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Mandates or Incentives?
Comparing Packaging Regulations with User Fees for Trash Collection

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I.INTRODUCTION

A.U.S. Policy

Solid waste management in the United States is undergoing an important transition. Until recently, it was largely a "silent service." Cities or private haulers collected municipal waste and carted it off for disposal, often at no direct cost to individual households. The destinations—landfills and incinerators—were mostly out of sight and out of mind. Only sporadic public or legislative scrutiny was given to possible health and environmental effects of disposal facilities. The primary goal of local waste managers was to increase efficiency and reduce costs in collection, transfer, and disposal technologies.

By the mid-1980s, citizens and policy makers began to fret about where the waste was going. Public officials, pressed by citizen health and environmental concerns, grew reluctant to site waste disposal facilities. Yet waste generation continued apace. The result? Disposal needs outstripped landfill and incinerator capacity, and charges for existing facilities escalated.

The focus of solid waste management in the United States has shifted. The quick and efficient removal of waste from neighborhoods is no longer the overriding concern. Instead, state and local legislators have made cutting down the waste stream a top priority. Today, managers are expected to implement recycling and waste-reduction programs that effectively decrease the quantities of material going to landfills and incinerators.

B.Massachusetts Policy

The Commonwealth of Massachusetts has instituted policies that are consistent with this nationwide trend. A comprehensive bill, Chapter 584 of the Acts of 1987, set in motion a series of regulatory actions by the Department of Environmental Protection designed to divert waste from disposal facilities and promote recycling. In addition, local governments have significantly expanded their recycling efforts.

As a result of these policy changes, two new problems have emerged for local governments in Massachusetts:

× Recycling programs, which are often more expensive than waste collection and disposal without recycling, have increased total waste management costs.

× The supplies of recyclables, dramatically increased by local recycling programs, have outstripped the growth in demand for these recycled materials among end users.

The cost of conducting recycling programs, coupled with low scrap values for recyclables, have put local governments in a financial bind. If Massachusetts policy makers want to continue to increase recycling programs, some way must be found to finance these efforts. How has the Commonwealth responded to this challenge?

C.Question 3

Major legislative endeavors have been proposed to stimulate (or even force) the use of recyclables by potential end users, especially packaging manufacturers. This represents an attempt to drive up demand for recyclables among a particular set of end users in order to boost scrap values and increase the revenues received from recycling programs. Such legislation also attempts, through packaging regulations, to reduce a portion of the waste stream at its source.

The most notable of these legislative pushes is Question 3, or the "MassPIRG Initiative," on the Massachusetts ballot in November 1992. This is a complicated law proposed by initiative petition. The measure calls for specific recycling and waste-reduction achievements by requiring manufacturers of a broad range of products and packages to use recycled content, reusable or source-reduced packages, or recyclable packaging.

Question 3, as described by proponents of the measure, includes among its goals the tripling of recycling levels, creation of new markets for recycled materials, and conservation of resources. These goals appear to be consistent with the changing focus of solid waste management. In considering Question 3, however, two important questions confront Massachusetts voters. Will Question 3 actually accomplish its goals? Are there policy alternatives that make greater reductions in the waste stream at a lower cost to taxpayers and consumers? This paper explores these questions.

D.An Alternative

An alternative approach is being tried in other states yet remains largely ignored in Massachusetts. Because this approach relies on incentives and offers more flexibility, it is likely to result in lower costs for meeting waste-reduction goals. It also targets a broader spectrum of the waste stream than do packaging mandates.

The introduction of unit-based pricing for waste collection and disposal would trigger a market-oriented waste management policy for Massachusetts. Residents would be charged a per-bag, per-can, or per-pound fee for trash removal by public or private operators. Under a unit-pricing scheme, consumers could lower their trash removal costs by cutting back on the waste they put out on the curb. To avoid costs, more households would participate in recycling programs, and consumers would demand products that are recyclable or waste-reducing from manufacturers. As manufacturers respond to consumer pressure by increasing recycled content and the recyclability of products, the supply/demand imbalance in the market for recyclables will be relieved. Unit pricing would also offer a means to resolve effectively the problem of financing an improvement of recycling programs and infrastructure by local governments and private haulers.

Central to the decision before Massachusetts voters is a dramatic choice: Should government mandate the contents and configuration of packaging in order to stimulate recycling and waste reduction without regard to the cost to Massachusetts consumers?

Or, should government establish incentives that reinforce existing industry efforts to reduce packaging waste and facilitate recyclability of a broad range of products, while remaining responsive to other important consumer concerns, such as cost?

II.RETHINKING THE RECYCLING PROBLEM

A.Markets Exist

To understand how unit-pricing user fees relate to the challenge of marketing recyclables, one must first understand the current problem with markets for recyclables. Question 3 and other legislative attempts to mandate demand for recyclables assume that a "lack of markets" in an absolute sense is the chief barrier to increased recycling.

This assumption is inaccurate. A 1991 nationwide survey of 300 recycling decision makers reported that only 13 percent said "finding markets" was a critical problem. In addition, the Massachusetts Department of Environmental Protection (DEP) published a study in 1992, "Value Added by Recycling Industries in Massachusetts," that endorses the perspective of end-user economics. The report asserts, "Manufacturers which depend on recycled materials...have benefitted tremendously from the recent cheap supply of recycled feedstocks, and have responded by investing significant capital into an expanded supply of waste paper and glass products." The report goes on to state that "`no markets' should literally mean no place to receive the material—NOT low prices for the material."

B.Market Problems

Thus, the evidence suggests that sellers of recyclables—local governments and private-sector operators—are indeed finding end users for the materials they are collecting. The real problem, from the sellers' point of view, is that low scrap values are worsening the economics of recycling.

The rapid proliferation of recycling programs across the nation, including in Massachusetts, has resulted in a sharp increase in supplies of recyclables. In 1988, several hundred curbside recycling programs existed nationwide. By 1992, that number had climbed to over 4,000.

Growth in demand for recyclables has increased, but less rapidly. So scrap values of recyclables have plummeted. In 1991 alone, scrap values of aluminum dropped 39 percent; newsprint prices dropped in some areas to negative values, where suppliers paid end users to receive materials. This price trend occurred nationwide across almost all materials.

These price trends put sellers in a bind because recycling program net expenses derive from collection costs, plus processing costs, less revenues from the sale of recyclables. As scrap values for these materials fall, net expenses rise, since fewer revenues are available to help offset costs. This trend is exacerbated by the fact that gross recycling costs have proven to be higher than initially predicted by waste managers.

Another problem associated with markets is that materials are sometimes turned away by end users. This is the result of contaminated loads—that is, loads inadequately sorted and prepared to the specifications of end users. Therefore, in addition to addressing the sellers' financial dilemma, a second challenge is financing the infrastructure necessary to properly process recyclables and prepare them to meet end-user needs.

SOURCES for Fig. 1, 2, and 3: "Ten Year Pricing and Collection Tonnage Histories for Recyclable Materials," Resource Integration Systems, Waste Management, Inc., November 22, 1991.

C.The Effect of Mandates

Question 3 and other mandatory packaging regulations designed to force up the demand for recyclables will artificially raise scrap values. This may increase recycling revenues and improve recycling economics for the seller in the short term. Mandating use of recycled content by select manufacturers will boost their use of such materials. This in turn will boost certain scrap values. However, these price increases may actually deter entrepreneurs outside the mandated end uses from exploring ways of using these materials in other products, such as animal bedding, glassphalt, insulation, and nonpackaging consumer products.

From the perspective of end users, low scrap values are desirable. End users view recyclables as raw materials for production. Their attractiveness depends, in part, on their cost relative to other materials for which the recyclables serve as a substitute. Low scrap values can stimulate demand for recyclables—not just by packagers, but by a broad array of potential end users—provided that other conditions exist. Potential end users require both reliable supplies and quality materials. Fluctuations in supply and quality account, at least in part, for the historical failure of low scrap values to result in increased use of these materials.

D.Policies to Improve Markets

Concern about low scrap values is really a concern about the financing of recycling programs. How can the infrastructure for processing recyclables to meet end-user specifications be financed? How can recycling collection programs be financed, given low scrap values of materials?

Policies that could remedy the recycling markets problem are the introduction of a long-term assured mechanism to finance integrated waste management systems, including recycling programs and materials recovery facilities; and the creation of a commodities market, along the lines of that first established in the 1800s for agricultural commodities. A commodities market for recyclables would do two main things: 1) improve information flows between buyer and seller, and 2) develop cash forward and futures markets to stabilize prices and better allow for emergence of long-term contracts. Additional market

incentive measures in the form of recyclin enterprise zones and policies that encourage lending to investments in using recyclables could supplement these other policies.

This combination of policies is premised on viewing recycling collection as part of an integrated waste management system, with recycling viewed as a service to local constituents paid for through waste management revenues. Mandating use of recyclables will not address the issues of quality, assured supplies, and improved information flows necessary to developing a robust commodity market for recyclables.

III.THE IMPACT AND COSTS OF IMPLEMENTING QUESTION 3

A.Background

Massachusetts communities, like other cities and towns across the United States, face this fundamental recycling market and financing problem. The policy focus in Massachusetts has rested on the assumption that the major challenge is finding markets, rather than on financing infrastructure and collection systems to ensure preparation of high-quality recyclables.

Question 3, the MassPIRG initiative on the November 1992 ballot, thus states in its preamble,

Whereas, cities and towns and the citizens of the commonwealth are now making aggressive efforts to reduce, reuse, and recycle;

Whereas, such efforts can only succeed if businesses redesign products and packaging to promote reduction, reuse and recycling and use the materials that the public recycles in their manufacturing processes; . . .

Therefore . . . this Act promotes packaging used in the commonwealth to be either reduced, reused, recycled, made of recycled materials, or made of materials which meet minimum recycling rates in the commonwealth by 1996.

Question 3 prescribes source reduction and recycling alternatives with which all packaging in the state must comply. The initiative specifies that by July 1, 1996, all packaging used in Massachusetts "would have to be either reduced in size by at least 25% every five years; or designed to be reusable at least five times, with at least 50% of such packaging actually being reused; or recycled at a 50% rate; or composed of 25% or more of recycled materials (increasing to 35% on July 1, 1999 and 50% on July 1, 2002); or composed of materials being recycled at an annual rate of 25% (increasing to 35% in 1999 and 50% in 2002). The requirements would apply to any packaging or containers used to protect, store, handle, transport, display, or sell products."

In assessing the cost effectiveness of Question 3, two evaluation criteria are relevant:

× What are the benefits likely to be achieved?

× What are the implementation costs?

B.Scope of Benefits

Source Reduction. Consider first the source-reduction benefits of Question 3. The initiative targets only the packaging portion of the waste stream. This makes up approximately 30 percent of the municipal waste stream. (Residential waste comprises 48 percent of total municipal waste, excluding construction and other special wastes.) Furthermore, Question 3 defines source reduction only in terms of volume. This approach ignores reductions in weight and in energy inputs. These other reductions can offer significant environmental gains because fewer materials and less energy are used per unit of output.

Compliance with Question 3's source-reduction mandate would require a 25 percent reduction (by volume) over five years. This is largely a non-option for many packages. Source-reduction efforts in industry have been extensive and ongoing. A historical look shows that reduction in package weights occurs in small, incremental steps. While Question 3 requires volume reductions, the data in Table 1, showing weight-reduction trends, nonetheless suggest the incremental way in which packaging innovations occur.

Table 1

SOURCE REDUCTION TRENDS

Percent reduction within time period

Beverage Containers

Year 1965-70 1970-75 1975-80 1980-85 1985-90

Aluminum (12 oz.) 16.1% 5.4% 6.9% 6.7% 7.4%

PET-1 piece (2-liter) NA NA NA 14.1% 5.5%

Steel (12 oz.) 27.4% 9.2% 11.1% 10.0% 7.9%

Laundry Product

Year 1978-1980 1980-87

Reduction 6.4% 12.5%

Non-soda Beverage Can

Year 1957-64 1964-83 1983-88

Reduction 19.6% 5.6% (5.6%)

* The beverage can was first reduced in weight, then increased back to its pre-1983 configuration because of problems with container damage during shipping.

SOURCE: This information was compiled by the author based on conversations with ten Fortune 500 firms in the United States. Firm and brand names are withheld to protect proprietary information.

These efforts have resulted in significant resource conservation and waste reductions. But small, incremental reductions would not "count" toward compliance under Question 3.

The net effect would be to undermine efforts by manufacturers to reduce materials, energy inputs, and waste, as they invest instead in achieving compliance with the mandates on package volume that Question 3 prescribes.

The data suggest that the source-reduction requirement is likely to be unrealistic because attempts to reduce packaging weight or volume do not yield consistent or predictable results. For example, some glass beverage containers require a barrier against light transmission, because light adversely affects product quality. While the development of glass coatings has allowed for some reduction in weight, certain technological hurdles limit further reductions at the present time.

One 6.85-ounce glass beverage container has remained at that weight since the mid-1970s, despite efforts to reduce it by one-tenth of an ounce. Reducing the container even by that amount can result in a failure of the package to prevent light transmission through the bottle.

With a 25-percent volume reduction deemed unachievable in this instance and others, companies will have to focus instead on meeting one of the other compliance options, on recyclability or recycled content in particular. Yet neither of these options will necessarily lead to the same degree of resource conservation that many source-reduction efforts have already produced.

Consider two other points:

× Packaging choices can involve important trade-offs in terms of waste generation, materials consumption, and energy use.

× Packaging is technologically complex, often involving whole systems of materials and packaging components. Changes in one component can require changes across entire production systems.

The following examples, researched by the Reason Foundation, illustrate these two points:

Example 1. For a plastic household cleaning fluid container, a major technological breakthrough—moving from pneumatic to electronic programming for blow-molding—resulted in a 5 to 7 percent reduction in materials inputs in 1970. Refinements in the technology over the next five years resulted in an additional 2 to 3 percent reduction. Further refinements, plus experimentation with new resin additives, allowed for better control of the plastic, resulting in additional weight reductions of 5 percent. Reductions between 1970 and 1992 totalled 15 percent.

Example 2. A set of 16-ounce beverage containers, which delivers 64 ounces of drink, yields .035 pounds of retail waste and .079 pounds of consumer waste. By contrast, to deliver 64 ounces of drink in 6-ounce containers results in .028 pounds of retail waste and .12 pounds of consumer waste. In this comparison, one container produces more consumer waste, the other more retail waste.

Total packaging systems involve many different parameters, including container dimensions and volume, label dimensions, transportation case dimensions, stretchwrap or other case coverings, numbers of cases per truckload, numbers of pallets per truckload, total shipping loadweight, and warehouse space.

All of these variables affect total energy use, materials usage, and packaging waste. Small changes can yield significant resource conservation. In one example, a 16 percent reduction in the cubic dimensions of a package, coupled with a 10.7 percent reduction in label size, can save nearly 20,000 pounds of material for one producer, over 500 truckloads of outgoing freight, over 20,000 pallets, over 7,000 pounds of stretchwrap, and over 250,000 square feet of chilled warehouse space.

What are the implications for manufacturers? Many source-reduction efforts that may not meet Question 3 requirements clearly offer significant environmental benefits by reducing fuel requirements, cutting materials usage, and conserving energy required for chilled space.

Recycling Markets. The other stated goal of the packaging regulations is to "create" markets for recyclables. There are several limitations to achieving this end in Massachusetts through the regulations described in Question 3. Packaging represents about 30 percent of the waste stream, or about 2.0 million tons of waste. Seventy to 80 percent of this packaging is made outside the state. This means about 400,000 tons of this packaging are manufactured in Massachusetts. If all the packaging manufactured in Massachusetts were to incorporate 25 percent recycled material, this would absorb 100,000 tons of recycled materials. However, since some of this packaging already

incorporates recycled content, the net increase in demand would be smaller than 100,000 tons.

Alternatively, if the legislation resulted in 50 percent of all packages being recycled, the net increase in recycling would be about 600,000 tons per year, or 10 percent of the residential and commercial waste stream (2.0 million tons x 50% minus 400,000). This is because some 400,000 tons of packaging are already being recycled.

Implementation Costs. Question 3 involves significant implementation costs. Clayton Environmental Associates (CEA) estimate public-sector costs of $5 million to $19 million to administer and enforce Question 3. These figures are consistent with off-the-record estimates given to the Reason Foundation by some Massachusetts government officials. CEA also estimates private-sector compliance costs between $110 million and $550 million annually. There are some 50,000 to 75,000 different products offered for sale at a given time in Massachusetts. Costs to manufacture and use packaging that would comply with Question 3 are estimated at $78 million to $290 million.

Because similar legislation does not exist elsewhere, it is not possible to pinpoint precisely what compliance costs will be. However, according to industry representatives involved in the manufacture of products that must comply with pharmaceutical regulations, administrative compliance costs have added approximately 20 percent to total packaging costs. This 20 percent increment represents only those costs associated with the paperwork necessary to show compliance. With $2 billion in packaging sold annually in Massachusetts, compliance costs alone for Question 3 regulations would come to around $400 million. This estimate is in line with the range of compliance costs suggested by CEA. Taking the mid-point CEA estimate, total compliance costs (which the packagers would presumably pass on to the consumers) would come to $230 per year per household.

Impact on Low-Income Households. There is another cost impact consideration: the effect on low-income households. Economist Robin Jenkins and others report that packaging makes up a larger portion of the waste in low-income households than in other households. Moreover, expenditures on basic consumer products take up a larger portion of low-income household disposable income. Thus, policies that increase the cost of packaging will be regressive in nature, affecting low-income households more than other households. Implementation of any special rebates for low-income families is likely to be infeasible.

IV.UNIT PRICING: OPPORTUNITIES AND COSTS

A.Unit Pricing in Massachusetts

With unit-pricing systems, households pay for waste service based on how much garbage they put out for collection. Such pricing is typically accompanied by curbside recycling or composting programs, so that households have other options for handling their

discards. These options, when combined with the financial incentive of unit-pricing user fees, create a situation in which waste disposal is discouraged while source reduction and recycling are encouraged.

Most cities in the United States, including those in Massachusetts, do not charge, or charge only a subsidized rate, for waste collection and disposal. The city of Worcester, Massachusetts, surveyed 246 cities nationwide in 1990 and found that two-thirds of those surveyed charged no fee, or charged only a subsidized flat rate for refuse service. This survey showed that 34 of 42 cities in Massachusetts charged no user fee for garbage collection and disposal service.

The Reason Foundation updated part of the Worcester survey by going back to those Massachusetts cities identified in the survey to examine user fee trends. Twenty-four of 30 cities and towns had no fee for waste service. Four communities did not offer waste collection service, so households either subscribed directly for service with a private hauler or hauled their own waste to disposal facilities. In this case, individual households did pay a fee, either directly to a hauler or at the disposal facility. Only two communities charged fees for waste service, and in both instances the fee was a flat rate.

The Massachusetts Municipal Association, in a separate survey of Massachusetts local governments, identified 16 cities (of 174 responding) that had some kind of residential user fees. Of these, four reported the use of unit pricing. Seven of the 16 charged flat-rate fees and four charged fees only at a disposal facility, where households delivered their own waste. One city charged a quasi-unit-pricing graduated fee. Leo Roy of the Massachusetts Executive Office of Environmental Affairs states that their review of waste fees showed 70 of 351 Massachusetts cities and towns have looked at or are considering unit pricing.

The Reason Foundation interviewed several public works department officials in Massachusetts and identified eight communities with unit-pricing systems. Thus, most Massachusetts communities do not apply user fees, or particularly unit-based fees, for waste service. Instead, waste service continues to be funded through general revenues, via property tax bills.

B.Unit-pricing Impact in U.S.

Most unit-pricing systems in the United States have been introduced over the last four years. Data regarding their impact on waste-generation rates are limited. Many jurisdictions introducing such systems have had poor data or no data prior to implementing their user fee systems. However, several surveys of communities with such programs offer useful preliminary information.

Minnesota. The state of Minnesota examined results in nine cities with unit pricing. Only two kept data on waste-generation rates. LeCenter, Minnesota, reported reductions of up to 60 percent in residential waste tonnage sent to disposal facilities, but reported some increase in commercial tonnage. White Bear Lake reported reductions in residential

tonnage of 22 percent in the first year, and an additional 17 percent in the second year after introduction of unit pricing. A third community, Meeker County, reported no reductions in waste sent to the landfill.

Perkasie, PA. Perkasie, Pennsylvania, reported reductions in tonnage destined for disposal facilities of 59 percent after introduction of the system in 1988. These reductions enabled the city to cut waste collection service from twice to once per week. Perkasie officials note, however, that some waste, particularly bulky items, was no longer handled by the city but rather by private haulers, thereby resulting in an overstatement of overall waste reduction.

Perkasie reports that total waste collection, including collection of recyclables, was 1,869.6 tons per year after introducing the per bag fee system in 1988, compared to 2,531 tons per year of combined waste in the preceding years.

Seattle. Economist Lisa Skumatz took a detailed look at the Seattle program. She noted that "although the rate design and increases were effective in reducing subscription levels, tonnage disposed did not decrease. In fact, tonnage disposed increased 9.9 percent between 1981 and 1986." However, Skumatz points out that though the tonnage disposed did not decline, "Seattle's variable can rates were likely a significant factor in decreasing the amount of waste that would have been disposed without variable can rates." Total waste generation during this time actually grew as households and income increased in the city. The variable rates did result in increased recycling.

Skumatz notes that rate design changes in 1989 led to significant rate increases for additional cans above the first can, providing a stronger overall waste-reduction incentive. Since the implementation of these new rates, waste-generation rates appear to have declined, and the average number of cans set out weekly per household has dropped to 1.3 cans per week.

Multi-city studies. In a graduate thesis at Duke University, Daniel Blume examined 14 cities with unit-pricing systems for which some waste-generation data were available for years prior to and after implementing user fees. Blume finds that waste destined for disposal declined 44 percent on average, with the median at 49 percent. Blume cautions that the data are not altogether reliable, because cities have no way of tracking whether waste is being hauled elsewhere for disposal.

Blume reports recycling increases of 3 percent to 156 percent, with an average increase of 106 percent. Of particular note, Blume finds that only half of reported reductions in waste can be attributed to recycling and composting. Some overall reductions in waste generation appear to be occurring.

A survey was conducted by Tompkins County, New York, Solid Waste Management Division, in conjunction with two Cornell University programs. The survey was sent to a random sample of Tompkins County residents in September 1990 after implementation of a unit-pricing system. Over 76 percent of respondents reported that unit-pricing

charges led them to reduce the amount of waste they generated by buying products with less packaging. Over 25 percent "identified additional ways of reducing household garbage. Among the more popular were reusing containers, using cloth grocery bags, buying bulk foods, stopping junk mail, sharing magazine and newspaper subscriptions, and giving away unwanted items."

A 1992 University of New Hampshire study offers further confirmation that unit pricing has some impact on waste generation and buying habits. The authors divided consumers into three categories, assuming that unit pricing would have differential impacts. The categories included the "true greens," who already spend time recycling; the "marginal greens," "who will not go out of their way to recycle;" and the "browns," who tend not to acknowledge a need for recycling.

The survey found that willingness among the "browns" to pay extra for recyclable packaging increased. Over 50 percent of the "browns" were willing to pay a 1 to 5 percent premium after implementation of the unit-pricing system, compared to less than 30 percent who were willing to pay extra for recyclable packaging before the program. The "marginal greens" cited a willingness to increase the premium they would pay for recyclables.

Table 2

COMPARISON OF 10 VOLUME-BASED PRICING PROGRAMS

City (Population) Date Implemented Average Monthly Tonnage Recycled

Before After % Change

Antigo, WI(8,500) 6/90 12.1 29.7 +146%

Charlemont, MA(1,200) 7/89 - - - - - -

Downers Grove, IL(46,000) 5/90 No Program 314 - -

Harvard, IL(5,600) 5/89 10.1 21.5 +113%

Ithaca, NY(35,000 - 40,000) 3/90 76.7 125.2 +63%

Lisle, IL(19,512) 6/89 No Program 112 - -

Mt. Pleasant, MI(30,000) 1/89 29.3 70.7 +141%

Plains, PA(11,230) 1/89 11.3 21.2 +88%

Rock Falls-Sterling, IL(29,500) 7/90 No Program 67.3 - -

Woodstock, IL (15,000) 1/88 - - 51 - -

The authors of the survey concluded that "whereas the implementation of a curbside recyclable collection program alone will increase recycling participation rates, a volume-based waste disposal system increases participation rates as well as decreases the absolute levels of waste generated."(Emphasis added.)

Specifically, the survey showed that after implementation of user fees, 95 percent of respondents participated in recycling, compared to 54.1 percent prior to the program. Program implementation appeared to result in reductions in waste volume.

Table 3

THE EFFECTS OF VOLUME-BASED PRICING ON LANDFILL DISPOSAL

City

(Population)

Average Monthly Tonnage to Landfill

Before After % Change

Rock Falls-Sterling, IL(29,500) 1016 356 -65%

Perkasie, PA(7,000) 210 97 -54%

Lisle, IL(19,512) Confidential Confidential -53%

Downers Grove, IL(46,000) Confidential Confidential -53%

Ilion, NY(8,800) 365 178 -51%

Antigo, WI(8,500) 185 92 -50%

Plains, PA(11,230) 316 160 -49%

Mt. Pleasant, MI(30,000) 363 203 -44%

Charlemont, MA(1,200) 60 38 -37%

Harvard, IL(5,600) 3 to 4 bags/week 1.6 bags -34%

Ithaca, NY(35,000 - 40,000) 608 417 -31%

Woodstock, IL (15,000) - - - - -31%

High Bridge, NJ(3,600) 134 110 -18%

C.Unit-pricing Impact in Massachusetts

The Reason Foundation interviewed officials from eight Massachusetts cities identified as having unit pricing. Five reported waste reductions after introduction of the fees. One city reported no reductions; one had discontinued the pricing system; and one did not know whether waste had decreased. Six cities reported an increase in recycling after implementation of the user fees.

Only one city, Gloucester, was able to estimate the amount of waste diversion. Gloucester reported that prior to the program, the town generated 20,000 tons of waste per year. After user fees were introduced that figure dropped to 12,000 tons. A local official noted that some waste may have been diverted to other disposal sites, so the total net reduction was not possible to calculate.

The Reason Foundation compared per capita waste generation in six Franklin County communities: three with unit pricing and three without unit pricing. Waste generation in the three communities with unit pricing ranged from .89 to 1.09 pounds per person per day. In the three towns without unit fees, per capita generation ranged from 1.47 pounds per day to 4.5 pounds daily. These numbers must, however, be viewed with some caution since uniform measurement criteria are not used among these towns.

In conclusion, initial evidence suggests that unit pricing in the United States and in Massachusetts has an impact on residential waste generation. Moreover, the data indicate that such systems result in increased participation in recycling programs, as well as increased purchase of recyclable and waste-reducing products.

Table 4

ILLEGAL DUMPING AND ENFORCEMENT COSTS

City (Population) Residential Landfill % Change Recycling % Change

Cities with significant illegal dumping or enforcement costs.

Harvard, IL(5,600) -34% to -31% 113%

Ithaca, NY(35,000 - 40,000) -31% 63%

Woodstock, IL (15,000) -31% - -

Mt. Pleasant, MI(30,000) -44% 141%

Cities with minor illegal dumping or enforcement costs:

Downers Grove, IL(46,000) -53% - -

Plains, PA(11,230) -49% 88%

Perkasie, PA(7,000) -54% 156%

Lisle, IL(19,512) -53% - -

Cities with no apparent dumping or enforcement problems:

High Bridge, NJ(3,600) -18% 3%

Charlemont, MA(1,200) -37% - -

Antigo, WI(8,500) -50% 146%

Ilion, NY(8,800) -51% 141%

Rock Falls-Sterling, IL(29,500) -65% - -

Seattle, WA(495,900) - - - -

D.Unit-pricing Implementation Issues

User fees are not without implementation constraints. These cluster around three sets of problems: potentially adverse consumer responses to user fees; waste-hauler implementation costs and concerns; and public administration costs.

Consumer Problems. The most frequently cited concern among waste haulers and public administrators regarding unit pricing is "midnight dumping," when consumers dump their waste at roadside or deposit it in other containers, especially commercial containers, to avoid paying collection and disposal fees.

Examination of the problem in Minnesota, Pennsylvania, Seattle, and other locations indicates that dumping is an overstated problem. Most communities report that while dumping poses some problem, it can be alleviated through public education and enforcement measures. Dumping in commercial dumpsters is readily alleviated by putting locks on commercial dumpsters.

In his 14-city study, Daniel Blume grouped respondents into three categories. Six cities reported no dumping problems, four reported minor problems, and four reported notable problems.

Convenience of alternative disposal mechanisms appears critical to the prevention of dumping. Those areas with no means for households to discard old appliances, for example, appear to experience some problem with dumping of these "white goods." Similarly, several communities

report most dumping by those that have no service at all, rather than by those paying user fees for convenient curbside pickup.

Reason Foundation interviews with eight Massachusetts communities with unit pricing did not reveal significant problems with dumping. Five of the eight reported no dumping problems; two reported some dumping, but noted it was not a "big" problem; one reported some roadside dumping, but speculated that some of the dumping was actually from the neighboring community that had high disposal fees for waste.

A National Solid Wastes Management Association representative in Massachusetts noted that the waste-hauling community is seeing a lot of dumping, but that this appears to be the result of the waste-disposal bans in the state.

Reports of backyard burning and waste compaction in cans have surfaced in discussions of unit-pricing systems. For example, Perkasie, Pennsylvania, experienced increases in backyard burning after introduction of per bag charges. They remedied the problem through passage of a prohibition on backyard burning. Seattle reported that consumers attempted to maximize the amount of waste put into an individual can by compacting it. Reports from communities with per bag fees, however, do not show compaction to be a significant issue. This suggests that the per can charging system may be more susceptible to the compaction problem. Both problems can be resolved through changes in program design, enforcement, and education.

Because people view garbage collection as a "free" service, residents may worry that they are being "double-charged" by local governments when unit pricing is introduced. Since trash collection costs are not often itemized on property tax bills, there may be a reluctance to rebate these tax revenues by localities. If taxpayers are vigilant regarding this issue, local tax dollars for trash removal would be eliminated and replaced by price-per-unit fees, resulting in consumer control and savings.

The equity issue—concern about the impact of unit pricing on households of different size and income levels—can be politically divisive. One key justification for unit charging systems is precisely that it is fair, because it bases garbage charges on how much waste households actually generate. Flat fees, or tax-based funding, by contrast, in effect charge households the same rate regardless of how much waste they produce.

State officials in Minnesota reported that communities perceived per-bag charges as fair. In the Cornell University-Tompkins County, New York, survey, 63 percent of respondents found the unit-pricing system "fair," and another 15 percent found it to be "somewhat fair." Eleven percent considered it unfair. Eight percent voiced no opinion.

Two other studies suggest that 1) the equity issue can be resolved through program design—for example, "lifeline" rates to low-income families; and 2) low-income households may not generate more total waste than other households. For example, Daniel Blume reports that the recycling coordinator in Lisle, Illinois, sampling 191 homes in four neighborhoods, found that "the highest-income neighborhood averaged 1.7 bags per week over five weeks; the two middle groups average 1 bag and 1.2 bags per week; and the lowest-income group average 0.9 bags per week." Higher-income households appear to generate more yard waste and newspapers than lower-income households.

Hauler Concerns. Hauler concerns about unit pricing focus primarily on questions about revenue streams: How predictable will they be? Will they be adequate to cover fixed and variable costs? Related to both of these issues are concerns about "cheating"—will consumers subscribe to one level of service but actually set out more cans than they paid for—and concerns about adjusting to seasonal consumer needs.

This issue is an important one, since much has been made of the concept of "avoided costs." For waste management programs, fixed costs represent 85 percent of total costs, while variable costs represent 15 percent. With residential diversion rates of 7 to 20 percent due to recycling and composting programs, there is little or no reduction in residential collection costs.

However, Daniel Blume concluded that billing and cash-flow problems could be overcome in per bag systems. Consumers simply buy the needed amount of bags (or stickers) and the hauler carries away only that waste set out in the appropriate container. Such a system avoids the seasonality problem, as well as any costs associated with complex billing systems. Since bags are bought in advance, such systems allow haulers to be paid in advance of service.

The question of covering fixed costs can be resolved through careful rate design. By using a two-tiered pricing system, one fixed fee is first charged to all households, with marginal costs then applied to any additional service purchased.

These and other technical and administrative problems all appear to be resolvable. These problems do illustrate one fundamental point: if unit pricing is encouraged, legislation

should not require a specific program design. Any legislation to promote unit-pricing should allow for maximum flexibility and local decision-making.

Public Administration Costs. Public administration costs will depend on program design. A state policy that encourages, rather than mandates, user fees can help minimize administration costs by allowing individual communities to design fee systems that meet their own needs.

If cities were to institute user fees based on full costs, then private haulers would be able to bid to provide the service. Increased competition among haulers—public and private sector—is likely to lower the costs to consumers.

The costs associated with user fee systems include billing, education and enforcement costs. Billing costs can be eliminated by using a per bag or per sticker system, rather than direct billing. Education and enforcement costs represent less than 5 percent of overall solid waste service provision costs. Massachusetts cities with per bag systems stated that they either experienced no increased administrative costs or minimal increased costs, as a result of implementing user fee systems based on the per bag or per sticker charges.

E.Unit Pricing: Legal Considerations in Massachusetts

Introduction of unit pricing means establishing explicit charges for household waste collection and disposal service based on the amount of waste generated. In Massachusetts, the key legal question is whether such charges can be introduced without violating the spirit or intent of Proposition 2 1/2. In short, are unit prices fees? Or are they taxes?

The most relevant court case on this issue is Emerson College v. City of Boston. In that case, the courts determined that a charge is a "fee" if 1) it is charged in exchange for a particular government service which directly benefits the party paying the fee; 2) the party paying the fee has the option of not using the governmental service and thereby avoiding the charge; and 3) it is being collected not to raise revenues but to compensate the governmental entity (including an entity operating under contract to the government) providing services for its expenses. Under this definition of a fee, unit-based fees for waste collection and disposal services seem clearly to be fees, not taxes.

A separate issue is whether a state requirement that local governments charge for waste collection and disposal through unit-pricing fees would violate Proposition 2 1/2. The Massachusetts Office of Local Mandates claimed that such a requirement would not violate Proposition 2 1/2 unless it would result in the imposition of additional direct costs on cities and towns. In the case of unit pricing, no new service is being mandated; and no new costs are being incurred.

Apart from considerations about Proposition 2 1/2, no legal impediments to unit pricing appear to exist in Massachusetts. Indeed, the Massachusetts legislature, in GL.c4 &28c

(f), provides that local governments may charge user fees for services and facilities relating to the collection or disposal of solid waste.

V.COST-BENEFIT COMPARISON: INCENTIVES VS. MANDATES

Unit pricing must be evaluated and contrasted to mandatory packaging requirements in light of three needs: 1) achievement of reductions in waste generation rates; 2) financing of solid waste infrastructure, including development of sustainable recycling programs that are economically viable, and integrated waste management systems that ensure adequate disposal capacity alongside any recycling and other efforts; and 3) implementation costs.

A.Reductions in Waste-Generation Rates

Unit pricing for residential waste directly impacts about 3.2 million tons annually of municipal waste (based on projections for 2000, as set forth in the Massachusetts master plan). Such pricing provides consumers with incentives to act in four basic ways: 1) participate in recycling programs; 2) compost yard waste, or participate in other yard waste diversion programs; 3) change purchasing habits to include source-reduced or recyclable packages and products; and 4) change discard habits by diverting old clothes, furniture, appliances, etc. to reuse outlets.

Because it targets the entire residential waste stream, unit pricing can have a greater impact on the waste stream than Question 3 regulations would. This is because it affects all components of residential waste including recycling, source reduction, and composting of yard waste (yard waste makes up as much as 20 percent of the waste stream). Applying the 44 percent diversion of residential waste reported in the Duke University study, unit-pricing systems, in conjunction with other programs, could divert some 1.404 million tons of residential waste per year from disposal facilities.

Assuming that Massachusetts residential recycling and composting programs are already diverting 20 percent of the 3.19 million tons of residential waste in the state, this comes to current residential recycling of some 630,000 tons of material, including newsprint and yard waste. Thus, unit pricing, if it diverts or reduces 44 percent of residential waste, or 1.404 million tons, would actually recover or reduce nearly 800,000 additional tons of waste (over the 630,000 already diverted). These figures are for illustrative purposes only, since data on source reduction and diversion rates resulting from unit pricing are at best tentative.

Unit pricing should result in larger reductions in the waste stream going to landfills or to incineration than would Question 3 as illustrated in Table 5.

Unit pricing gives consumers an ongoing incentive to find ways to reduce waste. This in turn gives manufacturers an increased incentive to meet consumer needs by continuously finding ways to reduce packaging waste, even in small increments. Unit pricing reinforces existing industry efforts to reduce packaging waste.

Unlike Question 3 regulations, unit pricing does not interrupt manufacturing efforts to achieve reductions in energy or raw materials use. A manufacturer can improve the environmental profile of its packages across a broad spectrum of options, versus a set of five options that focus only on waste volume.

Because the success of unit pricing in diverting waste away from disposal facilities is tied to the availability of options such as recycling and composting, most local governments are likely to maintain or introduce such programs alongside unit pricing.

At least 84 cities, however, already have curb side recycling programs, and some 285 have drop-off recycling options. Unlike disposal bans, unit-pricing systems do not limit local governments to recycling as the only option. Instead, the choice of which programs to implement can remain a local one based on local circumstances. With or without convenient curbside recycling programs, unit pricing offers incentives toward waste reduction.

B.Waste Financing and Recycling Markets

Unit pricing also offers a direct means of financing solid waste systems. Rates can be set on a two-tiered basis in which a base rate for all households reflects all fixed waste management costs, including costs of collection, as well as disposal and materials recovery facility infrastructure. Incremental additional charges based on variable costs associated with waste generation can then be charged. Recycling program costs can be included in the base rate if the policy intent is to stimulate recycling by only applying incremental charges associated with waste destined for disposal.

Unit pricing thus accomplishes another key policy task: it provides a secure funding mechanism for waste management, including recycling programs. Since the critical issue with recycling is not an absence of markets per se, but low scrap values that adversely affect total program expenses, user fee systems provide financing that is not held hostage to the peaks and valleys of secondary materials scrap values. Since preparation of quality materials is a critical barrier to robust markets for recyclables, user fees address the key policy need of providing funding for processing facilities and promoting innovation.

Disposal bans and packaging policies like Question 3 provide no funding mechanism for recycling or waste management programs. They assume the implementation of such programs, but provide no means of funding them.

An important criterion for evaluating policy is the incentive it creates for competitive efforts to improve recycling service delivery by reducing costs. Sustainable recycling depends in part upon reducing the costs of providing recycling service by improving program design.

Unit-pricing systems keep in place incentives for service providers to innovate. Since households pay directly for service under user-fee systems, they have a clear idea what

their service costs are. As amply illustrated in solid waste rate hearings, citizens who pay user fees put frequent pressure on public officials to keep costs down and limit price increases. Service providers are therefore encouraged to find ways to reduce recycling costs to avoid contentious or frequent user-fee price increases. This incentive is present particularly when some form of competitive service provision is also in place.

The Question 3 regulatory approach diminishes incentives for local service providers to reduce costs. By forcing the use of recyclables in order to artificially raise scrap values, such regulations increase revenues to service providers. But this diminishes some of the pressure on them to find ways of making recycling more cost-effective relative to other disposal options.

Implementation of AB2020 in California, which subsidizes the scrap values of secondary materials, has had just such an impact. That legislation provides some recycling centers with what amounts to a guaranteed subsidy—compensating them for the difference between their recycling costs and the scrap values of the materials they recycle. This difference has escalated continually since the program's inception, and convenience recycling centers appear to have done little to reduce operating costs.

Yet cost-reducing opportunities are significant—both for collection and processing programs. Compaction of collected recyclables, for example, can increase by tenfold the amount of plastics that can be collected in one truck. Relying on automated sorting, rather than on curbside source-separated collection, may offer prospects for reducing recycling costs. Changes in route structures, truck design, and collection and processing procedures can all reduce costs.

C.Implementation Costs

Both unit pricing and Question 3 will have some cost impacts on consumers. While neither requires recycling programs, the success of each is enhanced if such programs are in place. This means increased waste management costs will be incurred in either case.

Total traditional waste management costs in Massachusetts, including both collection and disposal, range between $54 and $138 per ton. The state auditor pegs the average cost at around $85 per ton. Recycling costs, on the other hand, based on a 23-city survey by the state auditor's office, ranged from $40 to $136 per ton, with the average 1992 cost estimated at $90 per ton. However, the auditor estimates costs for curbside recycling at closer to $130 per ton in the near future. They estimate that total waste management costs for most Massachusetts cities will increase by $30 million if curbside recycling is introduced across the state.

Table 5

COST-BENEFIT COMPARISON QUESTION 3 VS. UNIT PRICING

Under Question 3

Benefits: MA waste stream: 6,650,000 tons

Total packaging (30% of waste stream): 2,000,000 tons

1996 goal of 25% recycling: 500,000 tons

Less current recycled (packaging only): – 400,000 tons

TOTAL WASTE DIVERSION (1996): 100,000 tons/year

Cost: $250 per household/year

2002 goal of 50% recycling: 1,000,000 tons

Less current recycled (packaging only): – 400,000 tons

TOTAL WASTE DIVERSION (2002): 600,000 tons

Under Unit Pricing UNKNOWN

Benefits: Residential portion of MA waste stream (48%): 3,190,000 tons

44% diversion of residential waste: 1,404,000 tons

Less current recycled: (including newsprint and yard waste) – 630,000 tons

TOTAL WASTE DIVERSION: 774,000 tons/year

Cost: $20 per household/year

SOURCE: Mandates or Incentives? by Lynn Scarlett

NOTE: These figures assume that taxpayers will not be double-charged for solid waste collection. In other words, local governments will choose to deduct from property tax bills the amount previously collected to cover the costs of solid waste management when they institute unit pricing.

Thus, unit-pricing systems, implemented in combination with recycling and composting programs, will result in an estimated added waste management cost in Massachusetts of $30 million annually. For Massachusetts residents, this would mean a cost of $5 per person or between $15 and $20 per household annually. Expenditures for recycling

processing facilities are also required, but these capital costs could be amortized over a twenty-year period. These recycling program and capital costs would be incurred under either scenario. Question 3, though, adds the significant packaging compliance costs described earlier. These costs could amount to over $230 per household per year.

Direct public-sector implementation costs of unit pricing can be low, particularly if bags or stickers, sold at public and commercial outlets, are used rather than billing systems. In Massachusetts, one community that utilizes a per sticker user fee reports that total annual costs for the town's requirement of 24,000 stickers are $800. Other than acquisition of the stickers, the town experienced no additional costs to operate the user-fee system above and beyond expenditures already made for enforcement against dumping, collection service, and so on.

Even in more complex programs, such as the one operated by Seattle, in which direct billing to customers occurs, administrative costs for the program represent 5 percent or less of their total waste management budget.

VI.MARKET-ORIENTED POLICY ALTERNATIVES: MODEL LEGISLATION

Mandating packaging regulations like those spelled out in Question 3 are not the only policy alternatives to address Massachusetts waste management and recycling needs. A market-oriented approach to waste management and recycling in Massachusetts with user-fee funding of waste management as a centerpiece offers Massachusetts consumers a greater impact on the waste stream at a lower cost. This policy can be enhanced by two other actions: 1) State policies that encourage local governments to establish separate accounting for waste management. In combination with privatization of both infrastructure and service provision where feasible, this will ensure that adequate mechanisms for financing waste management and recycling infrastructure are available, including the infrastructure critical to ensuring quality recyclables that meet market specifications; and 2) State policies that authorize the relevant public authorities to work with other states and the private sector, including possibly the Chicago Board of Trade, to develop a formal commodities market for recyclables. This will address three key marketing needs—quality supplies, assured quantities, and improved information flows between buyers and sellers. In addition, introduction of recycling enterprise zones (modeled after a California enterprise zone program, could provide additional investment stimulus to potential end-user of recyclables.

A.Unit Pricing Legislation Models

Two models for introducing unit pricing through state legislative action exist: 1) a mandatory approach, and 2) an incentive approach.

Minnesota, through its Statutes Sec. 239.08, "requires [the] licensing authority (city or county) to base charges for residential collection service on the weight or volume of the waste collected." Thus, all public authorities and private vendors operating under license

to a public authority that provide waste collection and disposal service must use a unit-pricing system.

Wisconsin has crafted an incentive approach in which municipalities must show that they are moving toward volume-based user fees and, if not, why they have failed to implement such fees. Those communities that put into place unit-pricing systems would be eligible for a premium in the amount of state funding they could receive for recycling programs.

A third model is used by the U.S. Environmental Protection Agency (EPA) in its 1985 Construction Grants (CG-85) program for wastewater treatment facilities. In that grant program, EPA affirmed that municipalities must approve a user fee system as a prerequisite to the awarding of any grant assistance from EPA. Localities that wanted federal grant monies were required to pass a "sewer use ordinance" to establish user fee charges for wastewater treatment.

The incentive approach requires that the state have some grant monies or other benefit to offer localities that introduce unit pricing. Massachusetts already has approved such grants or loans for waste management through allocation of Massachusetts Industrial Financing Authority benefits, and through allocation of the $260 million authorized in the Acts of 1987 for waste management infrastructure. Legislation to tie distribution of benefits, or at least give preferences in distributing funds, to communities that introduce unit pricing could stimulate the creation of unit-pricing user fee systems in Massachusetts.

B.Separate Accounting

With the increasing sophistication of solid waste management services and the addition of new programs, associated costs represent a growing portion of local government budgets. Because waste management is a service offered directly to individual users—residences, institutions, and commercial establishments—it is possible to operate waste management as a user-funded activity within municipal government. In fact, this is common practice throughout the United States.

Massachusetts law, Chapter 44, Sec. 53F1/2, provides that local governments "may establish a separate account classified as an `Enterprise fund' for a utility...and its operation, as the city or town may designate." This enables communities to establish solid waste management programs on an accounting basis that facilitates tracking of full fixed and operating costs.

Separate accounting systems enable communities to retain "earnings generated by the operation of the enterprise to remain with that fund rather than closing out at year end to the general fund and becoming part of free cash." This prospect gives waste management entities greater latitude to make necessary infrastructure investments. It also enables them to enter into joint ventures with the private sector regarding provision of waste management infrastructure, including landfills, waste-to-energy facilities, and materials recovery facilities. The key advantage of separate accounting systems is to put waste

management on a business-based accounting system, so that full costs of different parts of an integrated waste management system are made explicit. This does not preclude subcontracting with the private sector and is, in fact, a first step in finding ways to reduce service-delivery costs.

C.Commodities Markets

Improving markets for recyclables requires assured quality of materials, assured long-term supplies, and better information flows among buyers and sellers to permit long-term contracts, more stable prices, and more uniform prices for like-quality materials.

These functions are essentially those performed by commodities markets. Indeed, establishment of such markets in the 1800s for agricultural goods was pivotal to improving and extending the marketing of those commodities.

This type of effort by the Commonwealth of Massachusetts would go a long way toward removing the barriers that constrain recycling markets. Massachusetts, working with other states, can join the private sector to take the initial steps necessary to get a commodities market for secondary materials off the ground.

VII. CONCLUSION

Unlike alternative measures that strive to reduce waste through packaging regulations, unit pricing does not impose compliance costs on the consumer product and packaging industries—and therefore, ultimately, on consumers. Consumers pay only those costs directly related to solid waste and recycling service.

A 1991 Roper survey found that 93 percent of households that pay no user fee for garbage have no idea how much that service really costs. In the absence of charges for refuse service, households have no financial reinforcement for their efforts to reduce waste through recycling, composting, or revised purchasing habits. Moreover, since consumers have typically paid nothing for garbage collection and disposal service, the waste generated by packaging has not been a monetary concern of consumers. Thus, manufacturers have had no consumer-induced incentive to include waste reduction as a criterion in the manufacturing design process. Unit pricing is a means of remedying this situation.

Unit pricing leaves manufacturers free to respond to changed consumer buying habits in many ways, thereby stimulating rather than restricting innovation. This flexibility means individual industries can make trade-offs and decide among new packaging options based on what is most cost-effective. This approach provides consumers with a multitude of low-cost packaging choices while still meeting consumer demands for waste-reducing packaging.

Thus, unit pricing is a substitute for, not a supplement of, prescriptive packaging regulations.

Unit pricing also introduces an incentive for local waste managers—public and private—to innovate and find cost-reducing methods for providing recycling and waste collection and disposal service. Indeed, given the higher costs associated with recycling programs relative to traditional collection and disposal costs in many communities, cost-reducing innovation is already occurring. Question 3, which creates an implicit subsidy of recyclables, severs the link between recycling program revenues and program implementation. This in turn reduces pressures to make waste management and recycling services cost-effective.

Though unit pricing is the centerpiece for policy reform, it should be implemented in concert with other efforts. Together, these actions will provide the basis for stimulating waste reductions and developing sustainable, cost-effective recycling and waste reduction programs. Unit pricing will meet and exceed the goals of Question 3 at a fraction of the cost to Massachusetts consumers.

ABOUT THE AUTHOR

Lynn Scarlett is vice president of research at the Reason Foundation, a nonprofit, public policy think tank based in Los Angeles. Ms. Scarlett has written extensively on a variety of policy subjects, including environmental and land-use regulations, solid waste, and recycling issues. She has testified on environmental issues before a number of legislative and regulatory committees, including the Federal Trade Commission and the U.S. House Subcommittee on Transportation and Hazardous Waste.

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