



METRO

MEETING: Joint Meeting of Solid Waste Advisory Committee/Rate Review Committee

DATE: December 15, 1993

DAY: Wednesday

TIME: 8:30-10:30 a.m.

PLACE: Metro Headquarters, 600 NE Grand Avenue
Room 370

- | | |
|---|----------------|
| 1. Updates | Bob Martin |
| • Washington County Transfer Stations | |
| • Redirection of Haulers to Metro Central | |
| 2. Standards for Yard Debris Compost Products | Jeff Grimm |
| • See attached memo from Lauren Ettlin | Dave Adams |
| | Lauren Ettlin |
| 3. Organic Waste Management | Terry Petersen |
| • See attached memo from Terry Petersen | |
| 4. Solid Waste Revenue System | Doug Anderson |
| • See attached materials | |
| 5. Other Business/Citizen Communication | |
| 6. Adjourn | |

**METRO**

DATE: December 8, 1993

TO: Solid Waste Advisory Committee (SWAC)

FROM: Lauren Ettlin, ^{LE}Metro Associate Solid Waste Planner

THROUGH: Bob Martin, Solid Waste Director

RE: Standards for yard debris compost products

On Wednesday, December 15, several members of Metro's Yard Debris Compost Standards Committee will present information to SWAC concerning quality standards for yard debris compost products. Metro identified the need for standards to stabilize and increase the market for yard debris compost and to provide greater assurance to potential customers that compost is suitable for plant growth and will cause no harm to the environment or human health. Jeff Grimm, Grimm's Fuel Company, Dave Adams, OSU Extension Service Agent and I will summarize the need for standards, testing protocol and implementation of this new program for the Solid Waste Advisory Committee.

Attached for your review is a summary of the standards and proposed implementation process.

LE:ay

cc: Rena Cusma, Executive Officer
Leigh Zimmerman, Solid Waste Markets Development Manager
S/SHARE/ETTL/1209SWAC.MMO



METRO

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STANDARDS FOR YARD DEBRIS COMPOST PRODUCTS

December 1993

Overview

Yard debris compost products from the Metro area differ in consistency and quality from season to season and between processors. Potential purchasers cannot be certain of product characteristics because of this variability. In addition, increased curbside collection and other recovery programs for yard debris have resulted in a greater amount of material for composting than ever before. As a result, more processors have opened their doors and are selling compost products.

In order to stabilize and increase the markets for yard debris compost and to provide greater assurance that it will cause no harm to the environment or human health, Metro identified the need for technical standards and a uniform testing program. In June, Metro formed a committee of experts, which included the two major yard debris processors in the area, to develop these standards and a testing protocol. Technical specialists were invited to the meetings to provide additional information on pesticide residue, plant nutrients and the maturity/stability of compost. The agenda and minutes of the standards committee were mailed to all Metro region processors and 55 interested parties.

The committee reviewed the compost standards from other areas, including Iowa, California, Florida, Washington and British Columbia. The results from Metro's yard debris testing program conducted on samples from Grimm's Fuel and McFarlane's Bark between 1986 and 1993 were also examined. These test results were interpreted and compared to those from the Cedar Grove facility near Seattle.

After deliberating for six months, the committee agreed to the standards and implementation process described in this summary report. The standards and testing program are voluntary. Yard debris processors that choose to participate will be able to promote their compost as an *Earth-Wise* product.

Required Standards to be Designated "Earth-Wise" Compost

Compost samples must meet the following technical standards to receive "Earth-Wise" designation.

Testing Parameter	Standard+
pH	between 5.0 and 8.0
Heavy (trace) metals	
Cadmium (Cd)	not to exceed 3 ppm
Lead (Pb)	not to exceed 150 ppm
Pesticide residue	
Penta-chlorophenol	not to exceed 0.3 ppm
Chlordane	not to exceed 0.3 ppm
Plant Nutrients	
Boron (B)	not to exceed 7 ppm
Calcium (Ca)	not to exceed 50 meq
Magnesium (Mg)	not to exceed 12 meq
Copper (Cu)	not to exceed 750 ppm
Zinc (Zn)	not to exceed 1400 ppm
Other	
Foreign materials*	not to exceed 5% foreign materials, including 1/2% plastics, by weight
Salts	not to exceed 4 mmhos
Seeds	not to exceed 1 viable seed/sample

ppm= parts per million

meq= milliequivalents

mmhos= a conductivity unit that measures how well electricity passes through liquids

+Laboratory methods and sample sizes available upon request

*Foreign materials: plastic, metal, glass, rocks and other inorganic materials

Definition of Compost

Compost is the stabilized and sanitized product of composting which is suitable for plant growth. It has undergone an initial, rapid stage of decomposition and is in the process of humification (curing). Compost, as defined for this certification program, is made only from yard debris, and is not blended with any other product.

Yard Debris Compost Standards Committee Members

Dave Adams	Oregon State University, North Willamette Research and Extension Center
Lee Barrett	City of Portland Bureau of Environmental Services
Bill Bree	Department of Environmental Quality
Lauren Ettlin	Metro Solid Waste Department
Jeff Grimm	Grimm's Fuel Company
Wes Jarrell	Oregon Graduate Institute, Department of Environmental Science
Dan and Ann McFarlane	McFarlane's Bark, Inc.
Paul Morris	Oregon Chapter, American Society of Landscape Architects
Lynne Storz	Washington County Department of Health and Human Services
Bob Ticknor	Oregon State University, North Willamette Research and Extension Center
Rick Winterhalter	Clackamas County Community Environment Section

Benefits of Designation as an "Earth-Wise" Compost

Nurserymen, homeowners, landscapers and other customers can confidently purchase "Earth-Wise" yard debris compost and know it has been tested and meets standards for designated parameters. Processors can advertise their compost has met standards and can be used for certain uses without harm to the environment or human health. All people living in the tri-county area benefit from more yard debris being returned to augment the soil and less hauled to the landfill.

Eligibility

To be eligible for the "Earth-Wise" designation, compost must fit these guidelines:

- Produced within Multnomah, Washington or Clackamas counties
- Yard debris only (such as leaves, grass, woody debris)
- In a stable condition (has undergone a rapid stage of decomposition and essentially completed curing)
- Compost only, no blended products

Implementation Process

A detailed application process will be developed by Metro and yard debris processors.

1. Yard debris processors interested in achieving designation of their compost as "Earth-Wise," complete Metro's application form.
2. An independent party under contract to Metro will sample the stable compost product.
3. Contractor will mail samples to appropriate laboratories for testing of the parameters.
4. Laboratories will send copies of the test results to the processor and Metro contractor. Lab services will be paid by the processor (see Costs for Testing).
5. Processor sends copies of test results to Metro.
6. Metro reviews test results and confirms product meets standards. Processors of approved products receive a certificate and logo for use in advertising their tested products for that year. Metro provides information on tested yard debris compost products through Recycling Information, articles in trade magazines and requests for information.

Costs for Testing

Samples of compost are taken by a Metro contractor twice per year at the request of the processor. The contractor sends the samples to 3 laboratories to evaluate the following parameters. Costs for lab testing are paid by the processor and are estimated to be about \$1,000 per year.

Tests	Suitable Laboratory	Cost (Sept. 1993)
- Plant nutrients - pH - Salts	OSU Central Analytical Lab Soil Testing	\$106 for all three tests
- Seed viability - Foreign materials	OSU Seed Lab	\$122 for both tests
- Pesticide residue - Heavy metals (lead and cadmium)	ANTECH Analysis/Technology Lab	\$260 for both tests
TOTAL		\$488 for all tests

Uses for Compost

Composted yard debris that meets standards can be used as a:

- Top dressing, mulch or control for erosion -- a soil cover that is not plowed under
- Soil amendment -- mixed with soil to improve soil chemistry
- Soil conditioner -- mixed with soil to improve soil structure
- Potting mix -- mixed with soil for house plants and seedling starts

Definitions to Achieve Consistent Product Sizes

The committee surveyed yard debris processors to determine the particle size of non-blended compost products currently produced in the Portland area.

Those products were consolidated into these three categories.

- **Fine Compost:** 5/8" minus, with an average of 80% fines*
- **Medium Compost:** 1" minus, with an average of 80% fines*
- **Coarse Composted Mulch:** 1" plus, not to exceed 30% fines*

* Fines = material that is 3/8" or less

Optional Tests for Marketing Compost Products

The Yard Debris Compost Standards Committee recommends that compost samples be tested for the following parameters in order to be competitive with other soil amendments in the Portland area market. Since these parameters are not essential to produce a product that does not harm the environment or human health, they are recommended rather than required.

Testing Parameters:

- Nitrate (NO₃)
- Ammonia (NH₄)
- Phosphorus (P)
- Potassium (K)

Schedule

The draft standards and testing program will be reviewed by compost processors, interested parties and Metro's Solid Waste Advisory and Council Solid Waste Committees. Comments from the review process will be included prior to submitting them to the Metro Council for adoption in winter/spring of 1994.

Compost processors may apply for "Earth-Wise" compost certificate and logo as soon as materials are developed following adoption of the program. Metro expects to implement the program beginning in the fall of 1994 for the 1995 calendar year.

Glossary of Terms

pH: Measures the alkalinity or acidity of compost on a scale of 0 to 14. Seven is neutral, plants grow best in compost with a pH between 5 and 8.

Yard debris: Leaves, grass clippings, woody material, plant stalks, hedge clippings, stumps. Does not include demolition debris, painted or treated wood, animal manure or food waste.

Stable: Compost is stable when it has undergone an initial, rapid stage of decomposition and has essentially completed the process of humification (curing).

Fines: Particles that are 3/8 inch in size or smaller.

Yard Debris Statistics for the Metro Area

11% of garbage is yard debris*
26% of garbage from homes is yard debris*
45% of yard debris was recycled (75,926 tons),
1992 Metro Recycling Level Survey


*From 1989 Metro Waste Characterization Study, percentages are by weight.



METRO

DATE: December 9, 1993

TO: Solid Waste Advisory Committee

FROM:  Perry Petersen, Planning and Technical Services Manager

RE: Regional Strategy for Organic Waste Management

As you know, we have been working on a long-term strategy for managing non-recyclable organic waste in the most cost-effective and environmentally sound manner. Based on input from the two workshops held in September and November, a draft strategy will be presented at a conference to be held January 12, 1994.

Workshop delegates were consistent in suggesting the following general components of a regional strategy:

1. Any strategy that involves the production of a soil product from organic waste must first consider markets.
2. Businesses such as food stores, restaurants, and food processors have significant quantities of "high-quality" organic waste. New separation, collection, and processing practices for these businesses should be developed as part of the regional strategy.
3. For residential waste, the region should emphasize reduction and recycling of organic waste through existing programs. If curbside recycling programs, home composting, and other existing programs are expanded, there will be relatively little residential organic waste requiring alternative management practices. Collection and off-site processing of residential organic waste would depend on the effectiveness of existing programs.

To ensure marketability of soil products made from commercial waste, the delegates suggested that there might need to be separation of organic waste at the business site. Several questions arise:


1. Would there be sufficient economic incentive for businesses and haulers to establish new collection practices and/or routes?
2. Would participation be limited to a few haulers that have a large numbers of food-related customers?
3. Would there be opportunities for cooperative arrangements among smaller haulers to allow more widespread participation? Could the recycling cooperatives in Portland serve as a model for making collection of commercial organic waste more economical? Could such cooperatives extend across jurisdictional boundaries?

These and other issues dealing with organic waste management will be discussed in detail with the SWAC during the coming year as we move forward with the proposed strategy. Any comments you have on the above issues, or other ones, at this time would be helpful as we prepare for the conference.

**METRO**

DATE: December 10, 1993

TO: Members of SWAC, Rate Review Committee, Work Group

FROM:  Terry Petersen, Manager of Planning and Technical Services

RE: Revenue System Materials for December 15, 1993

You will find attached a revised copy of the Revenue System DRAFT Report. At the beginning of this document, staff has added its understanding of recommendations as they currently stand. Please read these DRAFT recommendations critically and be prepared to add, delete, or amend them as necessary.

Before the meeting on December 15th you should receive the first of the in-depth studies of remaining options, as prepared by Metro staff with assistance from our consultants. On the 15th we plan to present details of our work on the following options: generator fees billed to jurisdictions, generator fees billed to haulers, and special disposal fees. At the January meeting we will cover the "license/franchise" options, the balance of the generator fee options, and niche taxes.

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Solid Waste Revenue System Financing Study

Progress Report and DRAFT Report

December 10 ,1993

DRAFT Recommendations

Objectives

The Metro solid waste revenue system should accomplish the following primary policies that have been adopted as part of the Regional Solid Waste Management Plan:

- A. *Equity.* Charges to users of the waste disposal system should be directly related to disposal services received. Charges to residents of the Metro service district who may not be direct users of the disposal system should be related to other benefits received.
- B. *Revenue Adequacy and Stability.* There should be sufficient revenues to fund the costs of the solid waste system.
- C. *Management Goals.* The revenue system should help the region accomplish management goals such as waste reduction and environmental protection.

General Statements

- A. *General Charges.* There are certain solid waste services and programs which benefit all residents (persons and businesses) in the region. All residents of the region should share in the cost of these programs and services. Examples: solid waste system management, Recycling Information Center.
- B. *Usage Charges.* Services which provide direct benefits to the customer using the services should be financed by usage charges based on the amount of service consumed. Usage charges should be set according to the cost of service. Example: waste disposal.
- C. *Dedicated Financing.* Dedicated funding sources should be sought whenever application of special financing mechanisms serve management or implementation functions which are consistent with the objectives of the program; and when such funding sources are cost-effective. Example: special disposal fees for the Household Hazardous Waste Program.
- D. *Linkage.* Funding mechanisms should be linked to services and/or clearly related to objectives of the solid waste management system. Funding sources should not be pursued for their own sake.

- E. *Revenue Neutrality*: Any changes to the solid waste system should be revenue neutral. Metro should not be seeking new funding for solid waste; rather redress inequities, establish a more stable revenue base and satisfy other objectives listed above.

Findings

- A. Solid waste enterprise funds, like Metro's, that receive all or the substantial share of revenues from tipping fees face the potential for inequities and revenue shortfalls due to several factors:
1. As tipping fees are increased to support the cost of integrated system management, the potential for leakage of waste to lower cost alternatives increases.
 2. In the wake of several recent court rulings adverse to local governments' actions to control leakage (e.g., enforcement of flow control ordinances), the ability to control such leakage through statute versus economic function may be constrained.
 3. During depressed economic periods, waste generation may decline, resulting in reduced revenues into the system.
 4. As greater levels of waste reduction and recycling are achieved and tonnage is diverted from disposal, which is an important goal of the region, the revenues from that tonnage, previously collected as tipping fees at points of processing or disposal, are lost.
- B. Under the above conditions, unless alternative sources of revenues to offset lost revenues are implemented or costs are equivalently reduced, the potential for substantial revenue shortfalls could jeopardize the stability of the solid waste enterprise fund.
- C. The above conditions also create the potential for inequities across waste generator classes.

Funding Options

- A. The broad approach to funding Metro's solid waste system should be:

1. To pursue dedicated forms of funding for specific programs when the financing mechanism has an identifiable link to the program objective, provision of service, or implementation.
2. To pursue customer charges for non-variable elements of the budget.
3. To continue financing variable costs of operation and disposal with usage charges on disposed waste (tip fees).

B. Specific recommendations regarding funding options are:

1. To implement advance disposal fees and other forms of special fees for use as funding sources and management tools for elements of the solid waste management system such as the Household Hazardous Waste and Illegal Dumping programs.
2. To investigate means of billing generator fees *through* property tax and utility bills and investigate means of billing generator fees *to* jurisdictions and haulers.
3. Make the usage charge (tip fee) more equitable and designed to work with elements 1 and 2 above. In particular, investigate whether there is a differential cost of service by vehicle type, and whether an associated pricing system at transfer stations could be developed that reduces the incentive to opt out of the collection system.
4. To develop a fee system for facilities to the extent that they benefit from Metro's integrated management of the solid waste system, but do not currently contribute to the cost of that system. These fees should be based on the services received, should consider the facility's ability to pay, and should not have a negative impact on the waste reduction objectives of the region.

Continued Development of Options

- A. As different elements of the financing system will have differing degrees of acceptance and implementability, Metro should develop a program for phasing in portions of the financing system as they are ready for implementation.
- B. It is important to establish understanding and acceptance of the reasons for change and its effects. Accordingly, Metro should embark upon a program to communicate this project to a broader audience of customers, affected and interested parties, and the public at large.

Introduction

Metro relies on a variable revenue source--fees and charges for solid waste disposal--to cover both variable and non-variable costs of the solid waste system. As a matter of principle, reliance on a variable revenue source for recovery of both types of costs reduces overall revenue stability. As a matter of fact, Metro's revenue base has been eroding over the last several years, and stands at substantial risk of further erosion. Under the current rate structure, the only feasible response to a declining tonnage base is a continual rise in the per-ton disposal charge. This response only exacerbates the problem, as rising costs drive tonnage and users from the revenue base. As a result, funding for operation and management of the solid waste system is jeopardized, and diminishing group of users is burdened with an increasing cost of paying for the whole system.

Under the existing rate structure, recent trends adversely affect *Regional Solid Waste Management Plan* policies on rate stability, equity and predictability:

Stability: Under the current rate structure, tipping fees are expected to continue their rise. Preliminary scenarios suggest the tipping fees could reach \$123 per ton (\$100 in current dollars) by 2000 if regional recycling goals are reached.

Equity: There will be a rising and differential burden on regional rate payers. For example, under the current rate structure, several large generators appear to be paying more into the system than can be justified by services received. This may motivate some large generators to leave the region. This will place an inequitable burden on households and small businesses who will be forced to pay for a greater share of the whole system through disposal charges alone.

Predictability: any significantly inequitable system is inherently unstable and unpredictable.

On July 22, 1993 Metro Council adopted Resolution No. 93-1824A which directed a reconsideration of Metro's method of funding the solid waste management system. The System Financing Study is to examine: *broadening the rate base*, so that rates are levied over a broader base than tonnage which arrives at facilities for disposal; *rate restructuring*, in which rates are designed to cover costs which do not vary with tonnage from relatively stable sources, and to cover variable costs with tipping fees related to true costs of disposal; *diversify the revenue base*, in which some solid waste management functions are funded from sources other than system-specific user charges.

A joint meeting of the Rate Review Committee (RRC) and the Solid Waste Advisory Committee (SWAC) was held during July 1993 to consider the scope of the program to be financed. In consideration of the Council's resolution to consider recommendations by January 1994, the RRC/SWAC moved to examine options which are within the scope of the department's current mission. The joint committee reserved the privilege of documenting findings and advice for potential long-range solutions during this process. A statement of the Solid Waste Department mission statement, objective, programs, and FY 1993-94 budget and rate model is available as *Background Information for System Financing Study* (Metro, July 1993).

Background

The present study was induced by the Council's findings that the current method of financing the solid waste system contains elements of instability and inequities. This section briefly lays out the reasons for these findings.

Stability Issues

The Solid Waste Department at Metro operates on the principle of integrated waste management. Integrated Waste Management is an approach that integrates the cost of waste reduction with the true environmental costs of land filling, and has evolved in response to the need to consider long-term waste management implications. Integrated system financing is a logical consequence of integrated waste management.

The original approach to integrated system financing at Metro was to set up the Solid Waste Department as an enterprise fund with all costs of integrated waste management to be raised by a usage charge (tipping fee) on disposal. Waste reduction, recycling, and recovery were to be encouraged by a mixture of differentiated pricing, incentives, programs, and facilities. The set of financial policies established during the 1980s was believed to be an equitable and stable means of financing the system.

By 1993 this was no longer generally perceived to be the case. The present System Financing Study is a response to these new perceptions.

What conditions and assumptions have changed since the financing system was initiated to produce the change in outcome?

1. Responses to incentives and programs did not follow exactly as expected. The Waste Reduction Program, as updated in 1988 and adopted in 1989, anticipated that recycling goals would be met through a variety of means, principally source separation and post-collection recovery. Of these, post-collection recovery was to make the larger contribution to recycling goals. An analysis of progress (Metro, *Draft Metro Region 1993 Waste Reduction Assessment*, August 1993) reveals that the region is on track if not ahead of expectations for source-separation, but is far behind expectations for post-collection recovery. In short, source reduction and separation have accounted for more waste diversion than anticipated.

The significance for system financing is that source-separated recyclables never enter the waste stream, and thus are not a source of revenue for Metro. Had these materials been part of a waste stream disposed at a recovery facility, a fee could have been extracted on the front end. In other words, in the original conception, diverting waste from a disposal facility did not necessarily imply that waste would be diverted from revenue-producing facilities.

2. Price responses to increased tipping fees exceeded expectations. It was anticipated that higher tipping fees on disposal would encourage source reduction, recycling, and high grading of commercial loads for delivery to processing facilities. These responses were correctly anticipated. However, the rise in tipping fees induced a greater-than-expected "high grading" of waste loads, allowing haulers and generators to shift waste from Metro facilities to lower-cost alternative disposal options.

3. Facilities not built as anticipated. As noted in (1) above, waste reduction responses have favored source separation and recycling over high grading and post-collection recovery. As a consequence, various recovery facilities (e.g., lumber depots) contemplated for Metro ownership never materialized. Sufficient recovery facilities were supplied by the private sector.

The closure of the MSW Composter, which was to be a key element in the system of recovery facilities, has temporarily foreclosed another opportunity for post-collection recovery.

4. Unfunded Mandates. The Solid Waste Department has been mandated to implement various programs over the years, but has generally not received funding assistance for implementation. Examples include the Household Hazardous Waste Program, the Unilateral Order from Oregon's Environmental Quality Council to implement the Regional Waste Reduction Program, and the 1991 Oregon Recycling Act designating Metro as the waste shed for the tri-counties responsible for reaching a 40 percent recovery level by 1995.

Equity Issues

Changes in Metro's revenue base has shifted the burden of payment to a narrowing group of users of the disposal system. Users who cannot significantly alter their disposal patterns are burdened with a disproportionate share of system costs.

In November 1988, Metro's base disposal rate was nearly tripled from \$10.75 to \$31.75 per ton--primarily in order to raise an initial \$12 million for the St. Johns closure account. Other components of the rate were also increased, resulting in a rise in Metro's tipping fee to \$45.75 per ton, from \$19.70 the previous year. One year later, the Rate Review Committee noted: "In previous years, Metro facilities have received a sufficient supply of waste to guarantee adequate revenue generation to meet expenses. However, in recent months, waste has been moving away from Metro facilities, becoming more price sensitive compared to past experience." [Interim Report, November 1989]

This finding induced a revision in Metro's rate setting method to its present form. The present method explicitly calls out variable and non-variable costs, and allocates these costs to budget components related to the beneficiaries of services provided. The non-variable costs of all programs that have a regional benefit are allocated to the **Regional User Fee** ("Tier 1") component. The Regional User Fee is a surcharge on all waste which is disposed in the region or at designated out-of-region facilities. The non-variable costs associated with Metro facilities are allocated to the **Metro System User Fee** ("Tier 2"). The variable operating costs of Metro facilities are allocated to the **Regional Transfer Charge**, and the variable costs of transportation and disposal are allocated to the **Disposal Fee**. The last three charges are assessed against waste disposed at Metro facilities only.

To calculate these fees, an annual budget is prepared, and a 1-year forecast of revenue tons by facility is developed. The Regional User Fee is calculated by dividing regional revenue tons into the Tier 1 allocation. The Metro components are calculated by dividing Metro revenue tons into each of the three Metro components. To these base rates are added Metro's excise tax, DEQ charges, and the Rehabilitation and Enhancement Fee. The Metro tipping fee is the sum of the four components.

Subsequent experience with this rate-setting method has suggested a number of cost reallocations among components. In general, more costs have been allocated to the Tier 1 (regional) component. Among the most significant of these are: contributions to the St. Johns closure account, recycling avoided cost, expensed capital outlays, and contributions to contingency. An analysis by independent consultants in 1993 concluded, "In general, the cost allocation process used by Metro appears reasonable and supported by analysis of the services provided which created the cost. There are a small number of specific costs whose allocation can be improved." [Black & Veatch, *Analysis of Rate Setting Practices*, July 1993]

However, a consequence of these reallocations has been a 171% rise in the Regional User Fee during a period when the Metro tipping fee rose 36% (Table 1).

Table 1
Rate History by Component
(\$ per ton)

Fiscal Year	Regional User Fee	Metro System User Fee	Regional Transfer Charge	Disposal Fee	Metro Tipping Fee*
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90-91	\$ 7.00	\$14.00	\$ 7.00	\$26.00	\$54.00
91-92	13.00	8.50	10.50	34.75	66.75
92-93	19.00	7.00	9.00	38.25	73.25
93-94	19.00	7.00	9.00	38.25	73.25

*Includes Metro's excise tax but excludes DEQ fees and Rehabilitation and Enhancement Fee.

Due to the manner in which the Regional User Fee is levied, the incidence of the non-Metro portion of the Regional User Fee is falling on a shrinking number of users. In point of fact, a single industrial user alone stands at risk to bear approximately 15% of the \$6.0 million estimated to be collected at non-Metro facilities in FY 1993-94 (Table 2)--calling into question the equity of distribution of costs and benefits under the current system.

Table 2
Metro Solid Waste Net Expenses by Rate Component
Budgeted Amounts FY 1993-94
(FY 1992-93 Rate Model)

Regional User Fee (Tier 1*)	
Metro Portion	\$ 11,718,603
Non-Metro Portion	6,030,536
Subtotal	\$17,749,139
Metro-Only Components	
Metro System User Fee (Tier 2*)	\$ 6,041,276
Regional Transfer Charge	4,806,882
Disposal Fee	24,811,776
Subtotal	\$35,659,934
Total FY 1993-94 Revenue Requirements	\$53,409,073

* In the original development of the current rate structure, all non-variable components were conceptually to be recovered through a "two-tiered" fee for fixed costs. The nomenclature of "Tier 1" for allocations to the regional component, and "Tier 2" for the Metro fixed component has remained in use.

The Building Blocks of a Solution

The complexity of balancing revenue adequacy with equity, stability, recycling incentives, and the other criteria for an acceptable solution means that the Solid Waste Department may rely on several financing legs in the future.

Currently, the department stands on only one "leg": disposal charges for "wet" waste (*i.e.*, waste requiring disposal in a Subtitle D landfill). Disposal charges (tipping fees) will continue to provide the bulk of funding for the solid waste system, but the extent to which they subsidize non-disposal elements must be reduced if equity and stability goals are to be realized.

Beyond disposal of "wet" waste, the department's financial requirements are caused by a number of entities and events. In general terms these are: consumption of certain products (particularly those which require special handling or disposal); generators (whether or not their waste is landfilled); and the changing nature of waste--in particular, waste which leaves the revenue base (*e.g.*, recyclables and "dry" waste amenable to processing or not requiring Subtitle D disposal). The principle of Integrated System Financing suggests that financing legs be tailored to management requirements of each event or entity. This suggestion forms the organizing principle for funding options examined in this study. The general financing legs are: special disposal fees (on products), generator fees (on generators), and license or franchise fees (on non-disposal operations).

This section summarizes these funding options--or "building blocks" of a solution--which have been examined by the Work Group and SWAC, together with a summary of discussion and preliminary conclusions.

Linkage Principle. The Revenue System Work Group of the SWAC has emphasized that funding mechanisms be linked to services provided and/or clearly related to objectives of the solid waste

management system. Funding sources should not be pursued for their own sake if their principal advantage is simply a source of financing.

Revenue Neutrality. The Work Group also emphasized that any solution be revenue neutral. Metro is not seeking new funding; rather it is seeking to redress inequities, establish a more stable revenue base, and satisfy the other criteria listed in Council Resolution No. 1824A.

Special Disposal Fees

This is a family of fees assessed against specific products or classes of products. Certain special disposal fees (e.g., advance disposal fees) are used as price-guided management tools for source reduction and recycling, or to internalize the costs of special disposal requirements. Other special disposal fees (e.g., litter charges) are designed to fund mitigation programs targeted at users' disposal habits toward the products. All special disposal fees listed below share some common features of administration (e.g., all may be levied at the point of sale), so it is feasible to think of them as a package of management tools for source reduction, recycling, and litter mitigation.

Advance Disposal Fee. Advance Disposal Fees (ADFs) are generally viewed as a tool for source reduction or internalizing the cost of disposal for items which present special disposal problems. An ADF is a fee levied on a product at some stage in its cycle from manufacturing to distribution and final consumption. An ADF is intended to influence behavior by providing a price signal to manufacturers and consumers about the full environmental cost of use and disposal.

ADFs are levied by a number of states on selected items--primarily automobile tires and lead acid batteries. These types of ADFs are linked to special or problem disposal. As a tool for source reduction, ADF proposals are usually based on packaging content.

The Revenue System Work Group recommends study of ADFs as an appropriate funding mechanism for certain elements of the solid waste management system at Metro--in particular, the Household Hazardous Waste Program--because the charge itself can be a tool for the administration and objectives of the program. Preliminary investigation suggests that there is sufficient revenue potential in the region to make an ADF program feasible. However, important questions remain on key elements of program design. For example, the efficacy of regional implementation of ADFs is untested, and may distort product markets more than achieve intended goals. The appropriate level to levy the fee in the manufacturing-distribution chain is also undecided. For some goods, there are strong arguments that ADFs work best when levied on the manufacturer. However, this may place hardships on firms which produce for export or which compete locally with imports. On the other hand, levying the ADF at the point of sale places an undue administrative burden on retailers.

Deposits. Deposits are a charge (usually collected at the point of sale) designed for refund if certain procedures are followed. The most commonly implemented form of deposit is on beverage containers. Deposits are appropriately applied to goods with no intrinsically harmful or problematic residual (compare with an ADF on lead acid batteries). A deposit is an economic incentive for proper disposal rather than a charge for disposal itself. Thus, deposits are primarily a management tool for recycling and litter control rather than a revenue source (although unclaimed deposits are often used to help defray administration costs). Deposits may be used in conjunction with other special disposal fees to aid in comprehensive management of recycling programs and litter mitigation.

Litter Fees. A litter fee is a charge on products which, due to their nature, are commonly littered or illegally disposed. Examples include tires, mattresses, furniture, carpeting, and some appliances. At Metro, receipts from litter fees would be appropriately targeted to enforcement of legal dumping, and cleanup of illegal dump sites.

Generator Fees

Generator fees are charges to generators of solid waste. They are not necessarily tied to direct consumption of services, but are designed to cover certain costs of an integrated solid waste management system. Generator fees are justified by the costs of infrastructure, planning, mandated actions, and public health which are induced by residence or business activity in the region. Accordingly, generator fees may appropriately recover non-variable costs which must be incurred regardless of the level of usage by the generator. In this manner, generator fees act in the same way as customer (or connection) charges as used by most utilities.

"Generator fee" is actually a generic term for a family of fees which can have markedly different characteristics, depending on rate design. Customers are often classified according to generation characteristics in order to tailor the fee schedule. In solid waste, residential generators are commonly identified by housing unit type (single, multifamily, mobile home) and/or parcel size. Commercial generators are often grouped by industry classification or building type. A generator fee can be designed as a connection charge wherein payers into the system receive benefits not available to non-payers, such as a lower usage charge. Generator fees can be flat fees, such as a charge per address or account; levied on the basis of imputed activity levels such as the size of the building or parcel; or based on actual activity levels, such as the number of employees, gross or net receipts. Each of these designs has different implications for administration cost.

A key issue in implementation of generator fees is the mechanism by which generators are reached for assessment, billing, collection, and enforcement. If third parties are involved in this process, the billing can be "through" --in which the third party is simply a collection vehicle; or "to"--in which the third party incurs an aggregate generator fee on behalf of its clients. In the latter case, the fees should be designed to enable the third party to pass charges on to generators in its client base. The method of implementation is sufficiently significant for this study that it defines several sub-options:

Dedicated Billing System. As no system currently exists in the region which is specifically designed to bill all solid waste generators, this option would require setting up a completely new billing system. Depending on the size of the generator fee, the start-up and administration costs could easily overwhelm receipts. The main advantage is that this option can in principle reach all generators, with customer classes defined and maintained appropriate for solid waste charges. The main disadvantage is the potential cost of the system and weak authority for collection of delinquencies.

Through the Property Tax Bill. Metro probably has authority to implement this option, but would have a large public relations job in educating and reminding the public that the generator fee is not a new tax, but that the tax bill is only a collection mechanism. This option limits the designation of customer classes to data which is available through the property tax rolls--most reliably, the address of the owner and the value of the property. This may have implications for equitable design. Equity issues are further compounded for multiple tenant addresses and rented property in which the generator may not be billed directly, and the property owner has limited scope to pass on the charge. Advantages: this option can in principle reach all generators and is less costly than an entirely new system. Disadvantages include the limited scope for equitable rate design, public relations issues, and weak authority for collection of delinquencies.

Through Utility Billings. Many of the arguments under the property tax collection mechanism above hold for this option. The utility companies will object to a new charge which customers may perceive as an increase in rates. If billing is through selected utilities (e.g., power but not gas), then the affected utility may lose market share based on the customer's conception of a rate increase. If billing is made through all utilities, there would be significant additional administrative costs to avoid double billing of addresses with multiple service (e.g., power and gas). Advantages: this option can reach a large number of generators and is less costly than an entirely new system. Disadvantages include the limited

scope for equitable rate design, potential distortion of private utility markets, and weak authority for collection of delinquencies.

Bill To or Through Jurisdictions. Under these options, Metro works with local jurisdictions to bill generators within each jurisdiction. Each jurisdiction has the ability to reach its residents by the most efficient means available. Advantages: this option can reach a large number of generators and keeps solid waste charges within the agencies which have regulatory authority. Disadvantages include coordination issues between Metro as the agency which calculates assessments, while 26 separate agencies are involved in billing and collection. As above, the "through" option has weak authority for collection of delinquencies.

Bill To or Through Haulers. Under these options, haulers would include the generator fee in their regular billings. This option has the advantage of being simple and direct: a customer charge for solid waste shows up on a garbage collection bill, consistent with the way consumers are used to being charged for utilities. Unlike the other options above, however, this option does not in principle reach all generators, but only those that subscribe to collection services. Conceptually, these customers can at present be "reached" through the standard tipping fee for disposal of commercial loads. The revenue base is not necessarily broadened; and if rate redesign causes some garbage bills to go up under a two-part fee approach, the recipients of those bills may opt out of the collection system, affecting the hauler, the franchising jurisdiction, and Metro. Advantages: this option is direct and understandable. Disadvantages include limited scope for reaching generators and price-induced risk to the revenue base.

License or Franchise Fee

A license or franchise fee is a charge for the ability to do business. This type of fee can broaden the rate base by obtaining revenues from non-disposal operations. The justification for this type of fee is that processors and other operators benefit from Metro's policies which divert valuable materials from the waste stream.

License or franchise fees can take the form of a charge for operation (rather like a business license fee), a surcharge on activity levels, or a mix of the two. Charges on activity levels can be levied on a gross or net basis. Charges on a gross basis (e.g., on tons or cubic yards delivered, or a percentage of the transaction price) has the advantage of simplicity, but the disadvantage that a firm working with a marginal or new technology cannot avoid the charge unless exempted. Charges on a net basis (e.g., net business income) does not necessarily disadvantage new firms (which typically have low or negative profits, especially if working with a new technology or infant markets), but increases the administrative reporting burden and may be a disincentive for efficient operation.

Usage Charges

A usage charge is a fee based on the amount of services consumed. Nearly all of Metro's solid waste system is currently financed through a usage charge at Metro facilities (tipping fee) and a usage surcharge (Regional User Fee) at certain non-Metro facilities. A usage charge is an appropriate means of recovering variable costs of service provision. There are several bases for establishing usage charges in solid waste:

Weight-Based Charges. A per-ton tipping fee is the most common form of usage charge in solid waste disposal. At present, Metro charges a flat \$75 per ton of waste delivered to its facilities. Weight-based charges have the advantage of being simple, unambiguous, and easy to administer. Additionally, a price schedule could be established which varies the per-ton charge according to the size of the load

delivered, and which could be designed to reflect the variable cost of service with the size of the load. An alternative approach to such a price schedule is described in "Customer Class Charges," below.

Volume-Based Charges. Similar in principle to weight-based charges, the basis for the charge is volume rather than weight. This option has been rejected by the Work Group due to the considerable scope for ambiguity in application.

Waste Class Charges. A waste class charge provides different price schedules for different types of waste. Within each class, this charge could be by weight, item, or volume depending on which is most appropriate. At present, Metro's differentiated charges for tires, household hazardous waste, source-separated recyclables, and clean loads of yard debris are examples of limited price schedules for different waste classes. Class-based usage charges can in principle be more equitable than undifferentiated charges if fees are based on the cost of disposing of different types of waste. However, implementation details such as identification and monitoring, charge backs for contaminated loads, and the administration of detailed price schedules can potentially raise the costs above those of a simpler procedure such as weight-based fees.

Customer Class Charges. A customer class charge sets up a differentiated price schedule for different types of customers. The Work Group has recommended that Metro re-examine its practice of not distinguishing between deliveries in small vehicles and deliveries in large, commercial vehicles. It is likely that station operation costs are greater for small, inefficient vehicles than for large vehicles with mechanized tipping capability. *The Work Group has recommended that Metro undertake a cost-of-service study, and entertain a pricing schedule that recognizes different costs of service, if any are found.*

"Take-or-Pay" A take-or-pay concept is common in certain utility industries where variation in demand is costly. A take-or-pay approach essentially puts resources up to bid in blocks, wherein a customer commits to purchase a certain minimum at a set price, and agrees to a separate price schedule for services above the minimum. The minimum is paid regardless of use, and in return the customer is given preferential treatment--such as a discount above the spot rate for consumption above the nominated minimum, or priority allocations in times of shortage. This approach may be relevant to assist Metro in balancing its own contracts which usually contain "put-or-pay" provisions which make waste shortfalls more costly on a per-ton basis.

Taxation

Under a tax-based system, some or all costs of programs are supported by general fund revenues which are raised by taxation.

Broad-Based Taxes. These are taxes which have wide incidence. Examples include property, income, payroll, and sales taxes. *These options were all rejected* for the following reasons: the weak or non-existent link between revenue sources and uses for solid waste management; extremely difficult to satisfy key evaluation criteria such as waste reduction incentives; the Metro charter requires a vote of the people to implement broad-based taxes, and this option is currently under study by the agency as a long-term solution to financing general government.

Niche Taxes. These are taxes which have narrow incidence. No explicit examples have been discussed, but the Work Group has directed that niche taxes be studied further.

Progress Report

The Revenue System Work Group began its work by examining a wide range of options--"building blocks" in the language of the previous section--for financing the solid waste system. The starting point for evaluation was to narrow this wide list to a manageable "long list" using common sense and philosophical principles. The "long list" would be evaluated qualitatively, using the evaluation criteria set out in Council Resolution No. 93-1824A, plus additional criteria added by the Work Group. From the "long list" will emerge a "short list" to be subjected to sharper, quantitative analysis by Metro staff and its consultant. Results will be reported to the Work Group and SWAC. Survivors of the "short list" become recommendations to the Council Solid Waste Committee.

During this discussion a number of principles have emerged which may form a basis for financing policies in the upcoming revision of the financing chapter of the *Regional Solid Waste Management Plan*:

Table 3 Emerging Principles/Policies

General Charges

There are certain services and programs which benefit all residents (persons and businesses) in the region. All residents of the region should share in the cost of these programs and services. Examples: solid waste system management, Recycling Information Center.

Usage Charges

Services which provide direct benefits to the customer using the services should be financed by usage charges based on the amount of service consumed. Usage charges should be set according to the cost of service. Example: waste disposal.

Dedicated Financing

Dedicated funding sources should be sought whenever application of special financing mechanisms serve management or implementation functions which are consistent with the objectives of the program; and when such funding sources are cost-effective. Example: special disposal fees for the Household Hazardous Waste Program.

Linkage

Funding mechanisms should be linked to services and/or clearly related to objectives of the solid waste management system. Funding sources should not be pursued for their own sake.

Surviving Options

As noted in the previous section, the group believes that any financing alternative which emerges from this study will rest on several legs. Thus, only a few of the "long list" of building blocks have been eliminated by consensus, as most options have merit if combined in a comprehensive program of integrated financing.

Consistent with the principles in Table 3 above, the Work Group has arrived at the following positions to date:

1. The broad approach to system financing is: (a) To pursue dedicated forms of funding for specific programs when the financing mechanism has an identifiable link to the program objective, provision of service, or implementation. (b) To pursue customer charges for non-variable elements

of the budget. (c) To continue financing variable costs of operation and disposal with usage charges on disposed waste.

2. Specifically, under (1.a), continue to study advance disposal fees and other forms of special fees for use as management tools for the Household Hazardous Waste and Illegal Dumping programs. Under (1.b), investigate means of billing generator fees *through* property tax and utility bills; investigate means of billing generator fees *to* jurisdictions and haulers. Under (1.c), investigate means of making the usage charge more equitable and designed to work with elements (1.a) and (1.b) above. In particular, investigate whether there is a differential cost of service by vehicle type, and whether an associated pricing system at transfer stations could be developed that reduces the incentive to opt out of the collection system. Note that a reduction of incentives to leave the collection system would make a generator fee billed through the haulers a broader-based, more stable funding mechanism.
3. A fee system should be developed for facilities to the extent that they benefit from Metro's integrated management of the solid waste system, but do not currently contribute to the cost of that system. These fees should be based on the services received, should consider the facility's ability to pay, and should not have a negative impact on the waste reduction objectives of the region.
4. As different elements of the financing system will have differing degrees of acceptance and implementability, develop a program for phasing in portions of the financing system as they are ready for implementation.
5. It is important to establish understanding and acceptance of the reasons for change and its effects. Accordingly, Metro should embark upon a program to communicate this project its broader audience of customers and the public at large.

The financing options are summarized in Table 4.

Next Steps

In order to complete its evaluations and make recommendations, SWAC has charged Metro staff and its consultants with analyzing the surviving options quantitatively, and in detail. The results will be used to evaluate the building blocks against the evaluation criteria. In order to complete this task, SWAC must also assign weights.

Table 4
Detailed Building Blocks
With Status Report
Incorporating SWAC Recommendations of 11/17/93

Option	Study	Reserve	Rejected
Special Disposal Fees			
ADFs	X		
Deposits	X		
Litter Fees	X		
Generator Fee			
Direct billing			X
Tax billing	X		
Utility billing	X		
Jurisdiction billing	X		
Hauler billing	X		
License/Franchise Fee			
Flat Fee	X		
Gross activity	X		
Net revenue	X		
Mixed flat/activity	X		
Usage charge			
Weight based	X		
Volume based			X
Waste class	X		
Customer class	X		
"Take-or-Pay"			X
Taxation			
Broad			X
Niche	X		

Where We Are

Last time:

Ended with a long "short" list of options for further study.

Intent: additional study leads SWAC to:

Rejection, or:

Recommendation to Council Solid Waste Committee with the provision that further study and planning of the options be undertaken with affected and interested parties.

Today:

Focus on the Generator Fee options

Performance on key evaluation criteria:

- o Revenue adequacy
- o Revenue stability
- o Equity
- o Incentives
- o Implementability

Action:

- o Reject
- o Recommend
- o Require further study

Clarification

Billing generator fees **"to"** vs. **"through"**
property taxes, utilities, jurisdictions, haulers

"To" agency incurs a bill; is a partner with Metro.

"Through" agency is simply a collection vehicle. No liability to Metro for no-pays.

Property tax billing and utility billings are "through" only.

Jurisdiction and hauler billings can be either.

Examples today assume a billing "to"

Findings: Stability

Both the hauler billing and the jurisdiction billing are more stable than the current system

This conclusion on hauler billing assumes:

Coverage rates in the collection system do not vary with the generation rate

Implementation of a two-part fee system (generator fee + disposal fee) does not systematically change coverage rates

The higher the coverage rate, the more stable the system

The higher the coverage rate, the lower the generation fee required to raise fixed revenue requirements.

Findings: Implementation Jurisdiction Billings

Concept:

Bill jurisdictions and let the jurisdiction find the best method to "reach" generators under its authority.

Metro calculates the appropriate bill based on estimates of generators by type within each jurisdiction. Revenue requirements are set during the annual budget process, approved by Council.

Staff and its consultant investigated water and sewer systems as means of "reaching" generators, based on their near-universality.

Water:

Coverage of generators is 90 to 95%

Customer classes generally recognize single family accounts.

Identification of customer classes appropriate for other solid waste generators is problematic

Coordination will be required among more than 20 water districts

Information on customer classes is not generally relevant to solid waste

Sewer:

Coverage of generators is 80 to 90%

Coordination will be required among only 5 or 6 sewer districts

Comments on customer class information above hold for sewer

SWAC/RRC December 15, 1993

Findings: Implementation Hauler Billings

Concept:

Bill haulers and let them include the fee as a fixed charge on garbage bills

Metro calculates the appropriate bill based on estimates of generators by type within each franchise. (With special considerations for commercial collection in Portland.) Revenue requirements are set during the annual budget process, approved by Council.

A bill to haulers will be counted as an additional cost to haulers, and rates would be increased during the normal process to accommodate this cost

Coverage of residential generators is 80 to 90%

Coverage of non-residential generators is 85 to 90%

Customer classes generally recognize single family accounts.

Haulers have different data-based abilities to discern customer classes.

The only universal data on customer classes:

- Whether the account is residential or commercial

- The size, type, and number of containers at the account

Table 0
Comparison of Generator Fees and the Regional User Fee
Effects of Different Disposal and Coverage Rates
Illustrated for Single Family Generators

Area	Conditions						Annual Remittance to Metro								% Change from mid generation
	Generator Units	Disposal (lbs/week)	Coverage Rate		Units Covered by		Average per Generator				Total for Area				
			Generator	Collection	Gen.Fee	Collection	Gen.Fee	RUF*	Disposal	Total	Gen.Fee	RUF*	Disposal	Total	
Illustration of Current System (No Generator Fee; Regional User Fee = \$19 per ton)															
A	1,000	20.0	na	85%	na	850	na	\$9.88	\$29.12	\$39.00	na	\$8,398	\$24,752	\$33,150	-17.7%
B	1,000	24.3	na	85%	na	850	na	\$12.00	\$35.37	\$47.37	na	\$10,200	\$30,063	\$40,263	0.0%
C	1,000	30.0	na	85%	na	850	na	\$14.82	\$43.68	\$58.50	na	\$12,597	\$37,128	\$49,725	23.5%
														\$123,138	
Illustration of Hauler Billing (Generator Fee = \$12 per household per year; no Regional User Fee)															
A	1,000	20.0	85%	85%	850	850	\$12.00	\$0.00	\$29.12	\$41.12	\$10,200	\$0	\$24,752	\$34,952	-13.2%
B	1,000	24.3	85%	85%	850	850	\$12.00	\$0.00	\$35.37	\$47.37	\$10,200	\$0	\$30,063	\$40,263	0.0%
C	1,000	30.0	85%	85%	850	850	\$12.00	\$0.00	\$43.68	\$55.68	\$10,200	\$0	\$37,128	\$47,328	17.5%
														\$122,543	
Illustration of Jurisdiction Billing (Generator Fee = \$12 per household per year; no Regional User Fee)															
A	1,000	20.0	90%	85%	900	850	\$12.00	\$0.00	\$29.12	\$41.12	\$10,800	\$0	\$24,752	\$35,552	-13.0%
B	1,000	24.3	90%	85%	900	850	\$12.00	\$0.00	\$35.37	\$47.37	\$10,800	\$0	\$30,063	\$40,863	0.0%
C	1,000	30.0	90%	85%	900	850	\$12.00	\$0.00	\$43.68	\$55.68	\$10,800	\$0	\$37,128	\$47,928	17.3%
														\$124,343	

Note: Metro disposal fees total \$56 per ton for all options.

* RUF= Regional User Fee

Table 1
Comparison of Generator Fee and Regional User Fee
Data by Jurisdiction 1992-93

Jurisdiction	Generators		Tonnage			Annual Generator Fee (GF)			Regional User Fee (RUF)			Difference (GF-RUF)
	Residential	Non-Resid.	Residential	Non-Resid.	Total	Residential	Non-Resid.	Total	Residential	Non-Resid.	Total	
Clackamas*	32,803	32,843	20,320	32,691	53,011	393,636	596,991	990,627	386,081	621,125	1,007,206	-16,579
Multnomah*	10,636	3,286	6,771	5,048	11,820	127,632	75,139	202,771	128,651	95,921	224,572	-21,801
Washington*	48,308	25,041	30,399	25,044	55,443	579,696	430,479	1,010,175	577,586	475,833	1,053,420	-43,245
Beaverton	23,478	27,980	14,147	27,342	41,489	281,736	539,387	821,123	268,789	519,495	788,284	32,839
Cornelius	2,180	612	1,406	942	2,348	26,160	14,744	40,904	26,718	17,889	44,607	-3,703
Durham	264	264	173	331	504	3,168	5,726	8,894	3,290	6,294	9,584	-690
Fairview	1,075	918	670	752	1,422	12,900	15,900	28,800	12,732	14,292	27,025	1,775
Forest Grove	4,745	3,667	3,022	3,838	6,860	56,940	72,644	129,584	57,410	72,926	130,336	-752
Gladstone	4,180	1,746	2,626	2,321	4,948	50,160	39,471	89,631	49,902	44,104	94,006	-4,375
Gresham	27,570	24,298	17,150	24,653	41,803	330,840	428,296	759,136	325,855	468,402	794,257	-35,122
Happy Valley	555	103	367	208	574	6,660	2,622	9,282	6,964	3,945	10,909	-1,626
Hillsboro	14,722	14,072	9,195	14,867	24,062	176,664	265,461	442,125	174,703	282,467	457,170	-15,046
Johnson City	447	11	269	38	307	5,364	313	5,677	5,113	715	5,828	-150
King City	1,123	6,547	710	7,946	8,657	13,476	128,620	142,096	13,492	150,982	164,475	-22,378
Lake Oswego	14,136	21,645	8,704	16,339	25,044	169,632	323,719	493,351	165,382	310,450	475,832	17,519
Maywood Park	290	56	192	50	242	3,480	1,289	4,769	3,639	955	4,593	176
Milwaukie	9,462	5,718	5,797	5,317	11,113	113,544	102,438	215,982	110,136	101,015	211,151	4,831
Oregon City	6,931	8,104	4,339	8,810	13,149	83,172	154,564	237,736	82,432	167,391	249,823	-12,087
Portland	201,186	393,377	126,219	324,673	450,892	2,414,232	6,286,829	8,701,061	2,398,166	6,168,788	8,566,955	134,107
Rivergrove	123	15	81	33	114	1,476	414	1,890	1,543	626	2,170	-279
Sherwood	1,323	498	833	872	1,706	15,876	12,471	28,347	15,835	16,573	32,408	-4,062
Tigard	13,054	15,999	8,072	15,475	23,547	156,648	303,508	460,156	153,373	294,026	447,398	12,758
Troutdale	2,530	2,762	1,660	3,172	4,832	30,360	47,771	78,131	31,533	60,276	91,809	-13,678
Tualatin	6,691	6,468	4,025	5,005	9,030	80,292	121,684	201,976	76,466	95,101	171,567	30,409
West Linn	5,915	2,651	3,826	2,971	6,797	70,980	49,221	120,201	72,703	56,441	129,144	-8,943
Wilsonville	4,160	5,114	2,475	3,188	5,663	49,920	85,884	135,804	47,032	60,566	107,598	28,206
Wood Village	1,096	499	708	487	1,195	13,152	10,033	23,185	13,448	9,247	22,696	489
Total	438,983	604,296	274,157	532,413	806,570	\$5,267,796	\$10,115,617	\$15,383,413	\$5,208,976	\$10,115,845	\$15,324,821	\$58,593

*Unincorporated portion within Metro boundary

Definitions and Explanations

Generator basis: Households (residential), Employees (non-residential)

Tonnage based on generation and delivery factors applied to underlying data

Generator fees based on \$12 per household and rate schedule for non-residential generators

Regional User Fee per ton: \$19.00 based on delivered tonnage

Table 2
Comparison of Generator Fee and Regional User Fee
Effect of a 10% Reduction in Disposal Compared with 1992-93
Holding the Regional User Fee at its 1992-93 Level

Jurisdiction	Generators		Tonnage			Annual Generator Fee (GF)			Regional User Fee (RUF)			Difference (GF-RUF)
	Residential	Non-Resid.	Residential	Non-Resid.	Total	Residential	Non-Resid.	Total	Residential	Non-Resid.	Total	
Clackamas*	32,803	32,843	18,288	29,422	47,710	393,636	596,991	990,627	347,473	559,012	906,486	84,141
Multnomah*	10,636	3,286	6,094	4,544	10,638	127,632	75,139	202,771	115,786	86,328	202,115	657
Washington*	48,308	25,041	27,359	22,539	49,899	579,696	430,479	1,010,175	519,828	428,250	948,078	62,097
Beaverton	23,478	27,980	12,732	24,608	37,340	281,736	539,397	821,123	241,910	467,546	709,455	111,667
Cornelius	2,180	612	1,266	847	2,113	26,160	14,744	40,904	24,046	16,100	40,146	757
Durham	264	264	156	298	454	3,168	5,726	8,894	2,961	5,665	8,625	268
Fairview	1,075	918	603	677	1,280	12,900	15,900	28,800	11,459	12,863	24,322	4,478
Forest Grove	4,745	3,667	2,719	3,454	6,174	56,940	72,644	129,584	51,669	65,634	117,302	12,282
Gladstone	4,180	1,746	2,364	2,089	4,453	50,160	39,471	89,631	44,912	39,694	84,605	5,025
Gresham	27,570	24,298	15,435	22,187	37,623	330,840	428,296	759,136	293,270	421,562	714,832	44,304
Happy Valley	555	103	330	187	517	6,660	2,622	9,282	6,268	3,550	9,818	-535
Hillsboro	14,722	14,072	8,275	13,380	21,655	176,664	265,461	442,125	157,233	254,220	411,453	30,671
Johnson City	447	11	242	34	276	5,364	313	5,677	4,602	643	5,245	432
King City	1,123	6,547	639	7,152	7,791	13,476	128,620	142,096	12,143	135,884	148,027	-5,931
Lake Oswego	14,136	21,645	7,834	14,706	22,539	169,632	323,719	493,351	148,844	279,405	428,248	65,102
Maywood Park	290	56	172	45	218	3,480	1,289	4,769	3,275	859	4,134	635
Milwaukie	9,462	5,718	5,217	4,785	10,002	113,544	102,438	215,982	99,122	90,914	190,036	25,946
Oregon City	6,931	8,104	3,905	7,929	11,834	83,172	154,564	237,736	74,189	150,652	224,841	12,895
Portland	201,186	393,377	113,597	292,206	405,803	2,414,232	6,286,829	8,701,061	2,158,350	5,551,909	7,710,259	990,802
Rivergrove	123	15	73	30	103	1,476	414	1,890	1,389	564	1,953	-62
Sherwood	1,323	498	750	785	1,535	15,876	12,471	28,347	14,252	14,915	29,167	-821
Tigard	13,054	15,999	7,265	13,928	21,193	156,648	303,508	460,156	138,035	264,623	402,659	57,498
Troutdale	2,530	2,762	1,494	2,855	4,349	30,360	47,771	78,131	28,380	54,248	82,628	-4,497
Tualatin	6,691	6,468	3,622	4,505	8,127	80,292	121,684	201,976	68,820	85,590	154,410	47,566
West Linn	5,915	2,651	3,444	2,674	6,117	70,980	49,221	120,201	65,433	50,797	116,230	3,971
Wilsonville	4,160	5,114	2,228	2,869	5,097	49,920	85,884	135,804	42,329	54,509	96,838	38,965
Wood Village	1,096	499	637	438	1,075	13,152	10,033	23,185	12,104	8,323	20,426	2,759
Total	438,983	604,296	246,741	479,172	725,913	\$5,267,796	\$10,115,617	\$15,383,413	\$4,688,078	\$9,104,260	\$13,792,338	\$1,591,075

*Unincorporated portion within Metro boundary

Definitions and Explanations

Generator basis: Households (residential), Employees (non-residential)

Tonnage based on generation and delivery factors applied to underlying data

Generator fees based on \$12 per household and rate schedule for non-residential generators

Regional User Fee: \$19 per ton based on delivered tonnage. With indicated reduction in disposal, the fee would be: **\$21.11**