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# HOW TO SUCCEED WITH PAY AS YOU THROW

**O**VER 4,000 communities in the United States are using pay-as-you-throw (PAYT), a solid waste management system that charges residents for trash collection based on the amount of waste discarded.

Asked why PAYT has been such a success, program operators explain the approach has reduced municipal solid waste costs, increased recycling, and decreased waste generation. Under PAYT (also known as variable rate or unit-based pricing), residents are continuously reminded to reduce waste since they pay for trash removal services by the bag, can, cart, pound, or cubic yard, depending on how the program is structured. The payoff from this economic incentive is significant. A recent Duke University study found that average waste reductions in PAYT communities range from 14 to 27 percent (see sidebar).

The potential for waste reduction appears to be even greater. According to a study conducted by the Institute for Local Self-Reliance (ILSR), when combined with convenient access to comprehensive recycling programs, PAYT plays a major role in achieving high recycling rates. The research shows that more than half of the sampled communities achieving a 50 percent recycling rate credit PAYT for their success.

Implementing successful PAYT programs, however, take some planning. First, they are designed with cost savings in mind. Second, convenient access to a wide variety of recycling opportunities must be available, so that residents can act on the price signals that PAYT sends. Last, the program has to be accepted by the community.



***Communities across the county are reducing residential solid waste volumes and costs — and boosting recycling rates — through unit-based pricing.***

***Janice Canterbury***

### REDUCING COLLECTION AND DISPOSAL COSTS

By complementing a PAYT program with source reduction education and recycling and yard trimmings services, MSW collection and disposal costs can be lowered. Residents set out less MSW for disposal, creating the potential for extending trash collection routes, reducing truck fleets, and cutting back on crew sizes. These savings, plus reduced landfill disposal costs, can be used to expand recycling services or offset additional costs from population growth.

The savings also can be passed on to residents. PAYT establishes this mechanism, particularly when a bag or tag system is used. When residents are required to purchase special bags or tags for disposal, they have control over their solid waste expense.

In Portland, Oregon (pop. 500,000), for instance, the city's standard rate for weekly collection of a 32-gallon can was reduced from \$17.50/month to \$17.20 in 1998. According to Bruce Walker, residential program manager with Portland, the unit-based pricing system enabled the city to pass on the savings from a disposal fee decrease at the landfill directly to its customers.

“One of the benefits we see as a contractor is that unless you have a volume-based system, your recycling equipment does not get fully utilized,” says Gene Freiburger. “The incentive isn’t there to recycle.”



In Dover, New Hampshire (pop. 27,000), PAYT helped the city save almost \$300,000 in annual solid waste costs; \$200,000 came from reduced collection costs alone. Instead of using three trucks for trash collection, the city’s contractor now uses only one. Jeff Pratt, Dover’s solid waste coordinator, indicates the amount of collected trash decreased from 11,000 tons in 1991 (before PAYT) to 4,000



After Mount Vernon, Iowa implemented a PAYT program, a consistently high recycling setout rate allowed Freiburger Waste Services to switch successfully to cocollection trucks.

tons in 1998. For each ton reduced, the city saves \$45 in disposal fees. Another factor contributing to cost savings is the decrease in tipping fees in recent years. The city was paying \$55/ton for disposal at the start of the program.

Gainesville, Florida (pop. 96,000) realized significant savings on disposal costs in the first year it operated a PAYT system. Steve Hiney, solid waste manager for Gainesville, notes that residents generated 22,000 tons of MSW in the year prior to PAYT. After the new pricing system was instituted in 1994, MSW disposal dropped to 18,000 tons, saving the city \$200,000 in landfill tipping fees — approximately \$8/household per year.

According to Gene Freiburger, president of Freiburger Waste Services — operator of the city of Mount Vernon, Iowa’s, solid waste program — additional cost savings occur when waste and recycling setouts become more predictable as a result of PAYT. Mount Vernon

(pop. 3,700) residents receive a wide range of recycling services, including curbside collection of all paper products, metal, glass, and plastic containers, and yard trimmings. There also are special pickups for large items, tires, batteries and brush, and vacuum collection for leaves in the fall. To avoid paying \$1.75 for each 33-gallon container set out (trash and yard trimmings containers), residents are grasscycling composting, and participating regularly in the recycling program.

Reaching a 50 percent (by volume) residential recycling rate allowed Freiburger to switch to cocollection trucks. Before PAYT, he was reluctant to invest in this new equipment, especially considering the inconsistent nature of recycling setouts and the tendency of residents to leave huge piles of trash at the curb. PAYT has made people more conscientious about what they dispose, he says, and more importantly, from a collection standpoint, their behavior is now fairly predictable. “One of the benefits we see as a contractor is that unless you have a volume-based system, your recycling equipment does not get fully utilized,” he explains. “The incentive isn’t there to recycle.”

With PAYT, the residents are consistently recycling 48 to 53 percent by volume. “Our changes are done,” he adds. “We don’t have to worry about what’s coming down the road. We’ve met a lot of the [recycling]

## COMPREHENSIVE ANALYSIS OF PAY AS YOU THROW

**I**N 1997, the U.S. EPA funded a research project with Duke University to analyze the effectiveness of PAYT programs. The primary researchers, Marie Lynn Miranda and Sharon LaPalme, compiled information on more than 1,000 communities by requesting publicly and readily available materials on all aspects of their solid waste programs. This information was combined with state reports, unit pricing literature and information from the 1990 census. A detailed subset of 212 communities from 30 states was developed to provide suitable data for statistical analysis of the specific effects of PAYT programs.

The results show that PAM programs significantly augment waste reduction. The annual amount of waste disposed per household decreased by 14 to 27 percent, and

recyclables collected increased by 32 to 59 percent in the first year of PAYT. Forty-eight percent of the communities experienced no change in illegal dumping. In fact, six percent reported a decrease and only 19 percent reported an increase. The remaining 27 percent did not track illegal dumping or did not have readily available information.

In conducting the study, Duke researchers compiled an extensive list of PAYT communities — a total of 3,887 as of the end of 1997, representing a total population of about 28 million. This is consistent with independent research conducted by Skumatz Economic Research Associates, Inc. of Seattle, estimating that as of 1997 there were roughly 4,200 PAYT communities in the United States.



# PAYT LEADS OLYMPIA TO DECREASED COLLECTION FREQUENCY

**A** PAY as you throw (PAYT) pricing system has been in place since 1961 in Olympia, Washington (pop. 38,000). Recycling has increased each time Olympia raises prices or adds a new recycling service. According to Guttchen, the city began leveraging the rates, or "growing the gap," between its one- and two-can service when recycling started in the 1970s, raising the cost of a second can more dramatically as recycling access increased. Currently, the rate for the second can is almost double that for the first can.

The number of two-can customers dropped by almost 50 percent when curbside recycling was introduced. "It was really the availability of the program combined with the financial incentive," says Guttchen. "Those two things together I think are a powerful combination. Just having leveraged rates, without a convenient opportunity to recycle, won't work very well."

Due to the success of its PAYT, recycling, and yard trimmings programs — leading to a recycling rate of 50 percent — Olympia switched from weekly to biweekly trash collection in September, 1998, explaining that there was not enough volume to justify weekly collection. (See "Containing Collection Costs," December, 1997.) The city collects MSW one week and recy-

clables and yard trimmings the next, using the same crew and trucks — 32-cubic yard, vertically split, front-loading collection vehicles.

Peter Guttchen, program manager with Olympia, says it was the yard trimmings program that allowed the city to move to biweekly trash collection. Yard trimmings are collected in 95-gallon carts. "Since we added the yard waste service, there's not enough trash out there every week anymore for us to collect it efficiently," he explains. "Between 20 and 25 percent of the total material we collect on the residential side is collected for composting."

Sixty-five gallon carts were distributed for the biweekly trash collection program. Customers staying on the weekly service get smaller (35-gallon) carts. According to Guttchen, the city was surprised by how few people elected to stay with the weekly service — less than 150 of 11,700 customers. Another 10 percent elected to cut their service in half again to biweekly collection of a 35-gallon cart. Finally, about 2,000 households receive the "Waste Wise Rate," which costs just \$4.60/month for biweekly collection of one 20-gallon cart. Guttchen says this option is particularly helpful for seniors and others who generate less waste.

In addition to choosing from the

above trash collection options, Olympia residents can subscribe to the city's recycling program, which collects everything from mail to aerosol cans. Residents are given 64-gallon carts divided down the middle with room for paper on one side and commingled containers on the other. Using semiautomated collection, the split carts are mounted on a middle tipper and hydraulically lifted, with paper falling to one side of the truck and cans and bottles to the other. (For trash collection, the crew alternates using the right and left tippers so the truck is loaded evenly). In addition, there are special recycling days each spring where the city offers collection service for scrap metal, tires, large quantities of cardboard, and porcelain (mostly toilets). All customers subscribing to the recycling program, except those receiving the Waste Wise service, receive a discount on their trash rate.

Guttchen believes the city's greatest accomplishment has been getting citizens' support and cooperation. "From our perspective, the challenge is not coming up with a creative way to make our service more efficient or with making great strides in recycling," he explains. "What we're most proud of is how we brought the community along to accept these changes."

requirements. We've gone through the evolution and we're up and running." With the volume-based system, Freiburger was able to invest in a 50-50 side-loading split (dual collection) compaction truck. Commingled recyclables are collected in one side of the truck and MSW in the other.

## CONVENIENT RECYCLING OPPORTUNITIES

Combining convenient recycling access (and heavy promotion) with PAYT price signals generally induces the public to dispose less and compost and recycle more. In fact, communities can use rate structure design — the process of determining the appropriate price to charge residents for each unit of garbage collected — to catalyze recycling. For instance, some communities charge twice as much for the second can of garbage and offer essentially "free" recycling services. By widening the gap between recycling and trash disposal costs, the public receives a strong message to dispose less. For price signals to work, however, they need to be combined with source reduction and recycling options, e.g. educating residents about backyard composting and grasscycling.

In Dover, offering curbside collection of a wide range of materials and making it convenient — has helped the city reach a 56 percent residential recycling rate. Residents throw all recyclables except paper, which is kept separate, into one bin. According to Pratt, the user fee provided the inspiration for the high recycling rate. "When a resident goes to buy a bag, they're paying \$11 for 10 (30-gallon) bags, so it hits them right in the pocket book," he says. "If it was strictly a voluntary, tax-funded program, I can't imagine that we'd see any more than 20 to 30 percent [recycling]."

In Gainesville, Hiney explains that the city had a successful recycling program before it switched to PAYT, diverting about 30 percent from disposal. Still, when PAYT was implemented in 1994, there was nearly a 100 percent increase in recyclables collected. "We went from about 3,000 tons to under 6,000 tons," he notes. The recycling rate in Gainesville is now 38 percent.

Portland revamped its trash collection service in 1992 to respond to public demand for increased recycling. Volume-based rates, weekly curbside recycling of a wide range of materials, and biweekly yard trim-

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# MASSACHUSETTS PROMOTES PAYT TO REACH 46 PERCENT RECYCLING GOAL

**M**ASSACHUSETTS is among an increasing number of states promoting Pay as You Throw programs to boost recycling rates. The state got behind PAYT when it saw the results from communities like Worcester and Seekonk. In Worcester (pop. 170,000) annual waste management costs decreased by \$1.2 million and the recycling rate went from three to 36 percent immediately after PAYT was launched in conjunction with curbside recycling. Providing free bulky waste collection helped Worcester decrease illegal dumping and sell the PAYT program. For Seekonk (pop. 14,000), implementation of PAYT resulted in a 20 percent reduction in waste disposal and a 35 percent recycling rate (or an average household reduction of one pound/day).

The Massachusetts Department of Environmental Protection (DEP) is counting on PAYT to help it reach a 46 percent recycling goal by 2000. (The state's recycling rate for 1996 was 33 percent). "Of the 80 communities with full-fledged programs [out of 351 total municipalities], over 75 percent received an 'A' on their recycling report card," says Joseph Lambert, recycling solid waste planner and project manager

for the unit-based pricing program within the DEP. To earn an A, communities must achieve a recycling rate of 30 percent or greater.

The *Massachusetts Solid Waste Master Plan: 1997 Update* notes that "the greatest single stimulus to increasing residential recycling is the adoption of unit-based pricing systems." The plan concludes that recycling rates in PAYT communities are much higher than the overall statewide results, in which less than 50 percent of the municipalities received an "A." The DEP and the state Executive Office of Environmental Affairs are strenuously encouraging PAYT over the next three years. The goal is to have 40 percent of the municipalities, or 140, with unit-based pricing programs in place by 2000. "If the 50 largest municipalities in Massachusetts, which represent over 50 percent of the state's population, all implement unit-based pricing, the statewide recycling rate will jump to nearly 37 percent," says Lambert. If all 351 municipalities adopted unit-based pricing, the recycling rate would grow to 39 percent.

Since the DEP sees curbside recycling as critical to the success of PAYT, the state is urging communities

to offer curbside access to both recycling and trash collection. Lambert refers to this as parallel access. "You get the most out of the PAYT program if it's curbside/curbside [collection]," he says. Along with parallel access, Lambert believes communities need to focus on taking the first step toward PAYT by establishing a limit on how much residents can discard. The DEP is suggesting that communities to at least set a limit, as a sort of pre-PAYT step, instead of allowing residents unlimited disposal. The state is developing recommendations for towns to use in determining formulas for setting trash limits.

Massachusetts promotes unit-based pricing through its grants, technical assistance, and certification programs. Under the Municipal Recycling Incentive Program (MRIP), performance-based grants given to municipalities reflect a strong preference for PAYT. In addition, the state awards grants to new PAYT programs for the purchase and distribution of bags and stickers. The state also has a mentoring service for people requesting information and has published *Pay-As-You-Throw: An Implementation Guide for Solid Waste Unit-Based Pricing Programs*.

**"When a resident goes to buy a bag, they're paying \$11 for 10 (30-gallon) bags, so it hits them right in the pocket book," says Jeff Pratt of Dover, New Hampshire. "If it was strictly a voluntary, tax-funded program, I can't imagine that we'd see any more than 20 to 30 percent [recycling]."**

tings collection are included in the program. Portland had an estimated residential recycling rate of 46 to 48 percent in 1996. According to Walker, the city is diverting 279 pounds of yard trimmings and 599 pounds of other recyclables from the waste stream per household annually, not counting the bottles and cans recycled through the state's bottle deposit program. By providing this combination of services, Portland was able to reduce waste disposal significantly, to just 1,468 pounds/household on average.

In San Jose, California (pop. 850,000), the residential recycling rate went from 28 to 43 percent in the first year of its PAYT program. That rate is now 55 percent, according to Ellen Ryan, the city's program manager. San Jose contracts with two private companies to provide residential trash, recycling, and yard trimmings collection services to 186,000 single family dwellings and 79,000 multifamily units. More than 24 different categories of materials are recycled.

Fitchburg, Wisconsin (pop. 18,156) credits its 55 percent residential recycling rate to a combination of PAYT, weekly collection of recyclables, monthly collection of reusable items, yard trimmings dropoff,

and compost bin promotions. "After we began [PAYT], the amount of waste disposed dropped roughly 10 percent," said Kevin Wunder, project manager for the city.

## GAINING PUBLIC SUPPORT

In general, the public resists switching to PAYT initially. Fears about illegal dumping, about having to pay for a previously "free" service, and just plain resistance to change create some barriers to implementation. To overcome these hurdles, many communities stress the need to achieve a sense of community ownership in the program, doing everything from holding public meetings to securing the support of local newspapers. Ultimately, combining public input with an aggressive outreach campaign helps to set the groundwork for widespread acceptance of PAYT.

In San Jose, for example, *Recycle Plus*, a comprehensive public education campaign, was developed to explain the new PAYT program to single family households. The public also was involved in the design of the program through questionnaires, community meetings and pilot projects. To get feedback on the program, the city conducts an annual public opinion survey. "Overall, residents are very pleased," says Ryan. "We have a

number of questions that we ask every year [about the solid waste program] and then we ask more detailed questions about areas that we are looking to tweak and improve." The results provide good data for internal planning. For example, when asked if they wanted containerized yard trimmings collection, residents said yes, but they were not willing to pay for it. As a result, San Jose opted to continue with its loose yard trimmings collection program.

In Mount Vernon, officials credit the success of the PAYT program to several factors: the initial involvement of a large number of residents; an effective education campaign; expanded recycling opportunities; and a cooperative recycling and refuse vendor. Mount Vernon had some problems with public acceptance at first, but then people readjusted. "You get some grumbling about the cost, but they understand the reasons why," explains Freiburger. He also notes that acceptance of the program is due in part to publicity surrounding the need for a new landfill. "The county is trying to site a new landfill in this area, and nobody wants it," he notes. This has helped increase participation in the PAYT program.

Dover built public acceptance by informing commercial customers about the pending switch to PAYT first, then announcing it to the residential sector. The city inundated people with information, including going out into the community and talking to residents. "We designed the program in 1989, hired someone to start a grass roots educational campaign in 1990, and launched the program in 1991," says Pratt. Several public meetings were held, but only 100 people showed up because people accepted the PAYT program, she adds. In addition, the city worked with residents early on, so the PAYT program did not come as a surprise. Special emphasis was placed on working with senior citizens and people who would have physical problems with the new carts to find ways to accommodate their needs.

To combat illegal dumping, staff worked with the police department to prepare officers for increased offenses, although this turned out not to be an issue. To help low income families, the city worked with federal, state and local agencies to create a special allowance in welfare checks for the purchase of PAYT bags. The local newspaper also supported the PAYT program, which Pratt believes went a long way to gaining the public's support. "If the public doesn't accept what you are doing, it will get stalled, delayed, or never happen at all," he says. ■

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*Janice Canterbury is with the U.S. Environmental Protection Agency's Office of Solid Waste. The EPA has a "Pay-As-You-Throw Tool Kit" that includes detailed guidebooks, an extensive workbook, and a videotape designed to help solid waste decision makers learn more about PAYT and plan and implement a program. For more information, contact the PAYT Helpline at 888 EPA-PAYT (372-7298). <[www.epa.gov/payt](http://www.epa.gov/payt)>.*