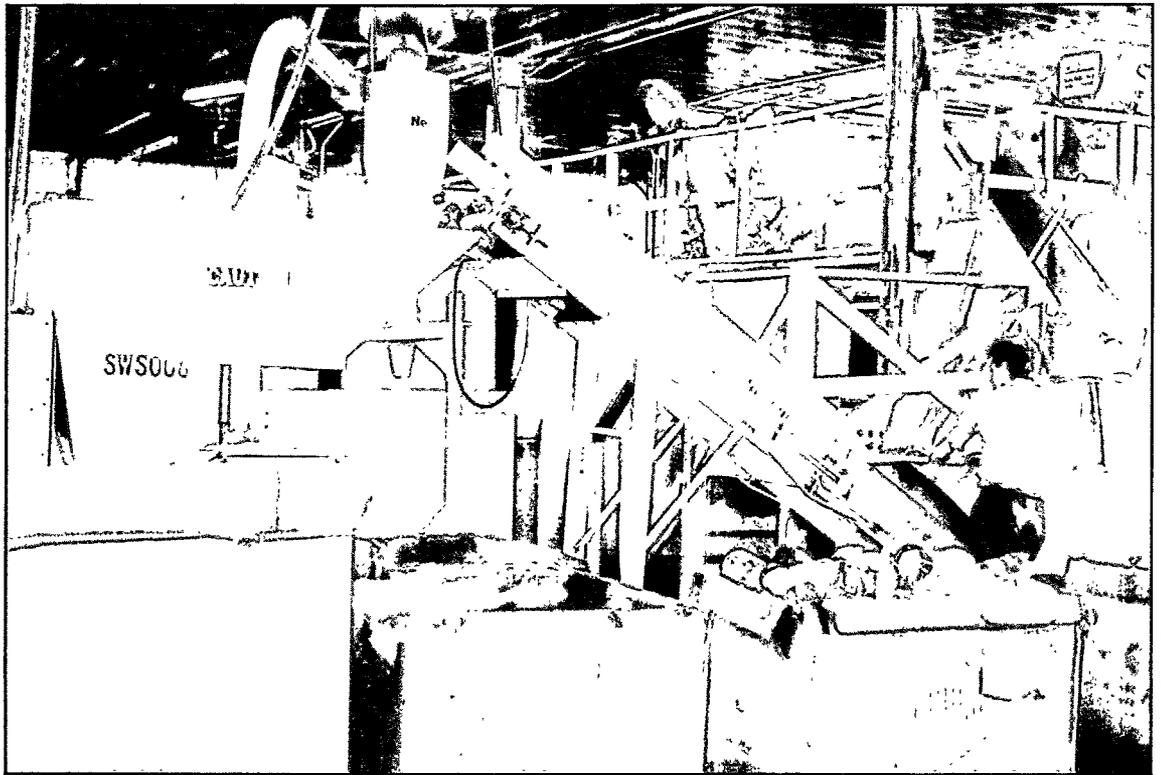
—Amy Carr

FOOTNOTES

¹Environmental Defense Fund, *Coming Full Circle: Successful Recycling Today*, 1988, pp. 72-73.

²Philip J. Prete, *A Solid Waste Agenda for North Carolina Cities and Counties*, The Conservation Foundation of North Carolina, May 1989, p. 21.

³Environmental Defense Fund, p. 70.



Mike McLaughlin

Worker monitors a conveyor belt at Mecklenburg's material processing center.

government and industry to encourage recycling. Still, no one disputes the significance of the Solid Waste Management Act. "It does have some of the teeth taken out of it, but it is a step in the right direction," says Pollock, the solid waste planner for Orange County, Chapel Hill, and Carrboro. "If nothing else, it has pushed the level of debate one notch further. You know, politics is incremental."

Recommendations

With the act, the state has laid the groundwork for a statewide assault on its solid waste management problem, with recycling as the major weapon to be deployed in the battle. But to make recycling work on a statewide basis and to get a handle on the state's solid waste woes, the legislature must return to this issue in future sessions.

The clear omission in the bill, and the issue that needs immediate attention, is money. Implementing a statewide solid waste management strategy, and recycling 25 percent of the state's waste stream, cannot be accomplished on good in-

tentions alone. Somebody has to pay the bill. Steven Levitas, director of the N.C. Environmental Defense Fund, says there are three clear sources of revenue for solid waste management, and all must be tapped if the state is to fund adequately the sweeping provisions of the Solid Waste Management Act. Those three sources are: 1) the outright appropriation of tax dollars by state and local government; 2) user fees such as tipping fees at landfills and separate bills for residential garbage collection, with a portion of the revenue returned to the state for research into recycling markets and methods; and 3) taxes on consumer products that contribute heavily to the waste stream—the advance disposal fees featured in the Florida law. "I don't think we will ever have the political will to raise all that money from one source," says Levitas.

Too often, the state has created new responsibilities for local government without identifying sources to pay for them. In this instance, the state identified one revenue source—the tipping fee—and local government nixed it. County officials say they did so in part because business balked at

picking up part of the tab for solid waste management through advance disposal fees for containers and newsprint. The one exception is tire dealers—and tires present unique and expensive disposal problems. The tire fee hardly can be expected to pay the freight for overall solid waste management.

To improve the state's chances of reaching its solid waste management goals, the North Carolina Center for Public Policy Research offers these recommendations:

1) The state should require counties to establish tipping fees at their local landfills that reflect the true cost of solid waste disposal. The law already requires that all waste going into local landfills be weighed by July 1, 1991. Once the waste is weighed, it becomes a relatively simple matter to assess a fee on a per-ton basis. Counties should also have the option of basing their disposal fees on volume, since some bulky materials take up more space in landfills than their weight would suggest. Waste disposal costs vary by county, and so would the fees. But counties are required under the law to calculate their true cost of solid waste disposal and inform the public of those costs. The next logical step is to assess cost-based tipping fees. The sooner such tipping fees are in place, the sooner North Carolina citizens will realize the enormous expense of a throwaway society. And a percentage of the revenue can be used to pay for recycling programs. Municipalities, which have the responsibility of collecting waste and thus will wind up paying the county tipping fees, may want to consider charging citizens separately for garbage pickup, rather than burying these expenses in the annual property tax bill. That too would help bring home the cost of waste disposal, and it would help municipalities defray collection costs. It also would set the stage for a variable rate structure in which residents could cut their garbage pickup bills by cutting their waste production and by recycling. The City of Seattle has pushed its voluntary recycling program participation rate to about 80 percent with a simple system in which citizens are charged a garbage pickup rate that varies with the size of the garbage can.

2) The General Assembly should increase its appropriation for implementing the provisions of the Solid Waste Management Act during its 1990 short session. Solid waste management may well be the major issue facing the state during the next decade. The \$800,000 appropriated out of a \$7.36 billion General Fund budget

is a relative pittance. It will not come close to paying for the new state responsibilities spelled out in the law, much less provide the wherewithal to assist local government in gearing up for a massive assault on solid waste. The state *must* demonstrate its commitment with a more generous appropriation—at least the \$5 million Hackney suggested, which would represent a modest investment in a far-reaching solution to the solid waste management problem. Otherwise, legislators will continue to encounter stiff resistance to raising revenue from local government and business interests, and the problem won't get solved. Once the legislature has shown its commitment through a realistic appropriation, it may want to return to the issue of advance disposal fees and taxes or other disincentives to encourage waste reduction and recycling. But first the legislature must appropriate enough money to get the Solid Waste Management Act out of the starting blocks.

3) The state should adopt a preference for the purchase of supplies with recycled content, even if the price is up to a ceiling of 5 percent higher. If the state succeeds in recycling 25 percent of its waste, the result will be a huge influx of recyclable materials. Without sufficient markets, the result may be above-ground stockpiling, rather than landfilling. That's no solution to the solid waste dilemma, but there are no easy answers to the problem of inadequate markets. The study mandated by the General Assembly to be done by the Department of Economic and Community Development (formerly Commerce) by March 1991 may point to private markets that could be tapped. But a good first step for the state would be a good example—a preference for goods with recycled content. Hackney says prices of products with recycled content are too high right now for a reasonable price preference to have much of an impact on state purchasing, but that could change with the onset of high-volume purchasing. At some point, the price of products with recycled content should reflect the savings on energy and raw materials used to make these products. A preference would give manufacturers a target to shoot for, and might even spur the onset of competitive prices for such products as recycled paper. This magazine, for example, was printed on recycled paper at an additional cost of 4.9 percent.

Action in these areas would enhance the state's chances of meeting its 25 percent waste diversion goal through recycling, although the Jan. 1, 1993, deadline may be unrealistic. The full



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potential of recycling can be realized only if North Carolina changes its attitude toward waste, and that will not happen in three short years. What is needed is a statewide waste diet that incorporates government, industry, and private citizens.

The programs and policies already in place in cities and counties across the state provide a good starting point. Experience in these existing programs indicates the public is willing to recycle at a certain level on conservation grounds alone. And business is beginning to realize that recycling means good public relations and—in some cases—higher profits. But these motives alone will not be enough to push the state past its 25 percent goal. Strong economic incentives, a massive public education effort, and programs that maximize convenience will be required if the state is ever to recycle a fourth of its waste. The Solid Waste Management Act represents the bold beginning of a long battle to slim down the state's bulging waste stream. But it is only a beginning.



FOOTNOTES

¹Chapter 784 (SB 111) of the 1989 Session Laws, now codified as N.C.G.S. 130A-309.

²G.S. 130A-309.04(c).

³G.S. 130A-309.09(b),(d).

⁴The Center mailed a survey to each of the state's 100 counties and selected municipalities with populations of more than 5,000 residents. Those counties and municipalities which did not respond got one follow-up mailing. These two mailings yielded an 88 percent response rate from the counties. Surveys were conducted by telephone for the remaining 12 counties, yielding a total response rate of 100 percent. Telephone surveys also were conducted for some municipalities which did not respond to the mail survey but were thought to have significant recycling programs. A total of 100 counties and 70 municipalities participated in the survey.

⁵"Scrap: America's Ready Resource," Institute of Scrap Recycling Industries, Inc., Washington, D.C., 1988, p. 18.

⁶Rolland Wrenn, "Recycling: A Good Idea Comes Around Again," the *Chapel Hill Herald*, Aug. 2, 1989, p. 4.

⁷Background for "The Solid Waste Dilemma: An Agenda for Action," Draft Report of the Municipal Solid Waste Task Force, Office of Solid Waste, U.S. Environmental Protection Agency, August, 1988, Chapter 1, p. 12.

⁸Background for "The Solid Waste Dilemma: An Agenda for Action," p. 2E-18.

⁹Tom Mather, "Trying to Make Molehills Out of Mountains of Trash," *North Carolina Insight*, Vol. 10, No. 2-3, March 1988, p. 40.

¹⁰John Hodges-Copple, "Minimizing Solid Waste," Southern Growth Policies Board, 1988, p. 3.

¹¹G.S. 14-399.

¹²G.S. 130A-309.04(b).

¹³Mary A. McDaniel, "The Role of Waste Exchange in Waste Minimization," *Proceedings of the Sixth Annual Conference on Hazardous Wastes and Hazardous Materials*, April 1989, pp. 238-240.

¹⁴G.S. 130A-309.10(f)(3).

¹⁵For more on the new political clout of environmentalists, see Seth Effron, "When It Comes to Environmental Politics, Who's Leading Whom?" *North Carolina Insight*, Vol. 10, No. 2-3, March 1988, pp. 2-9.

¹⁶Nash Herndon, "House Panel Revives Bill to Reduce Levels of Trash," *The Raleigh Times*, July 27, 1989, p. 7B.

¹⁷"The Amazing All-Aluminum Can," Phoenix Quarterly, published by the Institute of Scrap Recycling Industries, Inc., Vol. 21, No. 2, Spring 1989, p. 8.

¹⁸Philip J. Prete, Mary Beth Edelman, and Richard N.L. Andrews, *Solid Waste Reduction: Alternatives for North Carolina*, University of North Carolina Institute for Environmental Studies, October 1988, p. 23.

¹⁹"The Amazing All-Aluminum Can," p. 8.

²⁰Terry Martin, "Groups Speak Against N.C. Recycling Measures," *Winston-Salem Journal*, June 10, 1989, p. 15.

²¹Prete *et al.*, p. 27.

²²G.S. 130A-309.10(e).

²³Prete *et al.*, p. 63.

²⁴The City of Greensboro in Guilford County also reported curbside collection of recyclables. The city's effort is limited to collection of appliances at 48,000 homes.

²⁵G.S. 130A-309.04(b).

²⁶G.S. 130A-309.09(t).

²⁷Jeremy K. O'Brien, "Guidelines for Implementing Cost-Effective Curbside Recycling Programs," paper presented at National League of Cities recycling conference, Seattle, July 28, 1989, p. 8.

²⁸*Ibid.*, p. 4.

²⁹Jeff Clunie, Joyce Marymee, Bob Bingham, "Environmental and Economic Imperatives for Considering New Waste Disposal Approaches," draft technical paper by R.W. Beck and Associates for the North Carolina Alternative Energy Corporation, January 1989, p. 12.

³⁰"Solid Waste Management," Legislative Research Commission Report to the 1989 General Assembly, p. 9.

³¹*Ibid.*, p. 4.

³²Philip J. Prete, *A Solid Waste Agenda for North Carolina Cities and Counties*, The Conservation Foundation of North Carolina, May 1989, p. 16.

³³The publications, produced under contract by the University of North Carolina Institute for Transportation Research and Education, are titled, "1988 Directory of North Carolina State and Local Contacts for Recycling Information and Assistance," and, "Directory of Industrial and Commercial Recyclers Serving North Carolina Businesses and Communities." The N.C. Association of County Commissioners also has distributed a helpful report, "Recycling: Perspectives for North Carolina Local Governments," by David Patte.

³⁴Chapter 756 (SB 115) of the 1989 Session Laws.

³⁵The N.C. Center for Public Policy Research recommended in March 1988 that the General Assembly establish a revolving loan fund for landfill construction, with local governments borrowing from the fund and repaying the state. See Mather, p. 52, for more on these recommendations, which were written by Jack Betts, then associate editor of *North Carolina Insight*.

³⁶G.S. 130A-309.26(c), G.S. 130A-309.27(f), and G.S. 130A-309.58(b).

³⁷G.S. 130A-309.14(i).

³⁸G.S. 130A-309.14(c).

³⁹G.S. 130A-309.06(a)(1).

⁴⁰G.S. 130A-309.19.

⁴¹G.S. 130A-309.14(a)(1).

⁴²G.S. 130A-309.58(b), G.S. 130A-309.10(f)(1-4).

⁴³G.S. 130A-309.09(d).

⁴⁴G.S. 130A-309.10(c-e).

⁴⁵Ruth Bell *et al.*, "Trends in State Recycling Legislation," paper presented by staff of R.W. Beck and Associates recycling and materials recovery consultants, The National League of Cities recycling conference, Seattle, WA., July 28, 1989, pp. 5-7.



Karen Tan