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OF

INTEREST

A Practical Model for TIPPING FEES

King County, WA, uses a simple system to keep its regulatory and financial acts together.

Virtually every solid-waste management system in the world, whether public or private in nature, needs to rationally determine the prices it charges to end users. In some cases the process by which this is done receives remarkably detailed scrutiny by the public and the press. Often there are also several outside advisory boards involved.

Recognizing such realities, this article suggests an effective, simple, and transparent

model for setting user fees, taking into account the numerous financial and regulatory requirements that are usually associated with

By Thomas T. Karston

solid waste operations. For those readers who already have far more sophisticated systems in place, this discussion might be a helpful comparison. For others who are currently looking for a system or a guide to develop-

ing their own in-house model, the approach suggested here might offer some material assistance.

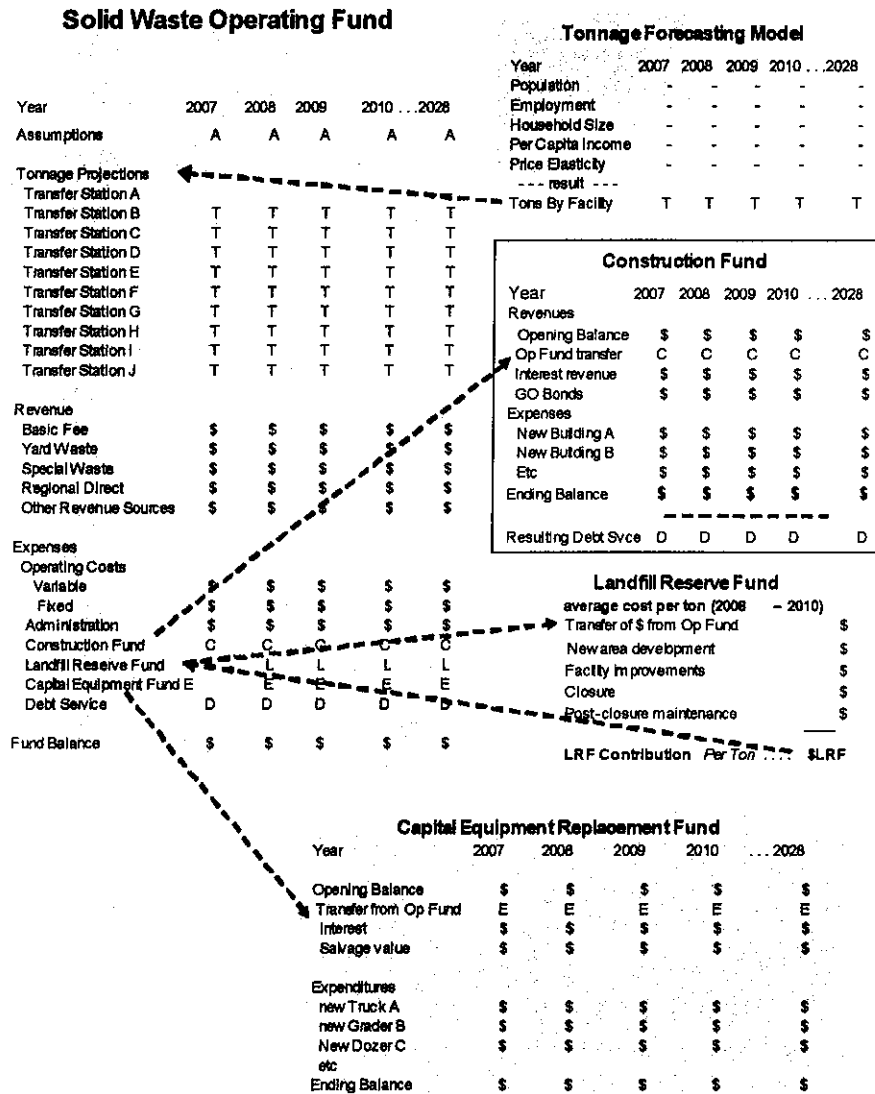
This method is currently used by the King County Solid Waste Division, which handles about one million tons of waste per year for the area surrounding, but not including, Seattle. To see how this approach to rate setting works in practice, it is helpful to consider that in virtually all aspects of its mandate the division works cooperatively with 37 quite diverse suburban and rural cities, and on a monthly basis receives advice from three distinct outside committees that, taken together, represent elected officials, professional haulers, technical specialists from the cities, and interested citizens—including retired Boeing engineers. Since solid waste operations across the country can vary considerably in the range of services they offer, a few comments about the scope and philosophy of the King County system might also help place the following rate model in some context.

For one thing, the division still operates its own landfill, which is currently expected to function until at least 2016.

For many years the operating framework has in effect incorporated the very modern concept of "extended producer responsibility" in that when waste is turned over to the county the price paid by customers is calculated to cover the entire future life cycle of all costs involved with disposing of the waste, including landfill development and closure, landfilling per se, gas recovery, regulatory compliance, and also 30 years of post-closure maintenance. The intent is that current users of the system cover their full costs, so that future generations will never be paying to care for waste that was disposed with the county decades earlier.

The division sets aside cash on a regular basis to cover the full cost of all future equipment replacements. Unlike private-sector operations, which calculate depreciation largely for tax purposes but generally do not use actual sinking funds, the division calculates and

Figure 1



transfers cash from its operating fund into a capital equipment replacement program (CERP) to ensure that virtually all rolling stock and construction equipment, as well as staff vehicles, can smoothly be replaced at the end of their useful lives. The possible thin opportunity cost involved with earnings on this fund is considered a small price to achieve rock-solid stability and continuity in the funding of ongoing operations. Many other organizations operate differently, of course, but then may periodically encounter awkward spikes in budget requests and/or debt requirements, especially in a public sector where politics is about making very public choices among innumerable pressing needs competing for funding.

Given this framework, which might be more financially and managerially demanding than some other solid-waste systems, the rate-setting process involves the interaction of five related financial models. Collectively, these seem to satisfy the needs of local elected officials, their technical staff specialists, the press, and a wide variety of concerned citizens. The components of this system are:

- The financial model, pulling together all

revenues and costs

- The tonnage forecasting model, which drives revenue projections
- The construction fund, in which capital investments for facilities can be planned and funded with routine transfers from the operating fund, and also from debt issues as appropriate
- The landfill reserve fund, which pays for capital improvements at the landfill itself, and which also builds a trust fund sufficient to care for each closed landfill for at least 30 years after closure
- The capital equipment replacement fund, covering replacement of all passenger vehicles as well as larger pieces of equipment needed at the 10 transfer facilities, the landfill, and for truck-based transportation of waste between the two

In setting future rates clearly, the logical first step is to forecast the solid-waste tonnage expected over the forecast period, which may typically be three years in length. While these projections might involve a bit of economic razzle dazzle, the end product is, of course, simply tons by type of waste, by location within the service area, by year through-

out the rate period, and perhaps for some 20 years further, to encourage a serious look at longer-term trends.

Using these inputs, and skipping ahead to the final step by way of overview, the financial model compares revenues and projected expenses at different hypothetical tipping fees to solve for a required minimum fund balance at the end the last year in the rate period. By testing a range of values for the tipping fee, a solution is easily forthcoming—assuming that several intermediate steps have been carefully executed: projecting costs, capital requirements, and non-tip-fee revenues.

So, step two involves forecasting the future costs of operations. However, this first requires a clear understanding of exactly what level of services the organization will provide to its customers, the nature of its labor relations environment, and how—or if—the budget of the solid waste operation relates to other aspects of local government. Once these more philosophical issues have been resolved, it is relatively easy to predict future short-run operating expenses.

In solid-waste organizations, these costs



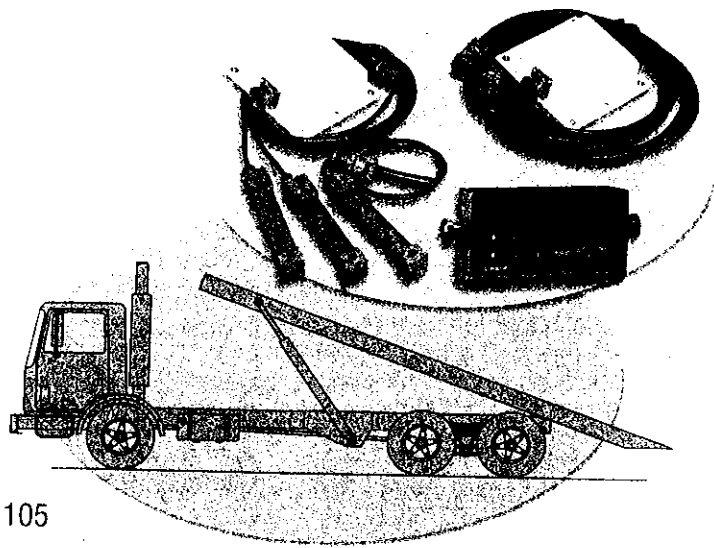
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often can be divided into three categories: operations, or the expenses of actually doing the daily work; administration; and transfers to other funds.

Operations costs are often straightforward to forecast over the forthcoming rate period, because they have to be grounded in budget numbers for the current year. But in looking several years further out, or certainly when considering a 15- or 20-year horizon, it is important to distinguish between "fixed" costs and those that are variable. Fixed usu-

ally means that any increases are due to inflation alone, a major exception usually being debt service. In contrast, variable costs might go up sharply with tonnage but also rise with inflation. If a simple cost-per-ton approach is used for forecasting variable expenses, it is important to not also apply this method to the fixed costs, which could result in serious overestimates.

Administration costs are straightforward and usually vary only with inflation—and with any reorganizations that can be ex-

pected, as these are often a normal part of any larger operation. However, the third cost component, transfers to the other funds, is more interesting. The operating fund is often the melting pot that brings together the cost implications for activities occurring in the four closely related areas mentioned above. Figure 1 illustrates an example.

In it, the tonnage forecasts feed into the financial model, and when multiplied by the preliminary tipping fees generate a revenue estimate, to be refined shortly.

On the cost side, one of the key elements is the transfer out to the construction fund, which in turn calculates and then feeds back into the financial model any debt service that might be relevant in future years. This could be a significant number if major capital investments for facilities are being planned, but fortunately, by working closely with the relevant engineers, it can be relatively straightforward to project the required volume of bond issues and to approximate their annual debt service costs.

For operations that do not own and manage their own landfill, the landfill reserve fund might seem a bit odd. This model calculates the annual transfer needed from the operating fund to construct and care for the existing landfill during its years of operation and to also build up a trust fund so that when the facility is closed there will be sufficient reserves to monitor and maintain it in all respects for at least 30 years. This is one of the financial implications of the operating philosophy mentioned above.

In a related system, unlike most private-sector operations, the division calculates and sets aside cash on a regular basis to fully fund the replacement of some 350 major pieces of equipment. This CERP-fund model takes into account its opening balance, the interest it earns, the cash it needs to steadily fund new purchases, and the salvage value of assets being retired. The result is the required transfer each year from the operating fund.

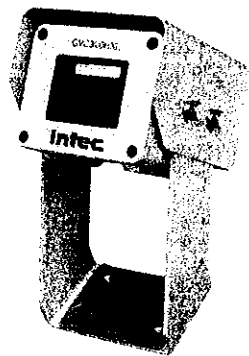
After these inputs are prepared and entered into the financial model, two more steps are useful before solving for the main tip fee. One is simply forecasting the total cash flow that will be received from all sources of non-tip fee revenue. These ancillary items might include grants, interest earned on existing fund balances in the operating fund, revenue from the sale of recycling materials, "judgments, settlements and fines," and any related items.

As a last preparatory step before solving

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for the main tipping fee, it is useful to project the revenue streams that can be expected from the smaller "product lines," such as those generated by yardwaste, special waste, and any other categories that pay a fee based on tons but where the total revenues involved are perhaps only 5% or 6% of what is generated by the main tipping fee.

Using only historical numbers to forecast such ancillary prices is perhaps too easy. Projecting these future rates based on a spread to the basic fee might be more accurate, to help establish a realistic environment for setting the basic fee itself. After an optimal value is found for this main price, it is then easy to go back and appropriately fine-tune the rates for the smaller categories of waste, using whatever relationships to the main fee might be relevant in each case. For example, with the category "special waste," the extra costs, on average per ton, that are involved with handling these materials should be added to the basic fee to get the appropriate price per ton. In another case, yardwaste is now increasingly taken to a private composting facility, even if it first comes to a public-sector transfer station and pays a fee set by the relevant governmental unit. Therefore, this yardwaste fee per ton should be determined by starting with the basic tipping fee, subtracting the cost of hauling to the landfill, and also subtracting the cost of disposal at that landfill, but then adding the cost (public or private) of hauling the material to the private compost facility and also adding any fees involved with processing it there.

After having determined the basic fee, it is often useful to compare its past and projected values with the rate of inflation, starting perhaps in 2000 and extrapolating out some 20 years into the future. As an example of how this comparison can be quite practical, King County Executive Ron Sims several years ago made a commitment that the rate of increase in the main tipping fee will be lower than the

rate of inflation as long as the county landfill remains in operation.

In this particular longer-term forecast it is expected that the local landfill facility will close in 2016 and that a shift to another disposal method, likely to be long-haul rail exporting, is projected to be quite a bit more expensive. In this context, regularly examin-

ing bans, price increases (or subsidies) involving waste reduction is a separate matter, but in shaping these policies the elected leaders can find it quite helpful to know the consequences on future tonnage levels from different recycling rates. Figure 2 shows one possible type of presentation, where a hypothetical community would move from

a recycling rate of, say, 43% to 50% and then perhaps to 60%. It can also be useful to provide at least some rough estimate of the timing on how such a transition will evolve, rather than leave this important aspect up in the air. If a region is at, say, 43% in 2007, it might be reasonable to assume that over the next six years a one-percentage-point improvement per year can be accomplished, reaching 50% by 2014. If the community and

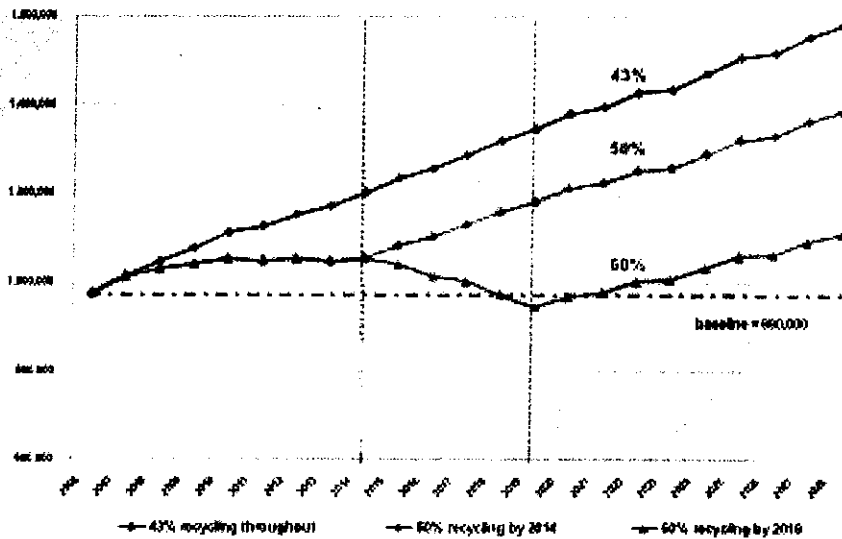
its leaders want to be more aggressive, one could assume a 2-percentage-points-per-year improvement over the subsequent five years, leading to a 60% recycling rate by 2019. In each case, the resulting amount of waste to process via a landfill or incinerator is easily calculated by subtracting the projected recycling amounts each year from the forecast of total tonnage expected to be generated in the service area.

The use of some or all of this five-part system, and perhaps several of the presentation graphics suggested here, can provide elected representatives with considerable input regarding the merits of any proposed rate increases, and the full impact of waste-management activities over the rate period under consideration. In addition, use of these concepts, together with an open and transparent review process involving the relevant cities, professional haulers, and interested citizens, may also further bolster confidence that this important public health responsibility is being prudently managed, in the context of an extended long-run horizon.

MSW

Thomas T. Karston is chief economist for the King County (WA) Solid Waste Division.

Figure 2
Total Disposal Tons to SWD by Recycling Assumptions



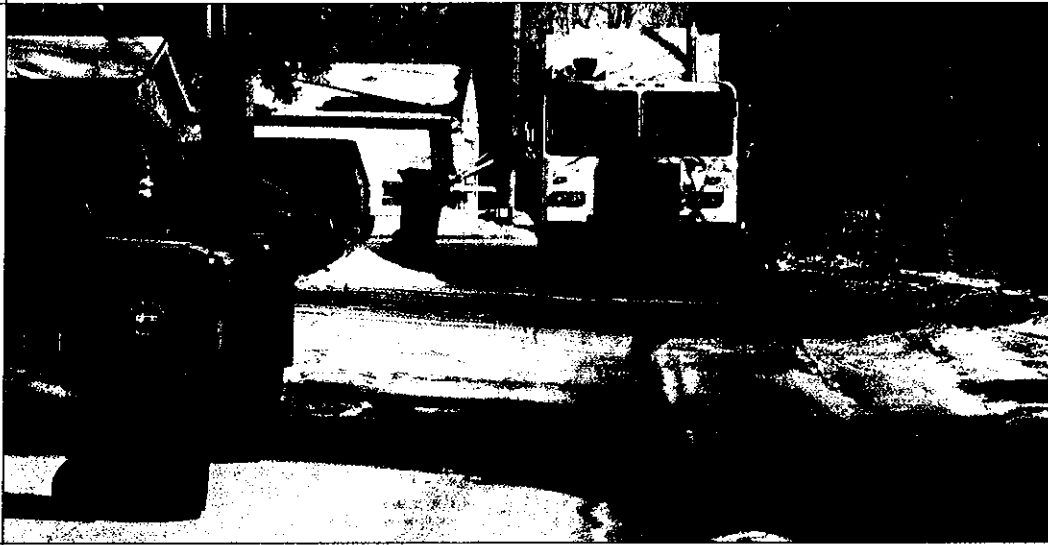
ing the longer-term horizon in some detail can be quite productive in planning for such substantial future shifts.

It can also be useful to calculate the impact of any increase in the basic fee on the hypothetical average one-can curbside customer over the particular rate period under consideration. This number would, of course, reflect only the influence of a change in the disposal component of curbside costs, not any change in the collection or overhead costs of commercial haulers that might be involved.

In the King County environment, with a million tons per year and with the advantage of a publicly owned (and often award-winning) landfill, this disposal-related impact of a change in the basic tipping fee is expected to be only about 80 cents per month for the hypothetical average one-can customer, even though 2008 will likely see the first rate increase since January 1999.

A word about tonnage forecasts: A major consideration in any longer-term tonnage projection is the recycling rate that is assumed and, in particular, how this rate might evolve over the planning horizon. How aggressive any governmental unit wants to be in pro-

Of Warranties, Service, and Resins



When it comes to deciding on carts, everything from hard knocks to the weather must be taken into account.

By Peter Hildebrandt

A cart takes tremendous abuse in the course of its lifespan. Choosing which product to purchase may begin with costs, but the amount of hard use a cart, a container, or a bin will receive and the climate and the local conditions may also play a role in the selection process.

Other issues, such as rising resin prices and the practicality of the long-standing 10-year warranty on carts, have started to heat things up on the manufacturers' side. These matters may spill over into the market as customers find things changing at cart-selection time. From around the country, we hear from manufacturers and communities about what works for them and the factors still driving their decisions regarding collection containers and carts.

From North to South

Edwin Marr has worked both in Buffalo, NY, and in Greenville, SC. As director of refuse and recycling in Buffalo, he had the task of implementing its new user-fee system. Next he implemented a pilot cart program. Based on performance studies that had been conducted, he ultimately used carts built by Charlotte, NC-based Schaefer Systems International.

"The Schaefer cart had characteristics we were looking for in a container," says Marr. "After working its way through subcommittees and counsel, Schaefer won the bid. We purchased 120,000 Schaefer carts.

"We took things a step further, purchasing 65- and 35-gallon containers for a volume-based program. The customer pays one rate for a 95-, one rate for a 65-, and another rate for a 35-gallon container so households control their own destiny in terms of cost. Doing the right thing by recycling and other waste-reduction activities would also bring their bill down."

Marr is now solid waste administrator in Greenville. Carts were purchased as an inventory item, not as part of the solid waste system. Greenville is evaluating its current funding mechanism for solid waste and recycling services.

Alternatives are being evaluated to determine what is in the best interest of the city and the customers it serves.

"Over the next few years, I'm sure I'll be getting into an enterprise system and a volume-based program similar to Buffalo's.

"Schaefer's a great partner for this type of program, with a quality product and excellent service. It's also helped with an education program providing literature and an

experienced staff. Such wealth can be drawn upon to make your program even better."

Marr also found the company quick to change the configuration on its lifting bar when it came out with a new model. He's never had any warranty problems. The carts hold up well within the first 10 years and beyond.

"We even made a request to change the type of bar they had, and they also went to a different type of pin which locked the bar in place, instead of the rings they'd used," says Marr. "Their engineers arrived, we showed them the performance issues we had, and they made the modification at the factory and started making the changes we recommended.

"Garbage must get picked up every day, and the quality of the service reflects directly on us. To have that kind of a response from a vendor is invaluable."

Injection Molding May Be an Answer

Though innovations are constantly being introduced, Michael Knaub Sr., vice president and managing director for Schaefer, still sees price as the main driver in the cart industry. On any given bid, eight manufacturers may be present.

"Prices are within pennies of each other, and no matter what the specs say, price is still the number-one driver," says Knaub. "Of course quality, service, and reputation come into play, but after over 30 years in the cart industry, my experience is that price still dictates the decision.

"But our industry is at a point where I feel we need to rethink the 10-year warranty we have on a \$50 product. Containers are abused weekly by trucks, cars, homeowners, and whatever, yet we still find it necessary to

put a 10-year warranty on them. I'd like us to rethink that."

Nestable Carts Save on Space During Transport

Toter Inc. produces a highly durable, rotationally molded product constructed from medium-density polyethylene as opposed to the high-density polyethylene used in injection molding, explains Jim Pickett, vice president of sales, with the Statesville, NC-based manufacturer. "Our carts are less

likely to break, are more flexible, and survive the impact and abuse happening on the street," says Pickett.

"Our carts are also nestable. When fully assembled, one may be placed down inside another cart, and they are fully stackable. This makes a difference when carts are being delivered. Approximately three times as many Toter carts may be placed in a truck than non-nestable carts, leading to great fuel savings as well as labor savings because crews can deliver more carts per trip.

"Toter carts tilt more easily due to the placement of the axles closer to the cart's center of gravity—taking less energy to angle a cart back—and because our handle is lower than on most other carts. Grabbers on trucks are kept from damaging the cart's wheels due to the protected location of the wheels. Blow-molded wheels add durability, with their 200-pound-per-wheel load ratings. Pal-nut installations make it unlikely wheels will come off.

"We construct carts from a multicolored plastic called 'granite,'" continues Pickett. "Despite some misinformation in the market, this isn't a coating or a spray-on but multiple colors molded into one plastic piece retaining the different colors. This 'granite' looks like that of a countertop.

"Aside from the aesthetic advantage, carts look neater: Dirt and scratches caused by the lifters remain hidden. Solid-colored carts, though nice and shiny, cannot hide each nick or mark—like a black car needing to be cleaned each week. Our granite is forgiving in terms of keeping the cart attractive a long time. This fact is born out by how often our customers request granite colors."

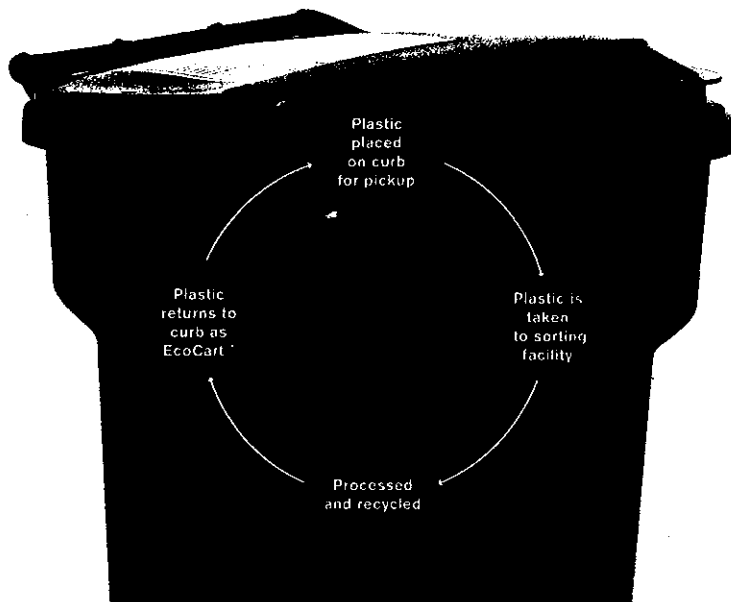
With a 10-year, non-pro-rated warranty, every component on the cart is covered. This means if a lid gives out in the ninth year, a full warranty is given, despite the proximity to the end of the warranty life. Toter has such a low warranty claim rate (its average annual claim rate is 0.02 of 1%) that the company has no problem with the 10-year warranty, according to Pickett.

"Regarding total cost of ownership, or 'life-cycle cost,' the labor cost associated with going out to residences to make cart repairs, be they warranty or non-warranty related, is the cost that buyers consider in addition to the purchase price," says Pickett.

Acknowledging Climate

In the summer of 2006, Akron, OH, sent out a fleet of Toter carts. The city had spent

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some two years researching various cart products—research that included speaking with Akron's counterparts across the US. The city concluded that the Toter product was highly durable and would present the fewest problems, according to Paul Barnett, public works manager with the City of Akron. "We felt that Toter's rotationally molded cart would be a better product for us than the low bidder's injection-molded cart," says Barnett. Akron's severe and snowy weather—including early weeks in January when the normal temperatures rarely rise above 20°F—also played into the city's decision to buy rotation-molded carts.

"The only problem I have with the whole issue of the 10-year warranty is that it's still just a 10-year warranty: You can have one on a Yugo or one on a Lexus," says Barnett. "A car muffler warranty may turn out to be little help if the pipes to attach it still cost you \$400.

"What is usually covered when it comes to carts is a new body. But there is still a great cost in shipping and sending someone out to a customer's house to pick up the old cart. We felt very strongly that we needed to buy the product that gave us the fewest problems, rather than going through the hassle and great expense of having a resident call up to tell us their cart's broken."

Tight Squeezes Inside the Beltway

Washington, DC, has had 96-gallon Toter carts for approximately 24 years. They have all been replaced at least once, according to Tom Henderson, Washington solid waste administrator. With 75,000 customers and some of those having more than one cart, the city has some 90,000 96-gallon carts.

In 2005 the city went to a single-sort recycling system. It put out just under 100,000 32-gallon carts for recycling as well as 12,000 32-gallon carts for garbage in the older sections of the city, those places without the room for the 96-gallon containers.

"We handle a lot of carts," says Henderson. "Our single-sort operation makes things much more convenient for the customer. Recyclables are now in a cart. Those waste materials stay cleaner, don't get wet in rain or snow, and don't blow around the neighborhood in the wind. Carts can also be rolled out to the curb, making things easier on the customer's back.

"Although we did get a 10-year warranty with the carts, we consider it a very low-

maintenance product and have not had too much cause to report any damage."

Though it is better to have larger carts so that fewer pickup runs are needed, Washington has tight areas in older sections where smaller carts must be used.

"For our sections clearly designed for older means of transportation—horses and buggies and canal boats—we'll do pickups twice weekly, and the smaller containers must be used," says Henderson. "But last year we converted as many people as we could from using conventional garbage cans to using the smaller carts, and we're hoping we have a lot fewer workers' compensation claims."

Automated Collection

Bismarck, ND, uses 96-gallon carts built by the Ameri-Kart Corp. for the city's automated collection system, which serves 55,000 customers, according to Galen Bren, recycling specialist for Bismarck. In 2001, Bismarck started working to get the high-density-plastic, rotationally molded carts out to the whole city. The city liked the durability of the carts, especially for a place with such temperature extremes.

"They seem to be holding up really well," says Bren. "Our warranty claims have been relatively low. Ameri-Kart has been very good in this area as long as the damage has occurred within the claim period.

"They simply send us the parts we need, whether it's lids, bodies, wheels, or whatever it is. I wait until I have enough of a buildup in need for those parts, then e-mail my request to the manufacturer, and within 60 days I receive the parts. We fix them ourselves unless the whole body is cracked. In that case we give [the customer] a whole new can."

The City of Provo, UT, which went to automated collection 20 years ago, uses mostly the same Heil carts it's used for the past two decades. These have proven to be virtually indestructible, according to Randy Harris, Provo sanitation manager.

"These are as tough as a tank, though unfortunately they aren't manufactured anymore. We still have approximately 15,000 of these carts on our streets," says Harris.

Last year the city took some samples of rotationally molded carts to see how well they would hold up. Provo also has other demo carts still out, including a few hundred each of Toters and Zarns.

"I will admit that in my experience the

lowest bid is not necessarily the best," says Harris. "I was looking at some that were within \$10, but if I get 10 more years out of the pricier carts I also may have saved Provo several thousand dollars from having to order new cans. It's my opinion, too, that climate influences things. I really think that people should go with what's best for their climate in the long run; the initial cost is not as important as how the cart will hold up down the road.

"Also, the recyclable carts, even though they may be mandated in some areas, may not hold up the best in the long run either."

Offering Three Processes

Ameri-Kart offers all three processes in the manufacture of its various cart products: injection molding, rotational molding, and blow molding. It is the only company to offer all three, says Doug Eck, Ameri-Kart director of sales. "We're sort of a one-stop shop. Whatever the customer wants, we've got it," says Eck. "We're also wherever the customer needs us to be."

Ameri-Kart has four plants from which it manufactures carts: Reidsville, NC; Spring-

field, MO; Shelbyville, KY; and Bristol, IN. "The industry has changed, and we, of course, have changed with it with new designs and new offerings," says Eck. "I describe the different types of moldings as basically the Ford-Chevy-Dodge approach: They're different names for something in itself not too different. Much of it comes down to personal preference of the customer. There are benefits or features to each cart and how it was produced. You don't think about different features when you think of a trash cart, but we do in fact offer them.

"There's a perception out there that the methods meet various criteria. But it comes down to expertise in molding and resin selection. Anything will break if you don't have the best design, utilizing proper resins for various applications, and have the best technical expertise in the manufacturing and molding process. Ameri-Kart has many decades of knowledge and expertise in all of these areas.

"Bismarck is a good example of a place where our product works extremely well. It doesn't get much colder than Bismarck in the winter, and we've had very few problems,

very good success with the performance of our carts up there."

Eck adds if equipment is treated properly it will last, no matter which process is used to manufacture it. The company's had great success with all product lines, including its latest addition, the injection-molded Mega-Kart line.

"I feel the whole warranty issue is impractical," says Eck. "Years ago, a five-year pro-rated warranty was the standard. As more competition entered the industry, different 'marketing' ideas were introduced, such as a 10-year warranty. While Ameri-Kart has had good success with the 10-year warranty, it remains a little puzzling to us as well as other competitors why a trash cart should carry a 10-year warranty. It is a tough call on cart damage sometimes; what really happened? Did a snowplow hit it? Was concrete dumped in it?"

The Rising Price of Resin

The Rehrig Pacific Co. handles the City of Los Angeles, which has the largest cart program in the United States. "The City of Los Angeles has been involved in this for a very

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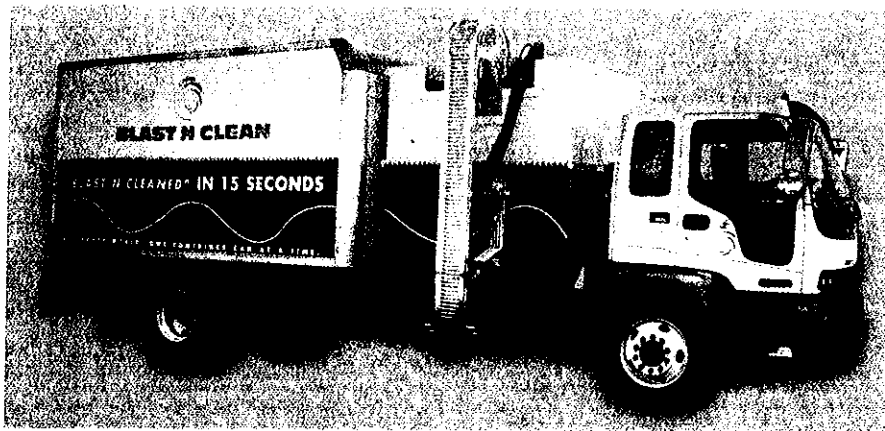
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long time; it has used many different carts, and it is extremely thorough in its testing and information tracking system," says Michael Schwalbach, national manager for the environmental business group with Rehrig. "We've had bar-code reading systems on our carts since 1997, including ones in the cities of San Diego and Los Angeles. A system can be set up on a cart to determine its location or how many times it's been repaired. It's essentially asset tracking for a city.

"We believe the basis of our success comes from long-term thinking, continuous improvement, and sustainability. We don't compromise our quality in either our product or our service—even in tough times. Even when resins skyrocket we're not going to compromise our quality and service. Thinking long-term, reinvesting in the business, and listening to the customer is our outlook."

Schwalbach isn't surprised by the push for a shorter warranty period at the same time resin prices rise. He sees all the costs adding up. On the whole 10-year warranty issue in general, Rehrig Pacific listens to the market and asks questions regarding the expectations of the market.

"The market has been telling us it would like a product that lasts 10-plus years," says Schwalbach. "We continue to make a product for that warranty period, and until the market changes that's what we'll do. For us, this hasn't been more onerous, because we've maintained this warranty position for the whole 15 years we've been in the cart market.

"We expect our customers to not abuse the containers and to maintain their trucks and lifters, but at the same time, we understand the reality of efficient collection and the rigors of collection our carts need

to withstand."

One of the biggest issues with carts after 10 years is simply the drop in quality from an aesthetics standpoint, says Schwalbach. "Customers at such a lifespan frequently want to replace a cart for other reasons than disrepair: The cart's simply getting worn down aesthetically, and customers may look for changes in colors, graphics, instructions, sizes, or designs due to program changes."

Like some of the other cart manufacturers that are fairly large, Rehrig Pacific admits it must carefully consider a design modification due to a changing warranty. "Should we find ourselves having to adjust to a lesser warranty, that would be both a philosophical and a financial question for us because we believe in high-quality products," says Schwalbach. "In such a case would there be liability relief with the amount of carts we produce? Sure. Would it change our price structure much short-term? Not really.

"But the resin issue has meant we really cannot promise a price long-term anymore. Before, we'd bid on contracts and the customer wanted us to lock in our price for one to three years; we were carrying the risk. Now we strongly urge potential customers that this needs to be a price that can move with the raw-materials cost. For customers still insisting on a lock with the price, we will either not participate because we don't want to take on that risk, or we must inflate our prices for that risk.

"The rise and fall of resin prices used to be a wash for us. Now we know that if we lock in with our prices long-term, the volatile resin situation means we can also end up being a big loser in all this. We can't take that risk anymore. We prefer to neutralize the whole resin issue by passing on to our customers the cost of a resin increase just as

easily as we'll pass on savings to them if the price of resin goes down—at the same time not sacrificing our quality."

Keeping Carts Clean

Albuquerque, NM-based company Blast-N-Clean is now supplying trucks capable of cleaning both residential and commercial refuse carts. The automated side-load-style truck is capable of washing more than 600 residential carts per day, eliminating caked-on garbage and bacteria-laden grime, and leaving the carts sanitized and smelling clean. Commercial trucks can wash approximately 70 front-load commercial containers per day.

The trucks follow along behind a regularly scheduled route collection truck. In just 15 seconds, the truck can pick up an empty cart, high-pressure wash it, and place it back on the curb. The commercial container-cleaning cycle takes approximately two minutes.

In support of new EPA MS4 runoff water regulations, there is a movement to be more conscientious about disposing of the residual water used to clean trash carts and containers, according to Paul Genn, executive vice president of sales and marketing with Blast-N-Clean. EPA guidelines restrict illicit discharges into stormwater systems. "For the homeowner or city residents, washing garbage cans cannot really be done as easily as before due to new EPA regulations," says Genn. "Our system completely contains all the water used for cleaning before we take it to a designated sewer to pump the graywater. Any residual solid waste is dropped into another container for normal disposal.

"People like to have clean cans, and with a GPS black box in our trucks we also know exactly which carts have already been cleaned, as well as which ones have broken wheels or lids, too much graffiti, or other problems. All data for the cans in a particular area are recorded on our system. At the end of the day we can even issue a disc with all this information on it for a whole area's cart-maintenance program."

Blast-N-Clean typically contracts with cities to wash all their carts three times annually. One truck can provide as many as 150,000 washes per year. At present, the company uses GMC and Isuzu cabs for its residential trucks.

MSW

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The alt-fuel trash truck trend: Big upside

Jim Johnson

Fuel pricing pressures as well as the global warming debate are helping push the market for alternative fuel vehicles around the country.

And that includes the garbage truck industry.

New research yet to be published estimates there are now more than 2,000 garbage trucks using natural gas on the nation's roads.

While that might not seem like much at first glance, the amount of such vehicles has risen dramatically just since the turn of the century.

"The number of natural gas trucks, which we reported about two years ago at about 1,500, is now over 2,000," said Joanna Underwood, chairwoman and president of Energy Vision.

Underwood's organization expects to come out later this year with a third in a series of reports examining the green garbage truck business.

The most recent report, which contains 2005 numbers, estimated there were about 1,500 natural gas-powered vehicles.

And that number was more than double the 697 that were hauling trash back in 2002, research indicated.

"I think it's a combination of factors that has done it," Underwood said, pointing to diesel prices, tax incentives, technological advances and global warming. "The combination of these have led to a real acceleration in the use of natural gas trucks."

New markets

A burgeoning trend Underwood sees is the use of alternative fuel garbage trucks in new locations. California, with its pollution concerns, has long been the leader in the use of alternative fuel garbage trucks.

But Underwood said locations in other parts of the country are now embracing the technology.

Smithtown, N.Y., required that trash haulers start using natural gas-powered vehicles. And that move has spurred interest from other nearby communities about also possibly adopting that requirement.

Underwood also pointed to several locations in Texas, including San Antonio, where the technology is being embraced.

"You have real hubs of activity and change," she said. "I think one of the things we're seeing is hubs of activity in different parts of the country."

The upcoming green garbage truck report will be the first authored through Energy Vision, a New York-based group Underwood formed just about a year ago after founding and spending 31 years at Inform Inc., the author of the first two studies.

Underwood created Energy Vision to concentrate solely on the issue of sustainable energy, including challenges in the transportation sector. Garbage trucks, thanks to the current research, are a focus for her group this year.

Liquefied natural gas and compressed natural gas are the most popular forms of alternative energy fueling garbage trucks, but by no means are they only way to travel.

Closing the loop

There's plenty of talk around about using hybrid-electric technology or landfill gas in trash trucks. The latter approach would help garbage companies close the loop regarding air emissions from their disposal operations.

Prometheus Energy Co. earlier this year began production at the world's first landfill gas-to-liquefied natural gas plant at the Frank R. Bowerman landfill in Orange County, Calif.

The plant is designed to have a capacity of 5,000 gallons of liquefied natural gas per day, enough fuel to reduce carbon dioxide emissions from the landfill by the equivalent of 10,000 tons per year, the company said.

That's like taking 150,000 cars off the road each year, the Seattle-based company said.

Two hauling companies - Norcal Waste Systems Inc. and 1-800-Got-Junk? - also both recently came out with alternative energy news.

Every Norcal truck serving San Francisco earlier this year began operating on a biodiesel blend of fuel or liquefied natural gas.

The move is cutting the company's carbon dioxide emissions from the vehicles by 21 percent, or 5,400 tons per year.

"Part of the reason is that the city of San Francisco, which is our No. 1 client, wants everyone to take steps to help reduce air emissions," Norcal spokesman Robert Reed said.

Norcal, through its subsidiary companies Sunset Scavenger Co., Golden Gate Disposal & Recycling and S.F. Recycling and Disposal Inc., has been powering 13 vehicles with liquefied natural gas for a few years.

The latest move switched the balance of the 385-truck fleet, which burns diesel fuel, to run on B20. That's a blend of 80 percent low-sulfur diesel fuel and 20 percent vegetable oil.

Norcal also is involved in two research projects that aim to turn food scraps into fuel that eventually could run trash trucks.

The company 1-800-Got-Junk? has franchised operations around the United States and Canada that travel to locations to remove unwanted items.

The Vancouver, British Columbia-based company is in a trial with Izuzu Commercial Truck of America to use biodiesel fuel in ten 1-800-Got-Junk? trucks.

That testing program is aimed to measure the ability of the vehicles in a variety of climates and driving conditions to handle the fuel blend.

"We're really excited to move this forward and pioneer whatever we can. We want to move forward and push the envelope wherever we can," said Craig Jooste, corporate operations manager for the junk removal company. "Hopefully we can do some good here."

Testing is set to take place in New York, California, Vermont, Minnesota, New Mexico, Michigan, Oregon and Pennsylvania during a six-month period. Both B5, containing 5 percent renewable fuel, and B20 will be used, and the results will be analyzed.

The study, an Izuzu spokesman recently said, raises the overall public awareness of the importance of using biodiesel fuel.

Boiling it down

Greg Hallahan, vice president of sales for his family's business, Hallahan Truck Center, in Holtsville, N.Y., said his business supplied nine natural gas-powered trash trucks to two haulers working in Smithtown.

He's boiled down the influences on the market concerning the use of alternative fuel vehicles.

"The four E's I look at are environmental, economic, environmental justice, and energy security," he said.

With some businesses, property owners and municipalities seeking out greener alternatives to traditional trash collection, Hallahan said, "there is a pull-through going on right now."

Haulers who want to capture business from those concerned about air emissions and noise pollution - natural gas trucks run more quietly - can look to different technologies, he said.

But cost is always going to be a big factor in determining whether haulers will change to alternative fuel systems. "We feel that it's going to always be the dollars. The bottom line is going to dictate a change," he said.

With an extended period of higher diesel fuel prices and uncertainty in the future, there is an opportunity to look at other fuel sources.

Using alternative fuels also is a way for companies to differentiate themselves from their competitors, save money and receive an environmentally friendly label, Hallahan said.

Underwood said she believes that the trash industry is on the precipice of embracing the use of landfill gas as a vehicle fuel source.

"I think this is right on the horizon. This is something that doesn't need technological breakthroughs, it just needs to happen," she said.

"I think this is very much in the minds of the haulers," Underwood said.

The number of trash and recycling vehicles in the country measures about 200,000 or so these days, Underwood said. So the estimate of 2,000 natural gas-powered vehicles is still just about 1 percent of the overall fleet.

"The market, I think, could be very large," she said. "It could be tens of thousands of trucks."

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Plastics bans spurring industry fears

Mike Verespej Plastics News

Three impending bans on plastic products in northern California - two on plastic carryout bags and one on expanded polystyrene takeout containers - has the industry concerned about escalating momentum to use bans to solve litter problems without a full assessment of the total environmental impact.

Oakland became the second U.S. city in three months to ban petroleum-based plastic carryout bags when its city council approved the measure July 3 by a 6-0 vote with two abstentions. The measure has a second vote July 17 and would go into effect in late January. An earlier ban by San Francisco goes into effect Nov. 20.

The Oakland ban would apply to stores with sales of more than \$1 million annually and would require stores to offer shoppers compostable bags or paper bags that contain a minimum of 40 percent recycled content and that are 100 percent recyclable. The San Francisco ban applies to stores with annual sales of more than \$2 million.

In addition, the community of Fairfax, about 18 miles north of San Francisco, is expected to adopt a petroleum-based plastic bag ban at its July 11 meeting; the five-member council unanimously endorsed the law in early June. It would go into effect in February and additionally ban the use of compostable bags after July 11, 2010 - the first ban of that type.

Bans on polystyrene also are spreading. Capitola, south of the Bay area, became the sixth California city in the past 15 months to ban polystyrene takeout containers when it made its 18-year-old voluntary ban mandatory in late June. But it delayed the July 1 implementation date for three months to survey retail establishments about enforcement issues and determine how many comply with the voluntary ban.

The mandatory ban also adds a requirement that restaurants use biodegradable or compostable containers. It also adds a hardship exemption if a retail establishment can show that the cost of the alternative products are more expensive - which they typically are.

"The sentiment is, 'We don't care what the science is - let's do this,'" said Michael Levy, director of the Plastics Foodservice Packaging Group of the American Chemistry Council in Arlington, Va. "The impact of the ban in Capitola is small because they have had a voluntary ban. But it is the idea of the momentum that is building around these bans that concerns us.

"What is continually driving things is the marine litter part of the issue," he said. "There still is a litter problem on the Monterey Peninsula. People are upset about any plastics in the ocean. What's scary about the plastic bag issue is that [the bags] have a strong recycling market and network and they are on the public radar screen as high, if not higher, than polystyrene foam."

Similarly, the Progressive Bag Alliance, a consortium of plastic bag manufacturers, was unable to convince Oakland to delay its ban, even though a California law mandating plastic bag recycling went into effect July 1.

"Yes, plastic bag recycling hasn't been as good as it should be," said Andy DeVilling, vice president of sales and marketing in Highland Village, Texas, for StarPak Ltd., a Superbag company and a member of PBA. "But give the law a chance. Now there is no excuse for recycling not to be done. These bags are 100 percent recyclable, and California is the first state in the nation to have a mandatory recycling law.

"We really believe that they moved forward without a proper assessment of the full impact on recycling or the total environment impact," DeVilling said. "Oakland doesn't have a commercial composting facility, so the compostable bags will likely end up in a litter stream and could damage the recycling stream the state is trying to create."

He added: "Instead of prohibiting plastic bags, Oakland should be helping to promote the first mandated opportunity to recycle plastic bags statewide."

Still, the number of proposed bans on bags is spreading. In addition to six in California, bans have been proposed in Austin, Texas; Phoenix; Boston; Portland, Ore.; Massachusetts; Baltimore and Annapolis, Md.

While there are only a few polystyrene city bans still under consideration this year, California's most far-reaching anti-plastics measure is in the state Assembly's Environmental Safety and Toxic Materials Committee. No hearing has been scheduled, but it already has passed the state Senate.

The bill, the Toxic Free Oceans Act of 2007, would ban companies from manufacturing, processing or distributing any plastics packaging ranging in size from 8 ounces to 5 gallons that contains styrene, vinyl chloride, bisphenol A, perfluorooctanoic acid, nonylphenol or alkylphenol.

Verespej is a reporter with Crain Communications' Plastics News.

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