



## Optimizing Recovery at the Curb

# FACT SHEET

One simple way local governments can enhance their waste reduction efforts is to improve existing curbside recovery programs. For example, enhancing education or employing policy tools such as once/week garbage collection or pay-as-you-throw programs can increase diversion rates and improve cost effectiveness. Moreover, these improvements are often inexpensive to implement.

Below are some of the options available for optimizing curbside recovery; these options are illustrated with North Carolina examples when possible. Because of the variability in local conditions, some strategies may be more appropriate and work better than others.

### Increasing Diversion

- ✓ **Boost participation through education.** Easy-to-implement measures include inserting flyers into utility bills, writing articles for local newspapers, staffing a booth at a community fair, or educating school children. Although more extensive measures require more planning and coordination, they can result in major participation increases. For example, the Town of Cary boosted its participation to almost 100 percent by holding community meetings to explain its recycling program and designating block leaders who helped educate and motivate their neighbors. Other education efforts could include yard signs to remind residents of set-out day, direct mail campaigns, radio or TV spots, mass mailings, take-home items (such as brochures and magnets), newspaper inserts, or telephone hotlines.

Persistence is important in education efforts. Some studies have shown participation increases of 10 to 20 percent immediately following a promotional campaign. They have also demonstrated that participation drops unless there is a continued effort to educate the public and promote recycling.

- ✓ **Consider adding new materials.** One way to increase the diversion rate is to add new materials to the collection. Although many communities collect newspaper, glass, and aluminum cans, fewer collect steel food cans, magazines, mixed plastic bottles, or mixed paper. Textiles, small appliances, and building and remodeling materials can also be collected curbside or at drop-off sites. Local government should evaluate the waste stream and the local/regional markets before any materials are added and explore the technical and economic considerations associated with adding each material.

#### Educate Participants

In a simple and consistent message, Orange County, N.C., tells its participants five easy ways to improve curbside collection. This message appears in a designated space in each quarterly newsletter:

1. Put your bin out only when it's full.
2. Flatten your plastic bottles and metal cans.
3. Separate your newspapers and magazines from cans and bottles.
4. Twin your bin. Put your bin next to your neighbor's if possible.
5. Put your bin out by 7:00 a.m. on your collection day.

- A more aggressive approach is to **add household and business food discards**. These materials can be collected through a wet/dry separation system. The wet fraction-food waste, yard material, and wet paper -is taken to a composting facility; and the dry fraction-recyclable papers and containers-go to a recycling facility. Food waste can also be added to back yard composting programs along with yard waste.
- **Try volume- or weight-based pricing of solid waste**, which has been shown to increase participation and materials recovery and decrease solid waste disposal levels. In a study of 21 cities that implemented unit-based pricing, recycling increased by more than 125 percent, and landfilled garbage was reduced by an average of 40 percent (as measured by weight). (Apotheker, *Resource Recycling*, April 1995).
- **Implement material restrictions** if large amounts of recyclables are going to landfills. Several North Carolina counties, such as Alamance, Camden, Pasquotank, and Wayne, to name a few, have imposed material restrictions with penalties for non-compliance. For example, Alamance excludes glass, plastic, metals (including metal hangers) and papers from landfills, and over 10 North Carolina counties have banned corrugated cardboard from their landfills.
- **Evaluate the cost effectiveness of adding *small* businesses to the program.** Limited service to businesses whose recyclables fit in the bins used for residential collection should be considered. Larger businesses should be provided educational materials and referred to appropriate business and technical assistance providers, local haulers and processors, and other businesses with successful programs.

#### **Offer Financial Incentives to Recycle**

A common approach, which is used by Wilmington, N.C., is to offer different size cans or carts for different prices. Wilmington offers two sizes of carts, 40-gallon or 90-gallon, at prices ranging from \$11 to \$28 (residential). The City also offers a second collection each week to residents who pay extra for that collection. In the first year, the new system saved the City almost \$400,000 and increased its combined tonnage of recyclables and yard waste by 42 percent.

Oxford, N.C., also offers financial incentives for participation in curbside recycling. Households can save up to \$5/month on solid waste costs if they recycle at least two materials and their bins are at least half-full, as recorded by waste haulers. With this approach, Oxford boasts of a 70-percent participation rate.

### **Improving Cost-Effectiveness**

- **Integrate materials recovery programs into a comprehensive solid waste management program.** If the recycling collection is separate from the rest of the solid waste management program, **the entire** system should be adjusted to achieve efficiency and reduce duplication. Responsibilities, methods, equipment, and funding mechanisms should be coordinated and each program component integrated into overall strategy and financing.
- **Implement full cost accounting.** To track and evaluate costs of various management options and to set rates to recover the full costs of providing services, all indirect and direct costs should be identified.
- **Consider decreasing recycling collection frequency.** The current trend in the U.S. is toward bi-weekly or monthly collection. Some municipalities are realizing 25- to 30-percent reductions in annual costs by switching from weekly to bi-weekly collections. Asheville, N.C., decided to start its curbside program with bi-weekly collection because of the cost savings over weekly. Longer set-outs may reduce the number of person-hours and trucks needed for collection, thereby reducing costs. However, longer setouts tend to decrease participation and tonnage recovered in some areas, with lower savings resulting overall. Timely education of participating households about the changes being made can prevent decreasing tonnages.
- **Consider commingling recyclables in plastic bags.** More communities are moving towards commingled collection in plastic bags, with two-stream more popular than one-stream. Commingling enables new materials to be easily added to the existing supply; however, it often results in more contamination than

with source-separated materials, especially food waste contamination of newspapers or corrugated cardboard. In addition, when residents are required to pay for the bags, participation may decrease

Bags work well with limited setouts because they are easier to haul to the curb, easier to load on the truck, and only require one trip to the curb. The negative side is that since bags must be opened at processing facilities, a bag-opening device will be needed. Chicago, Ill., began using blue bags last year and has not yet reached its 1996 goal of 60-percent recycling. Initial problems included low participation (25 percent), only one-third of total recyclables coming from blue bags, and bag breakage on-the-processing floor.

- **Test various crew sizes and route lengths,** and design routes for efficiency. Program choices will vary with equipment and processing facilities. A recent study of three North Carolina curbside programs found that one-person crews were most efficient, and two-person crews were generally used only on routes too large for one person to complete in 8 hours. (Bracken, *Resource Recycling*, September 1993) One of these programs found it most efficient to shorten its routes rather than unload mid-route.
- **Re-evaluate truck/equipment choices.** The increasing number of equipment options are most likely driven by the high cost of collection. Below are some of the options to consider.

- **Choose a light compaction truck:** by eliminating a mid-day unload, fewer routes will be needed to collect the same amounts of materials. Trucks that exert limited pressure (<5 psi) with moveable walls have been shown to work better than trucks with traditional compaction (17-34 psi) because the higher pressures result in more glass breakage. The moveable walls also accommodate varying volumes of recyclables. Rocky Mount, N.C., purchased a plastics compactor and found that it decreased the labor time required to collect materials.

- **Design trucks to meet program needs.** SunShares of Durham, N.C., designed its trucks with efficiency in mind. These trucks minimize “dead time” because materials can be separated on the truck as it moves between stops. The City of Minneapolis also designed its own trucks. (See box.)

Addressing Unique Needs
The City of Minneapolis needed trucks that could maneuver through alleys and pick up its growing list of materials (traditional materials plus plastics, yard waste, and white goods). It designed a prototype low-entry, dual-side vehicle that enables collection from both sides of alleys. The truck is a bi-level, 24-yd <sup>3</sup> box and pulls a 19-yd <sup>3</sup> self-dumping trailer. The City conducted a pilot test, made design changes, and ordered 14 trucks and trailers, thus reducing its routes from 14 to 12 while increasing the materials collected.

- **Evaluate other options.** A change in the number of compartments on trucks, automated collection (which has been shown to significantly reduce worker’s compensation claims), or a co-collection vehicle to collect garbage and recyclables on the same truck or wet/dry components in two compartments are options worth consideration.

Trucks should be evaluated carefully before purchase: Durham, N.C., experienced technical problems with its co-collection fleet and has traded them in for more traditional rear-loading, waste-only vehicles. The City is purchasing separate recycling vehicles. For more information on the effect of co-collection on recycling efficiency, *see Co-collection Remains an Experiment.* (Farrell, *BioCycle*, August 1996).

- **Try co-collection with garbage.** Joining recycling and garbage collection can be as simple as putting garbage and recyclables containers or neighbors’ containers side by side. This practice results in an increase in collection productivity of about 12 percent. Co-collection can also be capital intensive because new vehicles may be needed. With side loader vehicles, up to 100 stops per hour of garbage and recyclables can be made. Co-collection vehicles may be a good option for rural and small urban markets because of the long hauls to facilities with transfer stations and MRFs.

- **Enter into cooperative marketing agreements.** Small rural communities particularly can improve the finances of their recycling program by jointly marketing recyclables with other communities, recyclers, haulers, businesses, and non-profit organizations. Neighboring communities should be canvassed about sharing semi-trucks or processing equipment and combining loads.
- **Encourage the development of local markets in the area,** especially for non-traditional, high-value recycled products. Technologies are being developed that can use recycled feedstock to manufacture new products on a smaller scale. Examples of local markets are animal bedding and insulation from newsprint and road bed material from crushed glass or tires.

## Working with Contractors

- **Examine garbage and recyclables collection and processing contracts.** Good contractual arrangements can capture savings and revenues. Full cost **accounting** should be conducted so that the complete costs of an integrated solid waste management system can be identified, and a competitive bid process should be used. Components should be merged, and contracts should reflect the local government's integrated solid waste management goals. Other contractual options include sharing revenues from the marketing of recyclables and basing recycling contracts on tonnage. This approach captures savings from reduced garbage transport and tipping fees that result from source reduction, recycling, and composting.
- **Rebidding contracts can help save money.** When local governments put contracts out for rebid, they should consider selective commingling of materials for markets that will accept it or have processing capability; such commingling can include newspaper and magazines, corrugated cardboard and mixed paper, aluminum and steel food cans, or natural and pigmented HDPE. It is productive to have contractors engaged in the process of identifying opportunities to gain efficiencies.

## References

1. Anderson, Pete, "The Impact of Light Compaction on Curbside Recycling Collection," *Resource Recycling*. May 1996.
2. Apotheker, Steve, "Curbside Recycling: The Second Generation," *Resource Recycling*. April 1995.
3. Bracken, Robert, "Collecting Curbside Recyclables Efficiently," *Resource Recycling*. September 1993.
4. Farrell, Molly, "Co-Collection Remains an Experiment," *BioCycle*. August 1996.
5. Gies, Glenda, "Wet/Dry Pioneers in Canada," *BioCycle*. August 1996.



*The North Carolina Division of Pollution Prevention and Environmental Assistance provides free, non-regulatory technical assistance and training on methods to eliminate, reduce, or recycle wastes before they become pollutants or require disposal. Telephone DPPEA at (919) 715-6500 or 800-763-0136 or e-mail [nowaste@owr.ehnr.state.nc.us](mailto:nowaste@owr.ehnr.state.nc.us) for assistance with issues in this Fact Sheet or any of your waste reduction concerns.*

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