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RESOURCE RECYCLING

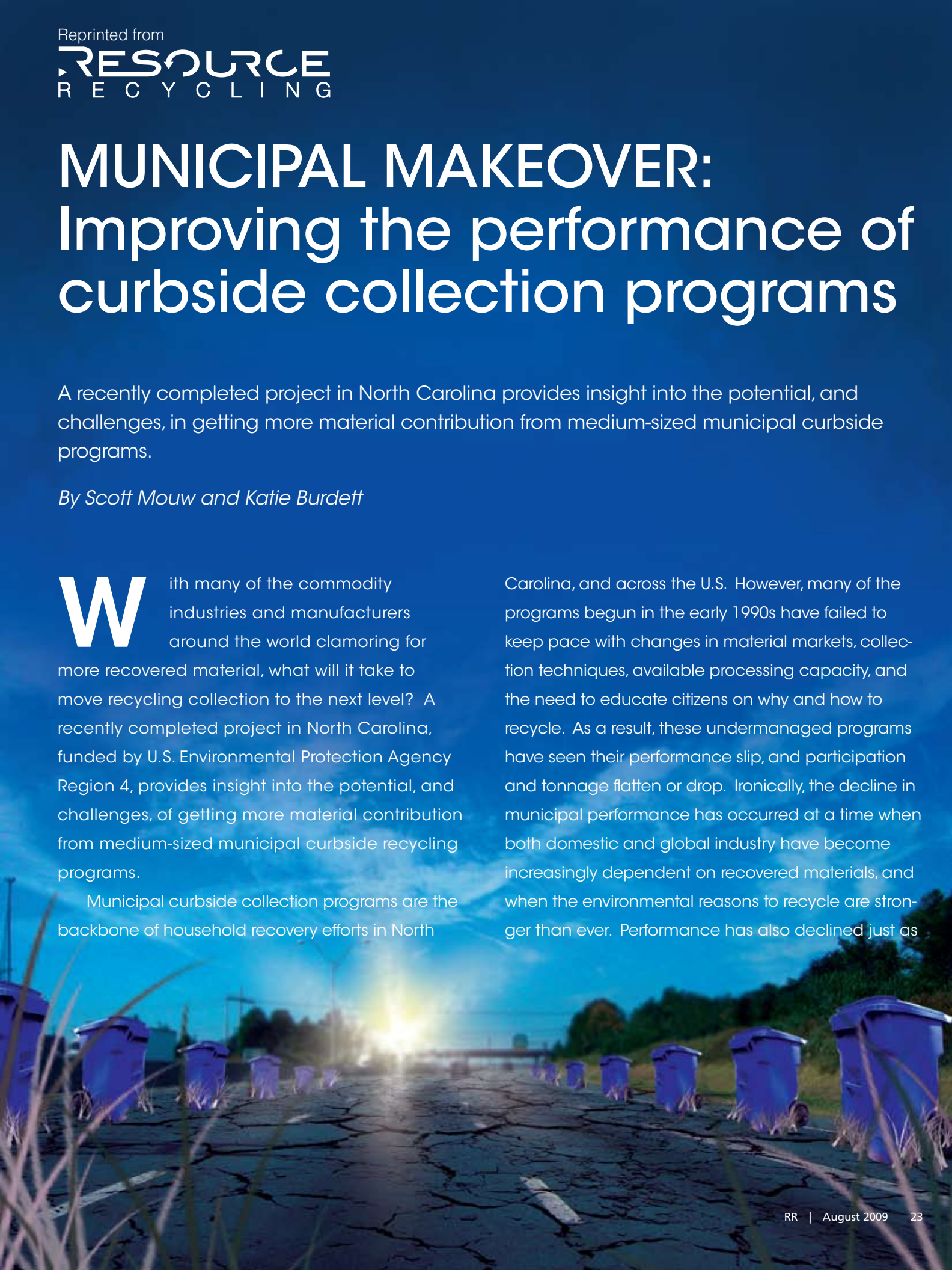
MUNICIPAL MAKEOVER: Improving the performance of curbside collection programs

A recently completed project in North Carolina provides insight into the potential, and challenges, in getting more material contribution from medium-sized municipal curbside programs.

By Scott Mouw and Katie Burdett

With many of the commodity industries and manufacturers around the world clamoring for more recovered material, what will it take to move recycling collection to the next level? A recently completed project in North Carolina, funded by U.S. Environmental Protection Agency Region 4, provides insight into the potential, and challenges, of getting more material contribution from medium-sized municipal curbside recycling programs.

Municipal curbside collection programs are the backbone of household recovery efforts in North Carolina, and across the U.S. However, many of the programs begun in the early 1990s have failed to keep pace with changes in material markets, collection techniques, available processing capacity, and the need to educate citizens on why and how to recycle. As a result, these undermanaged programs have seen their performance slip, and participation and tonnage flatten or drop. Ironically, the decline in municipal performance has occurred at a time when both domestic and global industry have become increasingly dependent on recovered materials, and when the environmental reasons to recycle are stronger than ever. Performance has also declined just as



advances in collection and processing techniques are maturing and as access to material recovery facilities (MRF) has improved dramatically.

Project summary

Starting in 2006, North Carolina's Division of Pollution Prevention and Environmental Assistance (DPPEA) began an intensive technical assistance program targeting municipalities roughly 10,000 to 60,000 in population. Using long-term data from mandatory solid waste reports, DPPEA noticed the flat performance of curbside programs in these communities. Beset by a combination of outdated collection techniques, limited ranges of collected materials, and an abandonment of program promotion, these programs were functioning well-below their potential. Compared to a DPPEA-calculated estimate of 750 pounds of curbside material available in each household, the municipal programs were, on average, only collecting an estimated 170 pounds per household served.

DPPEA's objectives in this project were threefold: 1) produce an actual improvement in the targeted programs, 2) test the application of best management practices (BMPs) that could be applied more broadly, and, 3) build a set of BMP "early adopters" to leverage curbside improvements in additional communities.

The first phase of the project involved a day-long training session for targeted medium-sized communities. DPPEA gave each attending municipality a customized, individual profile designed to show a baseline of their performance against the potential for improvement with the adoption of BMPs. The North Carolina League of Municipalities helped in recruiting communities to the training sessions and the Curbside Value Partnership gave a presentation at each event.

During Phase Two of the project, DPPEA delivered individualized technical and other assistance to the target communities including, in many cases, an on-site program assessment followed by written recommendations for program improvement. DPPEA also provided two funding opportunities to help municipalities implement some of the BMPs and other initiatives.

Best management practices

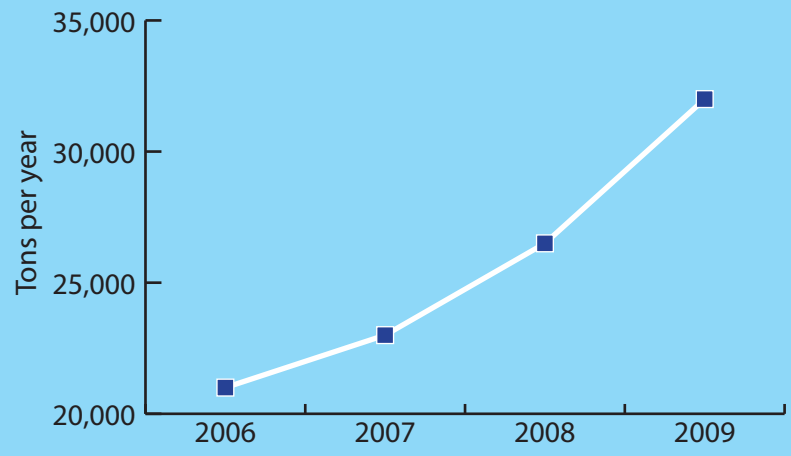
Through this project, DPPEA found that focusing on operational changes and on educational/promotional initiatives were crucial to increasing program efficiency, tonnage and public participation. The key operational changes included:

- Providing additional household recycling storage capacity to match the amount of recyclables in a typical household
- Moving to a different collection format, in particular, going from bins to carts
- Increasing the range of materials included in the curbside mix
- Altering post-collection material handling techniques
- Changing to different MRFs or processing service providers
- Looking for opportunities to generally improve on-route collection efficiency.

In many cases, operational changes also necessitated outreach activities. Flat participation has been a major cause for program stagnation. This project made clear that a commitment to education is absolutely critical to good curbside program performance. The elements of education and outreach that DPPEA emphasized in this project included:

- Investment of additional resources and a refocus on outreach efforts
- Creation and use of outreach mechanisms new to the community – for example, truck advertisements
- Creation and use of basic educational materials, especially in support of operational program changes
- Development of new types of messages to reach different demographics and to teach citizens why recycling is important
- Integration of the state's Recycle Guys and RE3.org outreach programs into local educational programs
- Implementation of award programs to incentivize citizen participation.

Figure 1 | Totals for 32 project communities: Curbside recycling tonnage (FY2006-FY2009)



Source: North Carolina Division of Pollution Prevention and Environmental Assistance, 2009

Overall project results

DPPEA's direct assistance through this grant project helped many communities modernize their curbside programs, including adoption of many of the core project BMPs and a rededication to public outreach. The original project proposal promised an increase of 6,670 tons annually in the client communities. The project succeeded in achieving its goal (Figure 1).

Curbside tonnage increased in the client communities by 10,804.29 tons, from FY06 to FY09, with the average pounds collected per household served rising by more than 42 pounds. Most importantly, these tangible accomplishments testify to the real potential for moving curbside recycling to a new performance plateau in North Carolina, as well as in many other states across the country.

Examples of individual community results

After attending a curbside training workshop and receiving an on-site assessment from DPPEA staff, the Town of Archdale

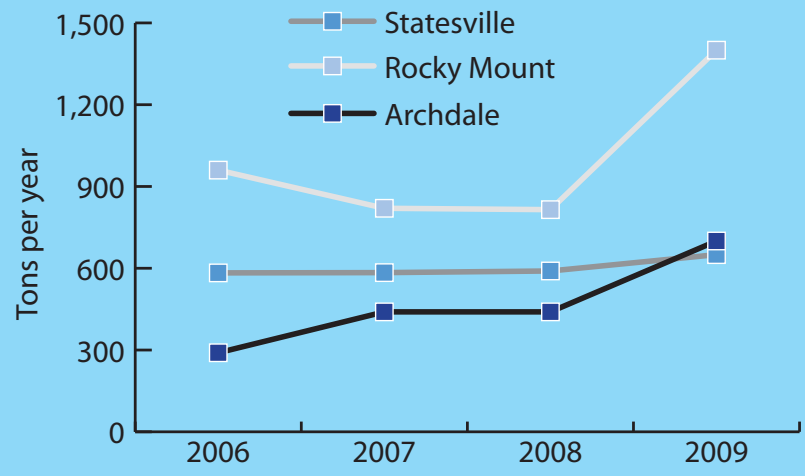
(population 9,680) converted to a bi-weekly, single-stream collection system utilizing rollcarts. When the town switched to the use of rollcarts, it also switched to a different MRF, and its collection contractor converted to automated bi-weekly collection.

In the Archdale case, there was a strong need for promotion activities to educate citizens on the many changes to the program, which included random rewards for participating citizens and a magnet listing collection information, in part supported by a state grant. Archdale's curbside recycling tonnage increased by 439 tons from FY06, when the project began, to FY09 (Figure 2). Pounds collected per household served increased by more than 83 pounds.

The City of Rocky Mount (population 56,288) also received extensive DPPEA technical assistance and two small grants to assist with implementation of several recommendations, including the conversion from bins to rollcarts for recycling, serviced by semi-automated collection vehicles. The city has already begun taking its recyclables to a single-stream MRF, under a contract that will control for wide swings in revenues and processing costs. Rocky Mount's curbside recycling tonnage increased by 461 tons from FY06, when DPPEA intervention occurred, to FY09 (Figure 2). Pounds collected per household served increased by more than 91 pounds.

DPPEA helped the Western North Carolina community of Statesville (population 26,704) with on an-site assessment and a small grant to implement some of its recommendations, including conducting additional bin distributions to increase household storage capacity, as well as greater outreach efforts. The city has since added several schools, businesses and apartments to its recycling program using 18-gallon bins and 96-gallon rollcarts. Statesville also received a mini-grant to test a 10-month random reward program for curbside participants. The city's curbside recycling tonnage increased by more than 67 tons from FY06, when the project began, to FY09 (Figure 2).

Figure 2 | Municipal curbside recycling tonnage (FY2006-FY2009)



Source: North Carolina Division of Pollution Prevention and Environmental Assistance, 2009

Importance of using rollcarts for recycling collection

One reason Statesville's results were less dramatic than some of the other communities in the project is that it retained a bin-based collection system and did not transition to carts. Although data from communities transitioning to carts is still somewhat limited, other North Carolina municipalities have actually seen significant improvements. For example, the Town of Wake Forest experienced a jump in participation, and a more than 50-percent increase in recovery, in its transition from bins to carts.

Preliminary data from the City of Greensboro also shows that using carts, even with every-other-week collection, results in increases in both set-out rate and tonnage collected. When the City of Durham piloted a rollcart collection program in several neighborhoods, it experienced a 35-percent increase in the amount of materials collected for recycling, as well as a rise in participation, from 40 percent to 70 percent. While carts are more expensive than bins, they do offer significant advantages, including longer lifespan, increased capacity, ease of use and improved collection efficiency through automation.

Barriers to more improvement

One of the most important factors in curbside program performance is the level of leadership exercised by local staff. Municipalities that have successfully modernized curbside services have motivated staff that take the initiative and pursue opportunities presented by changes to local processing capacity, market conditions, grant programs, and overall advancements in curbside techniques. There is a strong need for local staff to become more skilled in analyzing the effectiveness and efficiency of their programs.

Elected officials also need to become better educated on the nature, purpose and effectiveness of curbside recycling services. Furthermore, public education needs to be undertaken seriously, and consistently. Finally, conversion to cart-based programs is very effective, but expensive. High cart investment costs will delay or keep many programs from moving forward, despite the clear operational advantages and demonstrated leaps in tonnage and participation. Overcoming cart-financing barriers is critical to achieving the increase in recovery desired by many of the country's commodity industries.

Overall lessons

This project showed communities how to take advantage of the unprecedented conditions for recycling success: Access to single-stream MRFs, fundamentally strong markets and good peer community examples. The BMPs identified and implemented through the project have generic applicability to municipalities across the nation. Which specific BMPs might work best depends on current circumstances of individual cities and towns, and thus indicates a wider need for individualized assistance. The project also demonstrates the need for municipalities to make new budgetary investments in their programs.

Overall, this project indicates that planned interventions can improve

curbside programs, and that the timely injection of grant funding can make a big difference in how fast communities make necessary changes. While intervention by the state is crucial, the private sector (collectors, processors and end-users) plays a vital role in North Carolina recycling programs, and in programs throughout the U.S. Communities need outside help from this sector. A focus on improving curbside performance can help address a number of broad objectives, including delivery of additional tonnages to end-users who need increasing volumes of recovered materials. RR

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A Town of Archdale neighborhood on collection day.