

US EPA ARCHIVE DOCUMENT

Pay-As-You-Throw Workbook:
A Supplement to
EPA'S Pay-As-You-Throw Guidebook (530-R-96-004)



Pay-As-You-Throw Presentation Agenda

Welcome and Introductions

Overhead Presentation

- Introduction to pay-as-you-throw: will it work in our community?
- Planning for pay-as-you-throw and educating residents
- Designing a successful program
- Implementing and monitoring pay-as-you-throw

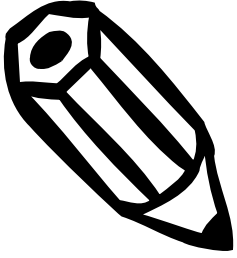
Questions and Answers

Pay-As-You-Throw Worksheet Handouts

- Goals
- Barriers
- Public outreach
- Container and pricing options

Next Steps

Adjourn



Survey of Attendees

Thanks for accepting the invitation to attend the upcoming presentation on our proposed pay-as-you-throw program. To help focus the presentation on the most important issues, please take a few minutes to respond to the following questions. Please return this form to the presentation organizers when you are done.

Your name: _____

Title/position: _____

How familiar are you with pay-as-you-throw?

- Very familiar
- Somewhat familiar with the concept and how pay-as-you-throw works
- Have read about/been exposed to a small amount of pay-as-you-throw information
- Unfamiliar with pay-as-you-throw

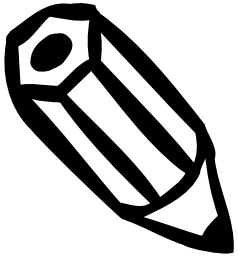
What do you think are the most important advantages of a pay-as-you-throw program for our community? (Rank the following on a scale of 1 to 3, with 3 indicating the most important advantages.)

- _____ Reduced waste generation amounts
- _____ Reduced waste collection and disposal costs
- _____ Greater recycling rates
- _____ Greater equity for residents (residents pay only for the waste they generate)
- _____ Increased environmental awareness among residents
- _____ Other _____
- _____

What do you think are the most significant perceived barriers to a pay-as-you-throw program in our community? (Rank the following on a scale of 1 to 3, with 3 indicating the most significant perceived barriers.)

- _____ Enforcement issues (illegal dumping, burning of waste)
 - _____ Potential for uneven cash flow
 - _____ Perception of increased costs to residents
 - _____ Implementation in multi-family housing
 - _____ High administrative costs
 - _____ Extending pay-as-you-throw to residents with special needs
 - _____ Building public consensus
 - _____ Other _____
-

What specific pay-as-you-throw topics or questions do you want to see raised at the presentation?



Evaluation Form

Thank you for coming to this pay-as-you-throw presentation. We appreciate your attendance and participation, and would like your feedback. Please take a minute to complete the following evaluation, identifying the presentation's strong points as well as the points that warrant more attention. This information will help us improve future presentations. It also will help us learn if we need to provide more information about pay-as-you-throw or answer any additional questions. When you are done, please return this form to the presentation organizers.

Please rate your response to the following questions on a scale of 1 to 5.

1: Poor 2: Fair 3: Good 4: Very good 5: Excellent

1. Overall, how would you rate the quality of the presentation?

1 2 3 4 5

Comments:

2. How would you rate the presentation format?

1 2 3 4 5

Comments:

3. How would you rate the presentation style of the speaker(s)?

1 2 3 4 5

Comments:

4. How would you rate the handouts/presentation materials?

1 2 3 4 5

Comments:

5. Did the presentation meet your goals and expectations?

1 2 3 4 5

Comments:

6. How well were your concerns or questions about pay-as-you-throw addressed?

1 2 3 4 5

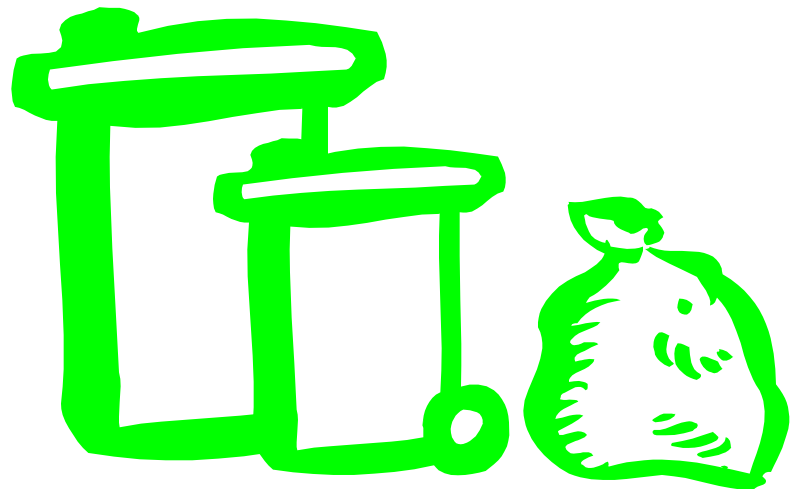
Comments:

7. What other topics or areas of discussion would you like to see addressed?

8. Please list any other questions or comments about pay-as-you-throw or the presentation.

“Pay-As-You-Throw”

Unit Pricing of Municipal Solid Waste



MSW Hierarchy Pyramid



Potential Benefits

■ Encourages the Three Rs:

- Reduce
- Reuse
- Recycle





Potential Benefits

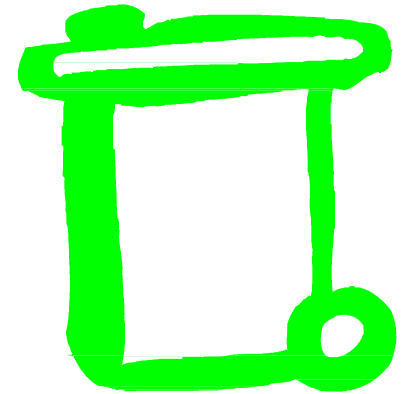
■ Encourages the Three Es:

- Environment
- Economics
- Equity



Waste Reduction Results

■ Perkasie, PA	54%
■ MN Town 1	60%
■ MN Town 2	37%
■ Duke University Study of 14 cities	44%

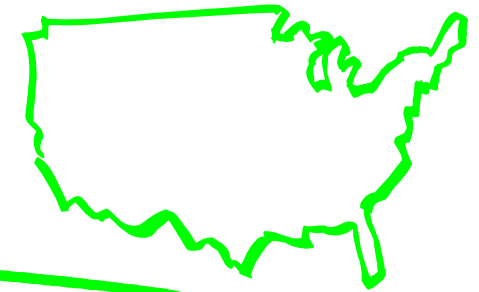


6 MA Cities

■ Before Unit Pricing	1.5 - 4.5 ppd
■ After Unit Pricing	0.89 - 1.09 ppd

■ Cornell University, Tompkins County, NY	76% of residents reduced waste
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Different Unit Pricing Programs



Community	Population	Type of Program	Change in MSW	Change in recycling
■ Plantation, FL	64,000	Bags	*	+21%
■ Perkasio, PA	7,900	Bags	-54%	+50%
■ High Bridge, NY	4,000	Stickers	*	+18%
■ Illion, NY	9,500	Bags	-51%	+41%
■ Pasadena, CA	119,374	Can	-21%	*
■ Loveland, CO	31,000	Stamp	-62%	*
■ Austin, TX	450,000	Can	-40%	*
■ Dupage County, IL	668,000	Bags	-53%	*

* Data not available

Deciding Whether to Use Pay-As-You-Throw

- **Will the program meet our MSW goals?**
- **Will residents support the program?**
- **Will costs and revenues balance?**



Pay-As-You-Throw Goals (Examples)



- **Raise sufficient revenues**
- **Encourage MSW reduction through price signals**
- **Convey a better understanding of social costs to citizens**
- **Charge for recycling and other complementary programs**
- **Allow for the needs of special groups**
- **Keep the program simple to use and run**

Education and Outreach

- **Need the support of residents!**
- **Build consensus with an outreach campaign**
- **Citizens' advisory council can help:**
 - **Set goals**
 - **Build consensus**





Building Consensus



- **Explain current MSW issues**
- **Present community's MSW goals**
- **Explain how Pay-As-You-Throw can meet these goals**
- **Residents more likely to support program when they see tangible benefits**

Techniques for Building Consensus



- **Hold public meetings**
- **Issue press releases/outreach to local media**
- **Prepare briefs for elected officials**
- **Work with retailers**
- **Enclose information with utility bills/other mailings to residents**



Rate Structure Container Options

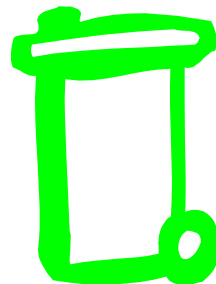
■ **Tags**



■ **Bags**



■ **Cans**





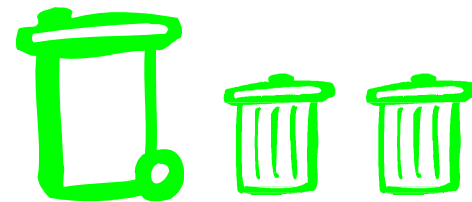


Rate Structure Systems for Unit Pricing

■ **Proportional
(linear)**



■ **Variable
Container**



■ **Two-tiered/
Multi-tiered**



Complementary Programs

- **Recycling collections**
- **Yard trimmings collections for composting**
- **Bulky items pickups**



Designing a Rate Structure

■ Costs

- **Estimate Demand:**
_____ cubic yards/tons MSW
- **Determine Services**
(curbside recycling, low-income assistance, etc.)
- **Estimate Costs:**
\$ _____ fixed and variable costs



Designing a Rate Structure

■ Revenues

- Develop Rates: \$ _____ per unit

- Calculate Revenues:

_____ units MSW x \$ _____ per unit = \$ _____



Designing a Rate Structure

■ Balance

- Weigh costs against revenues
- Adjust costs and/or revenues as needed



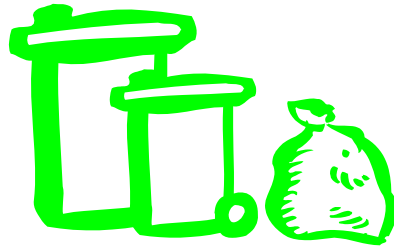


Challenges and Solutions

- | | |
|---|---|
| ■ Illegal dumping | Education, legal diversions, enforcement |
| ■ Multi-family housing | Include charges in rent, bar code chutes |
| ■ Low-income groups | Rebates, discounts |
| ■ Covering costs & revenue stability | Two-tiered billing |
| ■ Regressivity & hidden tax issues | Appropriate pricing and refunds |

“Pay-As-You-Throw”

Unit Pricing of Municipal Solid Waste



Pay-as-you-throw programs are incentive-based strategies for reducing the amount of MSW community residents generate.

This briefing will include an introduction to pay-as-you-throw and a discussion of how it can help our community better manage MSW.

We also will talk about how to design and implement a program that will succeed in our community. Many of these strategies have been learned from communities that have implemented programs of their own.

MSW Hierarchy Pyramid



Maintaining control over solid waste in the long term depends on emphasizing waste reduction.

Landfilling and combustion, while necessary, are the least desirable management methods. They occupy the bottom of the hierarchy.

Recycling, which reduces the amount of waste we have to dispose of, is preferable.

Waste prevention, which prevents materials from becoming waste in the first place, is at the top of the hierarchy.

Potential Benefits

■ Encourages the Three Rs:

- Reduce
- Reuse
- Recycle



Pay-as-you-throw directly supports waste prevention and recycling. Because residents pay for whatever they throw out, they tend to work harder to reduce, reuse, and recycle.



Because of this “pocketbook” motivation, it is likely that pay-as-you-throw will result in less total waste our community has to dispose of. Increased recycling rates will be a major factor in this.

In addition, when markets for collected materials are strong, greater recycling rates offer the potential for increased revenues from the sale of these materials.

Potential Benefits

■ Encourages the Three Es:

- Environment
- Economics
- Equity



The increased reducing, reusing, and recycling leads to further benefits, called the Three Es.

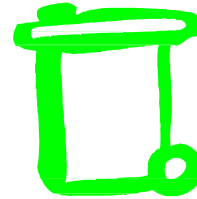
Environment: Less waste means less landfill space is needed. In addition, reduced need for manufacturing goods can result in less pollution.

Economics: For the municipality, less waste means lower collection and disposal costs. For residents, they control their costs. If they throw away less, they will pay less.

Equity: Waste management costs money, but now the costs are spread more fairly. Those residents that generate large amounts of waste will have to take financial responsibility for it.

Waste Reduction Results

■ Perkasio, PA	54%
■ MN Town 1	60%
■ MN Town 2	37%
■ Duke University Study of 14 cities	44%



6 MA Cities

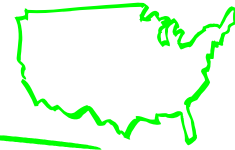
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■ Cornell University, Tompkins County, NY	76% of residents reduced waste
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What does the evidence show? In virtually every case, communities with pay-as-you-throw report that waste generation declined. Here are some examples.

The average waste reduction reported by pay-as-you-throw communities is between 25 and 45 percent. (Results may vary, depending on such factors as current waste collection systems and options chosen for pay-as-you-throw.)

Different Unit Pricing Programs



Community	Population	Type of Program	Change in MSW	Change in recycling
■ Plantation, FL	64,000	Bags	*	+21%
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■ Dupage County, IL	668,000	Bags	-53%	*

* Data not available

Those communities with existing recycling programs also show significant increases in the amount recycled.

Studies also show that waste prevention and recycling amounts increased in all the reporting communities, regardless of size or geographic location.

Deciding Whether to Use Pay-As-You-Throw

- Will the program meet our MSW goals?
- Will residents support the program?
- Will costs and revenues balance?



Ultimately our community has to decide about pay-as-you-throw based on three issues:

Will it meet our MSW goals? We need to compare the potential advantages of pay-as-you-throw to our MSW goals and make a judgment about whether the program will bring us closer to meeting these goals.

Will residents support it? They most likely will, if the program is well-designed and we reach out to educate them about pay-as-you-throw.

Will costs and revenues balance? The only way to determine this is to perform some detailed rate design work and evaluate the results.

Pay-As-You-Throw Goals (Examples)



- **Raise sufficient revenues**
- **Encourage MSW reduction through price signals**
- **Convey a better understanding of social costs to citizens**
- **Charge for recycling and other complementary programs**
- **Allow for the needs of special groups**
- **Keep the program simple to use and run**

Pay-as-you-throw programs can help a community meet a number of important goals. These are just a few examples.

Our goals include:

[List your community's MSW goals; discuss how well pay-as-you-throw will meet them]

Education and Outreach

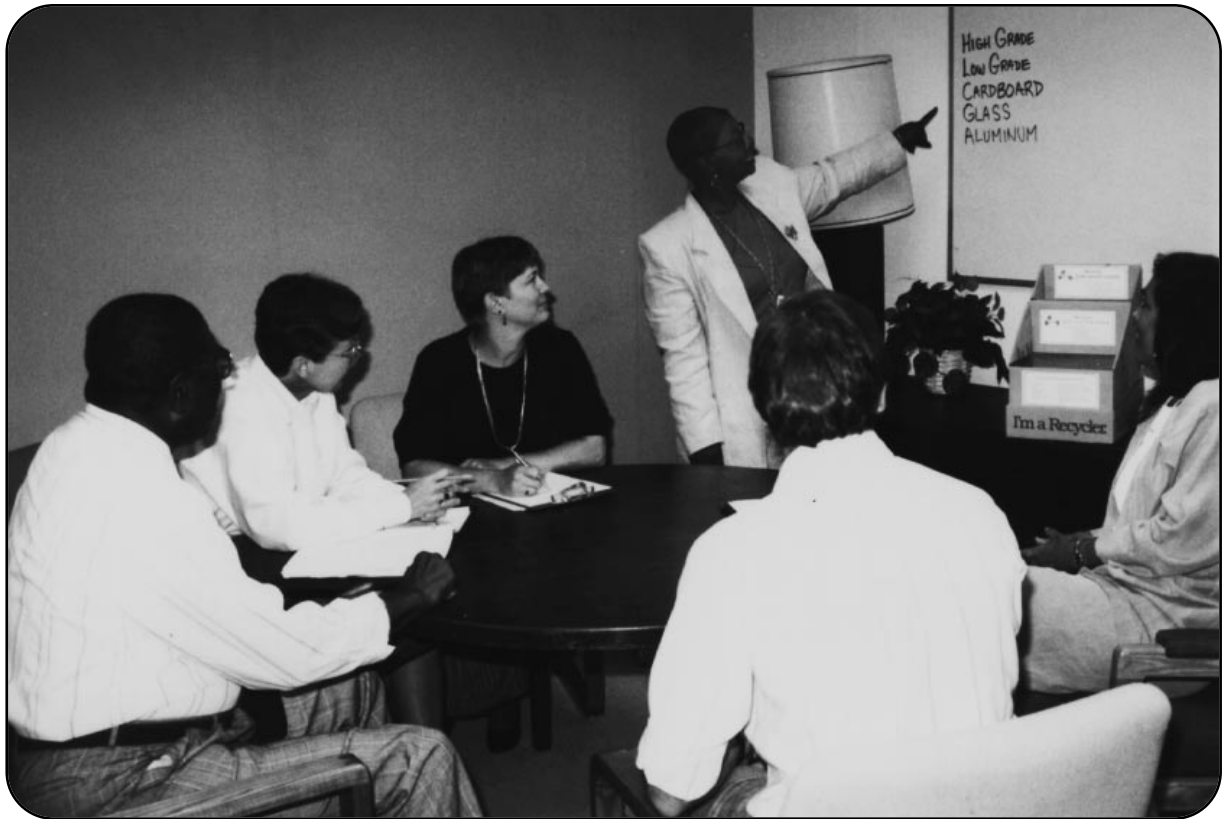
- **Need the support of residents!**
- **Build consensus with an outreach campaign**
- **Citizens' advisory council can help:**
 - **Set goals**
 - **Build consensus**



If we decide to go with pay-as-you-throw, we must earn the support of residents. A key lesson from communities with pay-as-you-throw is that such programs will not succeed without residents' approval.

To achieve this, the first step will be to initiate an outreach campaign. One goal of the campaign is to inform residents about why the new program is needed.

A second goal of the campaign is to involve residents in the actual planning for the program. Setting up a citizens' advisory council that includes civic leaders and other residents can help accomplish this.



The citizens' advisory council can assist in developing goals and in finding ways to reach out to the community about the new program. The council also can provide input on important decisions about how the program will be structured.

Building Consensus



- **Explain current MSW issues**
- **Present community's MSW goals**
- **Explain how Pay-As-You-Throw can meet these goals**
- **Residents more likely to support program when they see tangible benefits**

It is possible there may be some initial opposition to the program, since residents are going to be asked to pay for a service they may think they had been getting for free.

To overcome this, our outreach campaign could first discuss the problem. For example, we can let residents know that the increasing amount of trash is making MSW management harder and more expensive.

Then, we could relate these issues as goals. For example, we could say that a primary goal is to reduce MSW amounts.

Finally, our campaign should explain pay-as-you-throw and discuss how it can help us reduce trash and achieve other goals as well.

Techniques for Building Consensus



- **Hold public meetings**
- **Issue press releases/outreach to local media**
- **Prepare briefs for elected officials**
- **Work with retailers**
- **Enclose information with utility bills/other mailings to residents**

There are many different ways to structure the outreach campaign. Presentations could be made at public meetings on pay-as-you-throw and why it can help.

Involving local news outlets via press releases and invitations to public meetings is important. Achieving positive press coverage could go a long way toward easing residents' concerns.

Briefings for elected officials can help them better explain the program in public appearances.

Retailers can be educated about the program and also can display materials about it in their stores. Direct outreach to residents through mailings can be effective as well.



Another effective method of generating public support is to reach out to specific groups, such as the elderly or school children.

Children in particular are an important audience. Children tend to bring the messages they receive back home to their parents, which can help pay-as-you-throw gain acceptance community-wide.

Rate Structure Container Options

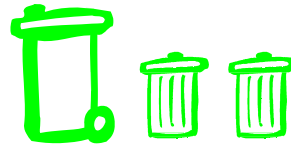
■ Tags



■ Bags



■ Cans



The next step is to design the structure of the program.

Some programs sell tags or stickers to residents to affix to their own bags. Under this system, the price of the tag or sticker includes the collection and management costs for the trash. The tag often indicates a specific size container, and alerts collection crews that the waste has been paid for.

Bags with some type of distinctive marking or color can be sold to residents at retail outlets or municipal offices. The price of the bag includes the collection and management costs for the trash.

Cans also can be used. One option is to offer a large can, and bill residents for the number of cans they fill up. Smaller size cans also could be used for any waste beyond the first large container.



Bag and tag systems tend to allow for faster collection, and no billing is needed. Residents tend to find these systems easy to understand.

There can be some revenue uncertainty, however, since residents may buy bunches of bags or tags at hard-to-predict intervals.



Can systems tend to offer greater revenue stability, and won't tear or scatter trash. Cans also often are compatible with automatic collection equipment.

A system for billing residents for their can set-outs is needed, however, which can increase administrative costs.

Rate Structure Systems for Unit Pricing

■ Proportional (linear)



■ Variable Container



■ Two-tiered/ Multi-tiered

The next step is to decide how to price the containers.

Under proportional systems, a flat price is charged for each container. This provides a very simple, clear signal to residents to reduce waste, and it is easy to administer.

The variable rate is used when different size containers are available. One price is used for the large container, and different prices are set for the smaller containers residents might use.

Because revenues may fluctuate with linear and variable rate systems, some communities use two-tiered or multi-tiered systems. These options establish a monthly flat fee to cover the fixed costs of MSW management. Then, a per-container charge is set on top of that. This lessens the waste reduction signal somewhat, but minimizes any revenue uncertainty.



Because residents have an incentive to reduce waste, it makes sense to offer additional avenues to accomplish this. These options are called complementary programs.

For example, nearly all communities with pay-as-you-throw include curbside recycling collections. Recycling enables residents to divert a large percentage of the waste they have generated.

Complementary Programs

- **Recycling collections**
- **Yard trimmings collections for composting**
- **Bulky items pickups**



Yard trimmings, which comprise a large percentage of the waste stream, also can be diverted through curbside collection or by encouraging backyard composting.

Bulky items will need to be planned for. Because they cost more to collect and dispose of, many communities have established a special fee system for “white goods” or bulky items using tags or stickers. Residents often are asked to put a set number of tags or stickers on these large waste items to indicate that their collection has been paid for.

Designing a Rate Structure

■ Costs

- Estimate Demand:
_____ cubic yards/tons MSW
- Determine Services
(curbside recycling, low-income assistance, etc.)
- Estimate Costs:
\$ _____ fixed and variable costs



After making the basic decisions about the program, the next step is to create a rate structure that balances costs and revenues.

The first step is estimating the demand for services, expressed as the amount of waste you expect to collect annually. This figure should take into account possible changes in the size of our community and the waste reduction impact of the new program.

The next step is determining the services that will be offered with the program. These services might include curbside recycling, a composting program, bulky waste collection, or assistance to low- or fixed-income residents.

Next, the cost of collecting the estimated amount of waste and providing the planned services needs to be calculated.

Designing a Rate Structure

■ Revenues

- Develop Rates: \$ _____ per unit

- Calculate Revenues:

_____ units MSW x \$ _____ per unit = \$ _____



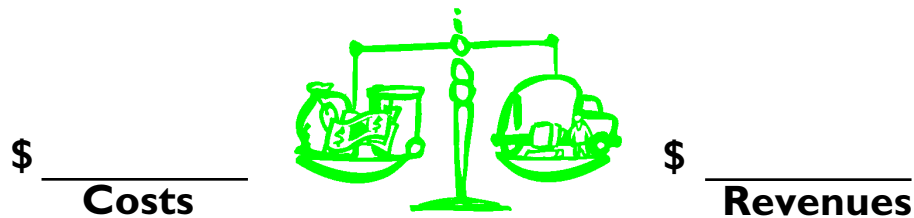
Revenues then need to be calculated.

First, an estimated fee per container should be established. Then, this rate is multiplied by the annual number of containers residents are expected to fill. These are the revenues that the program will generate.

Designing a Rate Structure

■ Balance

- Weigh costs against revenues
- Adjust costs and/or revenues as needed



Now the expected costs and the projected revenues can be compared and balanced.

It is likely that adjustments will be needed. It may be necessary to cut back on some services or raise the per-container fee to cover a shortfall.

On the other hand, if a surplus is projected, then the container fee could be lowered. A lower price also might help convince residents to support the program.



Challenges and Solutions

■ Illegal dumping	Education, legal diversions, enforcement
■ Multi-family housing	Include charges in rent, bar code chutes
■ Low-income groups	Rebates, discounts
■ Covering costs & revenue stability	Two-tiered billing
■ Regressivity & hidden tax issues	Appropriate pricing and refunds

There are a number of potential barriers we need to consider. With the appropriate planning, these barriers can be overcome.

The most commonly voiced concern when pay-as-you-throw is proposed is illegal dumping. However, experience from communities with pay-as-you-throw has shown that illegal dumping typically is less of an issue than originally feared. The key is educating residents to keep them from dumping their waste and provide them with significant opportunities (such as recycling and composting) to divert their waste legally. Strong enforcement also should be available.

Residents in multi-family housing can be difficult to service, since they often place their trash in common dumpsters. Possible solutions include adding the charges to rent or incorporating bar code readers in garbage chutes to monitor waste generation by residents.

To help low-income groups participate, rebates, discounts, or other forms of assistance can be provided.

(Challenges and Solutions, continued)

If it turns out that a major priority is to ensure that revenues will consistently cover costs, a two-tiered or multi-tiered rate structure can be used.

Residents also might be concerned about being taxed for solid waste services and then, under the new program, also being charged the variable fee. Making a point of lowering taxes by the appropriate amount or redirecting those revenues to other programs that residents support can help diffuse this issue.

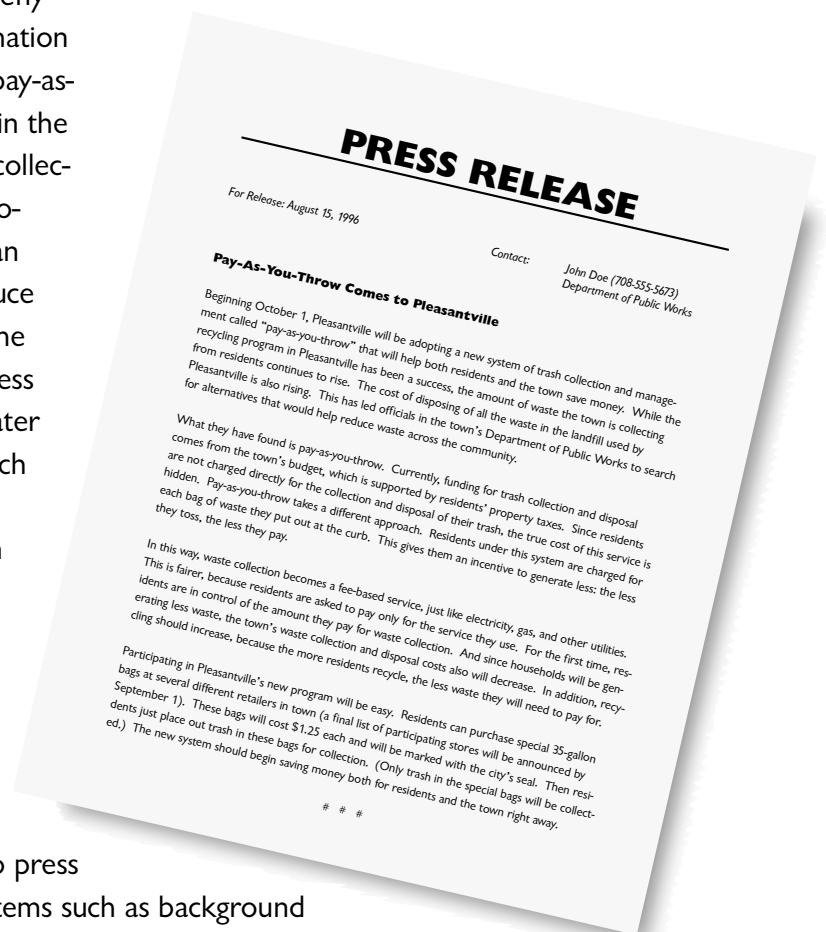
Press Releases

As you begin to develop and publicize your pay-as-you-throw program, coverage by local radio and print media outlets is likely. For MSW planners, this should be considered a public outreach opportunity. At this point, you can provide local reporters, editors, and other news professionals covering your community with the key facts concerning pay-as-you-throw. This will help ensure that they understand the issues surrounding solid waste management in your municipality and why local officials are considering a pay-as-you-throw program—before they begin to develop their stories.

The most common way to accomplish this is to develop and submit press releases to local media outlets.

The press release should briefly describe the essential information about your program: what pay-as-you-throw is, why a change in the way residents pay for trash collection and disposal is being proposed, and how residents can participate—and, if they reduce waste, save money—under the new program. Additional press releases can be developed later to announce other news, such as town meetings on pay-as-you-throw or any changes in the program.

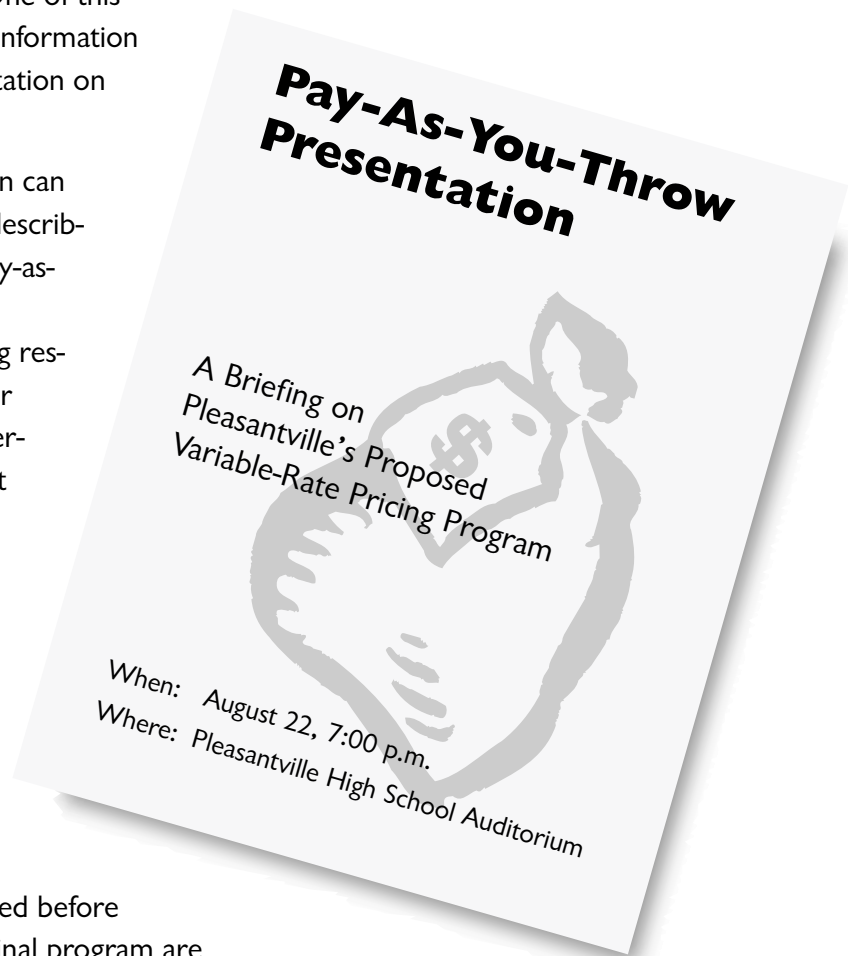
You might also consider other ways to provide information to the local media, including developing more comprehensive press kits (in addition to press releases, these can include items such as background reports and newsclippings from other pay-as-you-throw communities in your county or state) and conducting news conferences or briefings for residents about your program.



Public Meetings

Town meetings and other public gatherings offer a good opportunity to introduce residents to pay-as-you-throw, discuss how it can help the community, and answer any questions that people might have. If you are planning such a presentation, you might want to develop an invitation flyer to promote the event. (See Section One of this workbook for more information on planning a presentation on pay-as-you-throw.)

The meeting invitation can include information describing the concept of pay-as-you-throw and its advantages and letting residents know that their community is considering such a program. It also can indicate that the meeting is being called not only to present the proposed program but to hear what residents think—emphasizing that this input will be seriously considered before decisions about the final program are made. Be sure to include space on the invitation to list the date, time, and location of the meeting, and invite residents to come ask questions and learn about the program.



Newsletters

Many communities planning for pay-as-you-throw have developed newsletters to publicize their program. Creating and distributing a small (two- or four-page) monthly, bimonthly, or quarterly newsletter offers a chance to provide more information about your program than you are likely to get in the media. Newsletters also allow you to provide periodic updates as the program is developed—in many communities, the newsletter is launched well before program implementation—and help ensure that all residents are thoroughly aware of the program. You also can provide ongoing information about your program directly to the specific stakeholders you want to target.

Your newsletter can be used to introduce residents to pay-as-you-throw and clearly describe how the program can help both residents and the municipality to reduce waste and save money. You also can use the newsletter to ask residents

for their input and provide them with information about how to participate

before and during implementation. To effectively reach your audience, be sure to write the newsletter

articles in clear, everyday language. In addition, residents will be more likely to pick up and read a visually

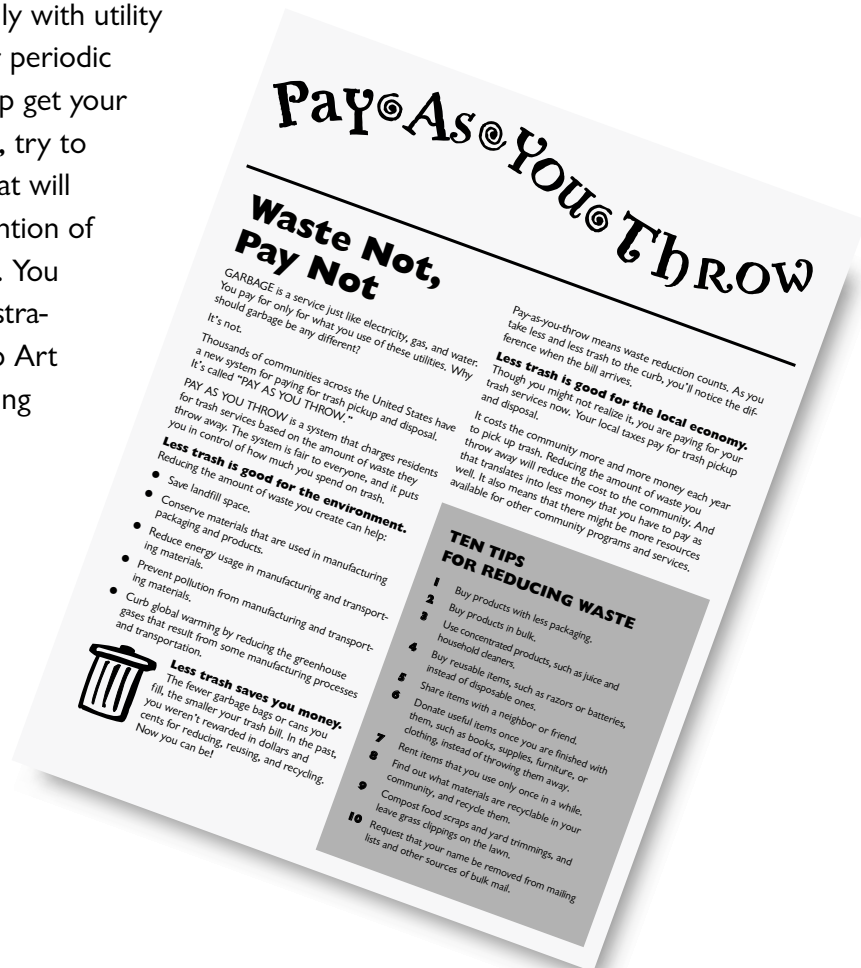
attractive newsletter. Refer to the Clip Art section, beginning on page 111 of this workbook, for a set of illustrations and mastheads that you can use when creating your newsletter.



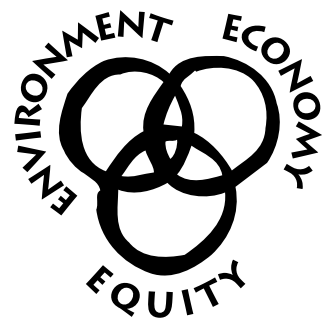
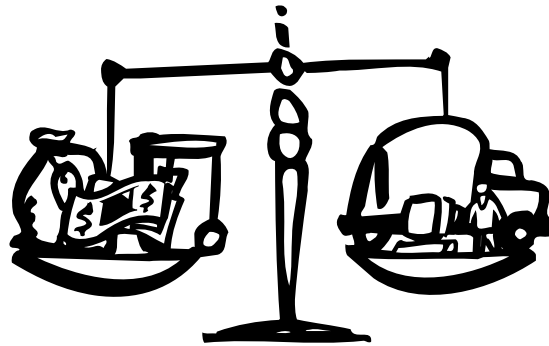
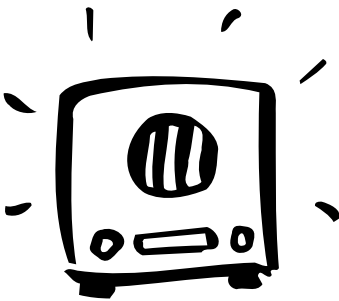
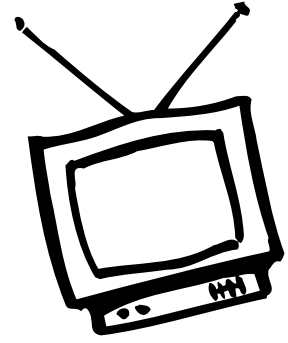
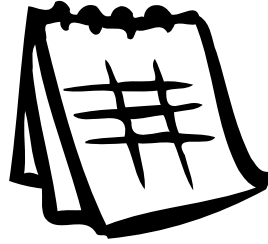
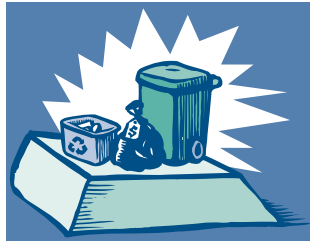
Flyers and Brochures

Flyers and brochures are another way to provide pay-as-you-throw program information directly to households in your community. You can create a general flyer to introduce residents to pay-as-you-throw and its advantages or develop more specific versions that each focus on one particular aspect of your program (for example, procedures for purchasing bags or tips on how residents can reduce waste). Like newsletters, flyers and brochures can be used to deliver specific ideas about pay-as-you-throw to target audiences within your community.

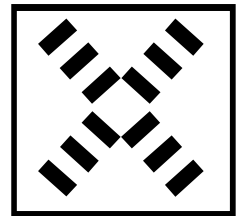
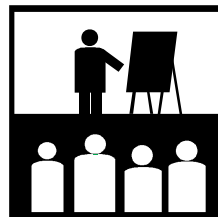
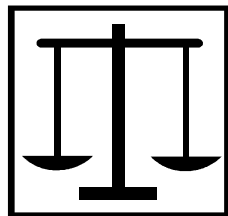
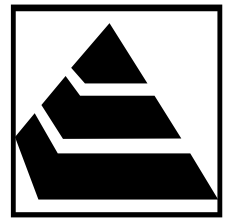
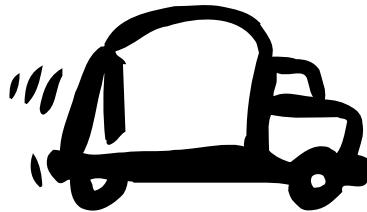
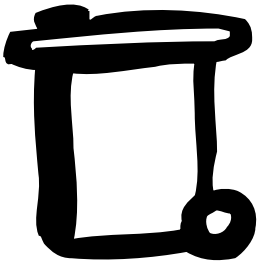
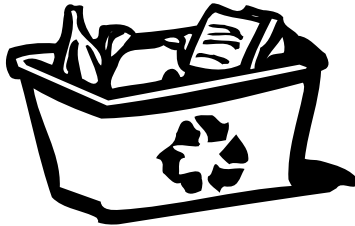
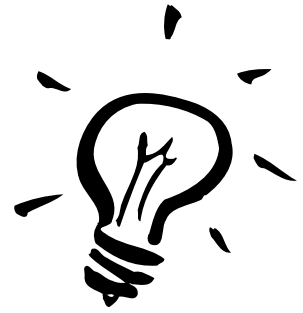
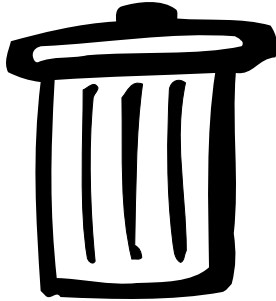
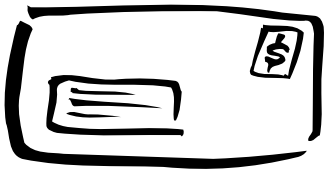
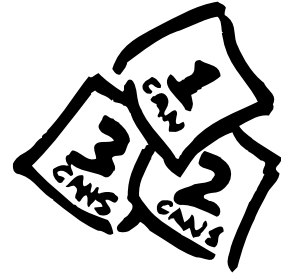
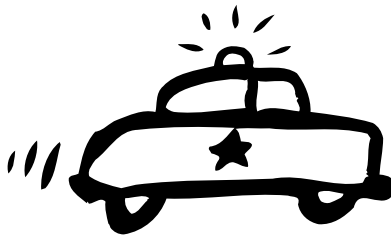
An advantage to flyers and brochures is that they can be distributed through a number of different channels. They can be posted around town to advertise an upcoming pay-as-you-throw meeting or event, placed in stores and municipal offices, or direct mailed to residents individually with utility bills or in other periodic mailings. To help get your message across, try to design flyers that will attract the attention of your audiences. You can use the illustrations in the Clip Art section, beginning on page 111 of this workbook, to help create and assemble effective fact sheet designs.



Pay-As-You-Throw Clip Art



Pay-As-You-Throw Clip Art



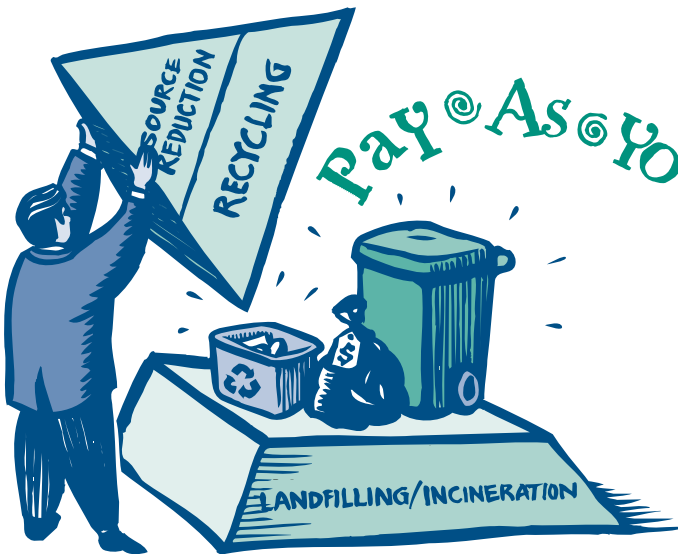


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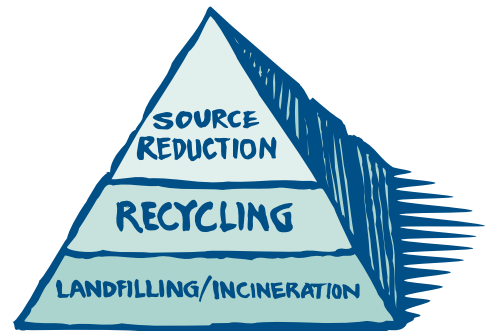
Save As You Reduce and Recycle



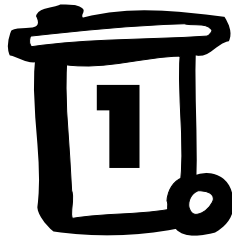
© Economics
© Equity
© Environment



Pay[©]As[©]You[©]ThroW



Worksheet



PROGRAM GOALS

Use this worksheet to identify and prioritize the specific goals of your pay-as-you-throw program.

Begin with the goals listed below, ranking each goal on a scale of 1 to 5. A ranking of 5 means it is critical that your program meets this goal. A ranking of 1 means the goal is of minimal importance. List any other program goals that come to mind, and rank them as well.

As you think about goals, consider other stakeholders in your community—to be successful, your program also will need to have their goals in mind. To help you identify the issues other stakeholders will want addressed, copy the back of this form and use it to solicit more ideas about goals during pay-as-you-throw meetings or presentations.

Goal	Importance
Reduce the amount of solid waste generated/increase recycling rates Notes:	1 2 3 4 5
Reduce the total cost of solid waste management Notes:	1 2 3 4 5
Remove solid waste management costs from the tax base entirely (by raising sufficient revenues to cover all solid waste management costs) Notes:	1 2 3 4 5
Subsidize other solid waste programs (such as recycling) Notes:	1 2 3 4 5
Increase equity by asking residents to pay only for the waste they generate Notes:	1 2 3 4 5
Increase understanding among residents of solid waste issues/environmental issues Notes:	1 2 3 4 5

Worksheet 1 (Continued)

Program Goals: List below the different goals for the pay-as-you-throw program and rank them on a scale of 1 to 5. A ranking of 5 means it is critical that the program meets this goal. A ranking of 1 means the goal is of minimal importance.

Goal	Importance
	1 2 3 4 5
	1 2 3 4 5
	1 2 3 4 5
	1 2 3 4 5
	1 2 3 4 5
	1 2 3 4 5
	1 2 3 4 5
	1 2 3 4 5

Worksheet



POTENTIAL BARRIERS

Use this worksheet to identify barriers that might affect your program and consider how they can be overcome.

Begin by reviewing the potential barriers on the matrix below. As you review these potential barriers, be sure to distinguish between perceived problems—challenges that have solutions or do not apply in your community—and real barriers that might actually prevent you from achieving your pay-as-you-throw goals. For example, illegal dumping often turns out to be a perceived barrier. It usually can be overcome with a strong education and outreach program and effective enforcement. Multi-family housing, by contrast, may be a real barrier for some communities. A high concentration of population in multi-family housing might prevent a community from extending pay-as-you-throw to these residents.

Then, on the following page, list the barriers that you feel might apply to your community's program. For each of these, consider the ways in which you might overcome them. The second page of this form can be copied and used during pay-as-you-throw meetings or presentations to solicit other potential barriers from attendees and to brainstorm more solutions.

Sample Barriers and Solutions

Potential Barriers	Possible Solutions
Illegal dumping/burning	<ul style="list-style-type: none">- Educate residents about pay-as-you-throw- Provide several legal diversion options- Develop enforcement plan
Uneven revenues/revenue shortfalls as residents generate less waste	<ul style="list-style-type: none">- Use multi-tiered pricing- Plan for reduced waste amounts in steady-state when setting prices
Multi-family housing	<ul style="list-style-type: none">- Include charges in rent- Under a bag-based system, have tenants purchase bags- Use bar code readers on building garbage chutes
Perception that waste collection is free/pay-as-you-throw is a tax increase	<ul style="list-style-type: none">- Educate residents about pay-as-you-throw- Set prices at levels residents will accept
Pay-as-you-throw is regressive/low-income residents feel greater impact	<ul style="list-style-type: none">- Offer these residents rebates, coupons, or discounts- Offer free bags to recipients of general assistance
Overstuffing of containers	<ul style="list-style-type: none">- Set weight limits on containers
Lack of support from private waste haulers	<ul style="list-style-type: none">- Involve haulers in the planning process- Pass ordinance mandating haulers offer variable rates

Worksheet 2 (Continued)

Potential Barriers: List below potential pay-as-you-throw barriers and consider whether each is actually relevant to your community. For each potential barrier you feel may impact your program, list any possible solutions that come to mind.

Potential Barriers	Possible Solutions

Worksheet



PUBLIC OUTREACH

Use this worksheet to identify specific public outreach goals for your program and consider ways to achieve them. This worksheet will help you plan for the two distinct parts of public outreach: A) soliciting feedback about pay-as-you-throw during the planning stage and B) educating the community during implementation about the program's final design and informing residents about how to participate (for example, where to buy bags and how to handle bulky items). (Refer to the "Public Outreach Materials" section beginning on page 91 of this workbook for more ideas on how to generate feedback and educate your community.)

Part A Soliciting Feedback

Using this table, consider how you will obtain input during the planning stage about the proposed pay-as-you-throw program. Begin with the audiences from whom you are seeking feedback. Then, consider possible methods of achieving this. In the last column, list when you should begin each of the different strategies for gathering input.

Audience	Outreach Methods	Schedule
EXAMPLE: <i>Retailers/other businesses</i>	<ul style="list-style-type: none">- Direct visits to local retailers to discuss the program and ask them about distributing or selling bags in stores- Invite retailers to public pay-as-you-throw meetings- Include retailers in your citizens' advisory council or other planning organization	About 6 months before program implementation
EXAMPLE: <i>Residents</i>	<ul style="list-style-type: none">- Develop a pay-as-you-throw fact sheet introducing the program and asking for feedback- Issue press releases to the local media to get media coverage- Hold public meetings on pay-as-you-throw- Invite community residents to join your citizens' advisory council or other planning organization	About 6-9 months before program implementation
EXAMPLE: <i>Elected officials</i>	<ul style="list-style-type: none">- Hold a briefing for elected officials to introduce the program and ask for their input- Include elected officials in the citizens' advisory council or other planning organization	About 6 months before program implementation

Worksheet 3 (Continued)

Soliciting Feedback: For each of the audiences listed below, consider possible outreach methods and a schedule of when to begin these strategies. Copy this page as needed to consider ways of reaching additional audiences.

Audience	Outreach Methods	Schedule
Retailers/other businesses		
Residents		
Elected officials		
Media		
Solid waste staff		
Private haulers		
Other:		

Part B Educating the Community

Use the table below to consider how to educate your community about pay-as-you-throw. Begin by considering which audiences you will need to reach. For each audience, list the specific goals of the outreach effort and the message you will use to reach that group. In the last column, indicate what products you could develop to accomplish this.

Audience	Goal	Message	Products
EXAMPLE: Residents	<ul style="list-style-type: none"> - Show residents that pay-as-you-throw is needed - Convince residents the program is fair and not an added tax - Explain how to use the new bag-based system 	<ul style="list-style-type: none"> - The current MSW program ultimately is not sustainable - The program will save you money, if you reduce waste (include details about how to reduce waste) - Participating is easy—just buy bags for your trash at area retailers (include details on prices, recycling, etc.) 	<ul style="list-style-type: none"> - Flyers posted around town - Public meetings - Press releases - Invite participation through the citizens' advisory council - Brochure mailed to all households
EXAMPLE: Media	<ul style="list-style-type: none"> - Generate positive media coverage of pay-as-you-throw - Convince media that the program is needed and will work 	<ul style="list-style-type: none"> - The current MSW program ultimately is not sustainable - Pay-as-you-throw has multiple benefits: it will give both residents and the municipality money, reduce waste, and is fairer to residents - More and more communities are adopting pay-as-you-throw 	<ul style="list-style-type: none"> - Press release/press kit - Briefings for reporters - Invite reporters to town meetings/other pay-as-you-throw presentations
EXAMPLE: Civic groups	<ul style="list-style-type: none"> - Convince community and business leaders that pay-as-you-throw is needed and will work - Show that the municipality's long-term financial health will be compromised if no change is made - Involve these leaders in the development of the program and in selling it to residents 	<ul style="list-style-type: none"> - The current MSW program is not sustainable - Pay-as-you-throw will help both residents and the municipality to save money - The municipality is interested in getting help from community groups in developing the program 	<ul style="list-style-type: none"> - Briefings for civic groups at their meetings - Public meetings - One-on-one meetings with civic group leaders

Worksheet 3 (Continued)

Educating the community: For each of the audiences listed below, consider the goals of your outreach effort, the specific message of your outreach to that audience, and the products you might develop to accomplish this. Copy this page as needed to consider ways of reaching additional audiences.

Audience	Goal	Message	Products
Residents			
Civic groups			
Media			
Retailers/other businesses			
Private haulers			
Other:			

Worksheet



CONTAINER AND PRICING CHOICES

Use this worksheet to compare the advantages and disadvantages of the different container and pricing choices and select the best system for your program. In Part A, rank in terms of importance the characteristics of the main container and pricing combinations: bags or tags/stickers that are sold at retail stores or municipal offices; cans under a “pay as you go” pricing system (under which residents are billed based on the number of cans they set out for collection); and cans under a subscription system. (Another pricing option that can be used in combination with any of the container and pricing choices is a two-tiered system, which uses a per-container fee for variable MSW costs while retaining a monthly flat collection charge for fixed MSW costs. This helps prevent revenue fluctuations).

After ranking the different container and pricing combinations, review your work and record a preliminary system choice in Part B. Be sure to consider the overall program goals you established in Worksheet 1 when making this choice.

Part A Container and Pricing System Characteristics

Consider the different advantages and disadvantages of the container and pricing systems and how relevant they are to your program. Rank each characteristic on a scale of 1 to 5. (A ranking of 5 means the issue is extremely important for your program. A ranking of 1 means the issue is of minimal importance.)

System	Advantage/Disadvantage	Importance
Bag Systems	Advantages	
	Stronger waste reduction incentive than can systems	1 2 3 4 5
	No billing system needed, so accounting costs lower	1 2 3 4 5
	Residents find bag systems convenient and easy to understand	1 2 3 4 5
	Lower implementation costs than can systems	1 2 3 4 5
	Faster, more efficient collections than cans	1 2 3 4 5
	Easy to monitor compliance	1 2 3 4 5
	Easy to adapt for bulky item collections	1 2 3 4 5
	Disadvantages	
	Greater revenue uncertainty than subscription can systems	1 2 3 4 5
	Bags must be purchased and made available to residents in stores or municipal offices	1 2 3 4 5
	Staff time required for purchasing, storing, and selling bags in municipal offices	1 2 3 4 5
	Residents might find buying and storing bags inconvenient	1 2 3 4 5
	Often incompatible with automated/semiautomated equipment	1 2 3 4 5
Animals can tear bags, and bags can tear during lifting	1 2 3 4 5	

Worksheet 4 (Continued)

System	Advantage/Disadvantage	Importance
Tag or Sticker Systems	Advantages	
	Stronger waste reduction incentive than can systems	1 2 3 4 5
	No billing system needed, so accounting costs lower	1 2 3 4 5
	Residents find tag/sticker systems convenient and easy to understand	1 2 3 4 5
	Lower implementation costs than can systems	1 2 3 4 5
	Cost of purchasing tags/stickers is less than bags	1 2 3 4 5
	Easily adapted for different size containers	1 2 3 4 5
	Easily adapted for bulky item collections	1 2 3 4 5
	Disadvantages	
	Greater revenue uncertainty than subscription can systems	1 2 3 4 5
	Tags/stickers must be purchased and made available to residents in stores or municipal offices	1 2 3 4 5
	Staff time required for purchasing, storing, and selling tags/stickers in municipal offices	1 2 3 4 5
	Residents might find buying and storing tags/stickers inconvenient	1 2 3 4 5
	Municipality must communicate size limits to residents, and collection crews must monitor size-limit compliance	1 2 3 4 5
Tags/stickers can fall off in rainy or cold weather or be stolen by other residents	1 2 3 4 5	
Can Systems (Pay As You Go)	Advantages	
	Residents have flexibility to set out as few or as many containers each week as needed	1 2 3 4 5
	New cans may not be required if residents already own cans of roughly uniform volume	1 2 3 4 5
	Cans are reusable and prevent animals from scattering waste	1 2 3 4 5
	Cans can work with automated/semiautomated collection systems	1 2 3 4 5
	Disadvantages	
	Greater revenue uncertainty than subscription can systems	1 2 3 4 5
	Smaller waste reduction incentive if large cans are used	1 2 3 4 5
	Complex tracking and billing system needed to count set-outs at each stop and bill accordingly	1 2 3 4 5
	Billing system creates lag time between collecting waste and receiving payment for the service	1 2 3 4 5
	Greater implementation costs if purchase, inventory, and distribution of cans is required	1 2 3 4 5
Collection time greater than with bag systems	1 2 3 4 5	
Alternate system needed for collection of bulky items	1 2 3 4 5	

Worksheet 4 (Continued)

System	Advantage/Disadvantage	Importance
Can Systems (Subscription)	Advantages	
	Revenues are stable and easy to forecast	1 2 3 4 5
	Simplified collection process for collection crews	1 2 3 4 5
	New cans may not be required if residents already own cans of roughly uniform volume	1 2 3 4 5
	Cans are reusable and prevent animals from scattering waste	1 2 3 4 5
	Cans can work with automated/semiautomated collection systems	1 2 3 4 5
	Disadvantages	
	Reduced waste reduction incentive, since residents have no incentive to reduce waste below their minimum service level	1 2 3 4 5
	Complex tracking and billing system needed to track residents' subscription level and bill accordingly	1 2 3 4 5
	Billing system creates lag time between collecting waste and receiving payment for the service	1 2 3 4 5
	Greater implementation costs if purchase, inventory, and distribution of cans is required	1 2 3 4 5
	Collection time greater than with bag systems	1 2 3 4 5
	Alternate system needed for collection of bulky items	1 2 3 4 5

Part B Choosing a Container and Pricing System

After ranking the different system characteristics, review your work to see which system offers the most relevant advantages and the fewest disadvantages. If you are very concerned about revenue instability or uneven cash flow, consider whether you should use a two-tiered pricing system.

Next, go back to the prioritized list of program goals you created in Worksheet 1. Consider which container and pricing system would best enable you to achieve your community's goals. If needed, use the table below to help you consider your options. List your program goals in the first column and consider the impact of each container/pricing system choice on the goals.

Program Goal	Container/Pricing Systems				
	Bags	Tags/Stickers	Cans (Pay As You Go)	Cans (Subscription)	Two-Tier Pricing
EXAMPLE: Reduce MSW as much as possible	Bags tend to be smaller, creating a stronger waste reduction incentive	Tags/stickers for smaller containers create a strong waste reduction incentive	Cans tend to be larger, reducing waste reduction incentive	Cans tend to be larger, reducing waste reduction incentive	Flat fee in combination with variable rate reduces waste reduction incentive
EXAMPLE: Minimize program costs	Low accounting costs, since no billing system needed	Low accounting costs, since no billing system needed	Billing system can increase costs	Billing system can increase costs	Potential for reduced administrative costs
EXAMPLE: Achieve revenue stability	Uneven cash flow possible	Uneven cash flow possible	Uneven cash flow possible	Steadier cash flow	Steadier cash flow

With the different system characteristics and your overall program goals in mind, make a preliminary container and pricing system choice and record it below.

Container and pricing system: _____

Used with a two-tiered or multi-tiered rate structure? _____ yes _____ no

Worksheet



RATE STRUCTURE DESIGN

Use this worksheet to design a rate structure for your program. In Part A, estimate the amount of waste you will be collecting under pay-as-you-throw. In Part B, estimate your pay-as-you-throw program costs and the cost of any complementary programs. Then, estimate the per-container price needed to meet your program’s costs in Part C. Complete this worksheet by considering whether this price strikes the right balance between costs and revenues.

Part A Waste Collection Forecast

Perform the following calculations to estimate the amount of MSW that will be collected from residents under your pay-as-you-throw program. Begin by estimating the amount of MSW collected in the year before program implementation (the “base year”). Then, revise this figure to reflect MSW collections two years after program implementation (the “projection year”). This is also called the steady-state, when residents’ reductions in waste generation due to pay-as-you-throw have stabilized.

1. Current Waste Collection				
_____	÷	_____	=	_____
Tons of MSW collected in the base year		Current number of community residents in the base year		Tons of MSW collected per resident in the base year
2. Community Growth				
_____	×	_____	=	_____
Tons of MSW per resident in the base year [from A-1]		Estimated number of residents in the projection year		Annual MSW tonnage expected in the projection year without pay-as-you-throw
3. Waste Collection Under Pay-As-You-Throw				
100	–	_____ %	=	_____
		Percentage decrease in MSW expected under pay-as-you-throw		MSW reduction multiplier
			×	_____
				Annual MSW tonnage expected without pay-as-you-throw [from A-2]
			=	_____
				Annual MSW tonnage expected under pay-as-you-throw
_____		÷	12	=
Annual MSW tonnage expected under pay-as-you-throw				Tons of MSW expected per month under pay-as-you-throw

Part B Program Costs

In this section, estimate your monthly MSW curbside collection and disposal fixed and variable costs under pay-as-you-throw in the projection year. Then estimate monthly fixed and variable costs for your new (or existing) recycling program in the projection year. Be sure to take into account your residents' reduced MSW set-outs when estimating costs. (For composting/yard waste collections or other complementary programs, copy this page and use it to estimate their costs.) If you contract out for some or all of these services, enter this cost under the "contractor fees" line. Combine these costs at the end of this section to estimate the total cost of pay-as-you-throw and any complementary programs.

I. Fixed MSW Collection and Disposal Costs per Month

Physical facilities (e.g., maintenance, mortgage, utilities)	\$ _____
Salaries and benefits (labor costs that remain fixed regardless of quantity of MSW collected)	\$ _____
Vehicle amortization	\$ _____
Vehicle maintenance (vehicle maintenance costs that remain fixed regardless of quantity of MSW collected)	\$ _____
Vehicle operating costs (vehicle operating costs that remain fixed regardless of quantity of MSW collected)	\$ _____
Contractor fees (if any)	\$ _____
Other fixed costs	\$ _____
Total fixed MSW collection and disposal costs per month	\$ _____

2. Variable MSW Collection and Disposal Costs per Month

Salaries and benefits (labor costs that vary with amount of MSW collected)	\$ _____
Vehicle maintenance (vehicle maintenance costs that vary with amount of MSW collected)	\$ _____
Vehicle operating costs (vehicle operating costs that vary with amount of MSW collected)	\$ _____
Contractor fees (if any)	\$ _____
Tipping fees	\$ _____
Other variable costs	\$ _____
Total variable MSW collection and disposal costs per month	\$ _____

3. Total MSW Collection and Disposal Costs per Month

_____	+	_____	=	_____
Total monthly fixed MSW collection and disposal costs [from B-1]		Total monthly variable MSW collection and disposal costs [from B-2]		Total monthly MSW collection and disposal costs under pay-as-you-throw

4. Fixed Recycling Collection and Processing Costs per Month

Physical facilities (e.g., processing equipment amortization, utilities)	\$ _____
Salaries and benefits (labor costs that remain fixed regardless of quantity of recyclables collected)	\$ _____
Vehicle amortization costs	\$ _____
Vehicle maintenance costs (vehicle maintenance costs that remain fixed regardless of quantity of recyclables collected)	\$ _____
Vehicle operating costs (vehicle operating costs that remain fixed regardless of quantity of recyclables collected)	\$ _____
Contractor fees (if any)	\$ _____
Other fixed costs	\$ _____
Total fixed recycling costs per month	\$ _____

5. Variable Recycling Collection and Processing Costs per Month

Salaries and benefits (labor costs that vary with amount of recyclables collected)	\$ _____
Vehicle maintenance costs (vehicle maintenance costs that vary with amount of recyclables collected)	\$ _____
Vehicle operating costs (vehicle operating costs that vary with amount of recyclables collected)	\$ _____
Equipment costs (e.g., baler, compactor, Bobcat operations) (equipment costs that vary with amount of recyclables collected)	\$ _____
Contractor fees (if any)	\$ _____
Other variable costs	\$ _____
Total variable recycling costs per month	\$ _____

6. Total Recycling Collection and Processing Costs per Month

_____	+	_____	=	_____
Total fixed recycling costs per month <i>[from B-4]</i>		Total variable recycling costs per month <i>[from B-5]</i>		Total monthly recycling costs under pay-as-you-throw
_____	-	_____	=	_____
Total monthly recycling costs under pay-as-you-throw <i>[from B-6]</i>		Net revenue from sale of recyclables per month		Adjusted total monthly recycling costs under pay-as-you-throw

7. Total Cost of Pay-As-You-Throw and Complementary Programs

Total monthly MSW collection and disposal costs under pay-as-you-throw <i>[from B-3]</i>	\$ _____
Adjusted total monthly recycling costs under pay-as-you-throw <i>[from B-6]</i>	\$ _____
Other monthly complementary program costs, if any	\$ _____
Total monthly cost of pay-as-you-throw and complementary programs	\$ _____

Part C Program Revenues

Use this section to estimate the per-container price needed to meet your program's costs. If you plan to use more than one size container, estimate the amount of waste you will collect in each size container per month (you might contact planners in pay-as-you-throw communities for help with this estimate). Then perform the calculations in this section separately for each container. If you are uncertain about how to convert your container's capacity from volume to weight, refer to the report *Characterization of Municipal Solid Waste in the United States: 1995 Update*. You also might check with planners in other communities or weigh a random sampling of several filled containers and use the average weight for this calculation.

I. Container Selection and Capacity

Container selection: _____ (cans, bags, tags, or stickers)
 Volume of selected container: _____ gallons
 Convert container capacity to weight: _____ tons

2. Estimated Per-Container Price

_____	÷	_____	=	_____
Tons of MSW expected per month under pay-as-you-throw [from A-3]		Weight per container in tons [from C-1]		Number of containers expected per month
_____	÷	_____	=	\$ _____
Total monthly cost of pay-as-you-throw and complementary programs [from B-7]		Number of containers expected per month		Estimated price per container

Part D Program Balance

At this point, you have developed a price per container that will help you cover your estimated costs. Remember, however, that your per-container price is based on program costs in the projection year (once your program has reached the steady-state). Prior to the projection year, you can expect greater waste collection amounts. This will result in greater revenues, but also greater costs. You might consult with planners in nearby pay-as-you-throw communities for data on whether their costs were greater or less in the two years before reaching the steady-state. If needed, adjust your per-container price to strike a balance between reasonable fees and covering your costs completely. Also consider whether your fee sends a strong enough waste reduction price signal to residents. Enter the revised per-container price below.

Revised price per container \$ _____

Worksheet



IMPLEMENTATION CHECKLIST

Use this worksheet to review the different potential pay-as-you-throw program implementation activities and check off the relevant ones as they are completed. This checklist is divided into three sections. All planners should use Section A, which contains a checklist of specific implementation activities suggested for any pay-as-you-throw program. Then, select and use either Section B or C, depending on whether you plan on using a bag- or tag-based systems or a can-based system.

Part A All Container Systems

- Draft and enact any necessary ordinances to charge a variable rate for waste collection.
- Draft and enact any additional needed ordinances:
 - Banning waste dumping and/or burning
 - Limiting container weights
 - Mandating recycling
 - Prohibiting unauthorized containers
- Define enforcement responsibilities (work with the police and health department).
- Reassign collection and management staff as needed to new roles in outreach, enforcement, and administration.
- Prepare staff to address residents' concerns and questions.
- Plan your education and outreach campaign. Develop outreach materials and schedule briefings and presentations.
- Consider working with the business community to ensure that they lock their dumpsters to prevent midnight dumping.
- Develop and implement policies for accommodating low-income residents and physically handicapped and elderly residents.
- Develop and implement policies for accommodating residents of multi-family units.

- Develop and test your rate structure and your budgeting and tracking systems.
- Develop procedure for gathering and analyzing data on waste generation amounts and costs. Conduct baseline data collection.
- Develop a phase-in strategy (e.g., collect all wastes for several weeks, but leave “error tags” where needed to educate customers that only correctly paid and packaged trash will be collected in the future).

Part B Bag- or Tag-Based Systems

- Determine weight limit for bags or size limit for trash that is tagged and the number of bags or tags to purchase.
- Identify vendors, develop specifications and RFPs, solicit bids, and purchase bags or tags.
- Plan and develop a distribution network (e.g., using town offices or local retailers).
- If distributing through retailers, arrange distribution logistics (e.g., delivery and invoice schedule and marketing agreements). Assign and train staff as necessary.
- If distributing through municipal offices, develop and implement inventory management system. Assign and train staff as necessary.
- Develop an education program informing residents how to participate (e.g., the location of bag or tag sales outlets and the procedures for bulky wastes).
- Develop and implement plans for bulky items, including pricing.

Part C Can-Based Systems

- Evaluate whether residents can use their own cans or if the town will supply cans.
- Determine the container size and number of cans to purchase.
- Identify vendors, develop specifications and RFPs, solicit bids, and purchase cans.
- If you have a subscription system, develop and provide information to residents that allows them to estimate their trash set-out and select a subscription level.
- If residents will use one large can, develop plans for extra waste (e.g., supplement with bags or tags). Purchase necessary items and educate residents.
- Develop and implement plans to distribute new cans (for new residents, replacements for stolen containers, or changes in service level for subscription can systems).
- Distribute containers and maintain an inventory of extra containers.
- Develop and implement billing system.
- Develop and implement plans for bulky items, including pricing.

Worksheet



MONITORING AND EVALUATION

Use this worksheet to monitor waste generation amounts and the amount of material recycled and composted. For the first year after program implementation, enter base year data in the first column and data from the program's first year in the second. For monitoring the program after the first year, enter the previous year's data followed by the current year being evaluated. This information can be tracked over time to demonstrate the waste reduction impact of pay-as-you-throw and help inform decisions about potential changes in the program's scope or structure.

Part A Waste Collection Amounts

	Base Year	Current Year
Tons of MSW collected:	_____	_____

Part B Recycling Amounts

Tons of recyclables collected:	Glass	_____	_____
	High-Grade Paper	_____	_____
	Mixed Paper	_____	_____
	Corrugated Cardboard	_____	_____
	Newsprint	_____	_____
	Aluminum	_____	_____
	Plastic	_____	_____
	Steel	_____	_____
	Other	_____	_____
Total tons of recyclables collected:		_____	_____

Part C **Composting Amounts**

	Base Year	Current Year
Tons of organic materials collected for composting:	_____	_____

Part D **Costs**

Tracking the costs incurred and the revenues recovered under pay-as-you-throw is an important process. At least once a year, refer back to Worksheet 5, "Rate Structure Design," and re-calculate program costs and revenues. This information can be used to evaluate the program's economic sustainability on an ongoing basis. It also can be used to demonstrate the cost-effectiveness of the program to elected officials or planners from other communities interested in pay-as-you-throw.