EXHIBIT____(RGC-3)

FINAL STAFF REPORT:

NOTICE OF INQUIRY

SOLID WASTE RATE DESIGN

TG-901250

WASHINGTON UTILITIES AND

TRANSPORTATION COMMISSION

OLYMPIA, WASHINGTON

July 20, 1992

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I. EXECUTIVE SUMMARY

Solid waste collection companies regulated by the Washington Utilities and Transportation Commission (Commission) are required by law to use rate structures and billing systems consistent with Washington State's solid waste management priorities which rank waste reduction and recycling above disposal of mixed waste. The Commission issued this Notice of Inquiry (NOI) to see if current rate design approaches could be improved to meet this goal. Although comments were received from a number of parties, there was insufficient information to support most of the approaches suggested. To assess the technical feasibility of these approaches, staff conducted a workshop to gather more information.

Staff concludes that virtually all approaches would have merit under different circumstances. However, the only ones that the Commission can feasibly pursue under existing authority are those that recover costs directly involved in providing service. Therefore, staff recommends the following improvements to the Commission's existing cost-of-service methodology that should help increase incentives to ratepayers. Recommendations include:

- New weight and time studies should be performed. Procedures for haulers or local governments to use in performing specific local time and weight studies should be developed. Class A companies should perform studies to develop weights and times specific to their operations; Class B companies may use average weight and time figures characteristics.

- Companies should continue to submit data sufficient to allow the staff to determine the effect of rate changes on customer behavior.

- Mini-cans and every-other-week service should be available to all customers of Commission-regulated companies.

- Billing notices should assist customers to identify costs and services clearly and accurately, as usage data is now contained on electric and telephone utility bills.

- The Commission should study technology options, system costs, and incentives to encourage regulated firms to use garbage-by-the-pound billing systems.

II. RECOMMENDATIONS AND POLICY DISCUSSION

A. Discussion

This is the final staff report on solid waste rate design, concluding the Notice of Inquiry (NOI, Docket TG-901250) begun in November, 1990. State law directs the Commission to require solid waste collection companies to use rate structures and billing systems consistent with the state's solid waste management priorities (RCW 81.77.030(6)). These priorities rank waste reduction, recycling, and disposal of segregated waste above disposal of mixed waste (RCW 70.95.010). The Commission wanted to look at solid waste rate design to see if current embedded cost approaches could be improved upon to meet this goal.

The Commission issued a NOI and received comments from over 25 parties. Although there was almost total support for "incentive rates," there was insufficient information to support the most popular alternatives (use of avoided cost or marginal cost pricing) or to indicate the feasibility of altering the current approach to cost allocation or rate design (see the first NOI report: "Notice of Inquiry: Solid Waste Collection Rate Design and Incentive Rates," October, 1991).

In order to assess the feasibility of these approaches, the Commission directed staff to gather more information through a workshop with local governments and technical experts. The workshop raised a number of policy questions and presented a broad spectrum of possible approaches to cost allocation and rate design. Staff concludes that, while virtually all rate design approaches provided at the workshop and in comments would have merit under different circumstances, their viability under existing regulatory arrangements is limited by two conditions.

First, the Commission has jurisdiction over rates for solid waste collection, but not over rates for solid waste disposal. This means that disposal fees included as a cost of collection

cannot, for the most part, be scrutinized and set according to Commission standards of reasonableness. This also means that the Commission has no information about whether disposal fees include sufficient funds for costs such as landfill closure; future disposal siting; cleaning up illegal dumps; and providing waste reduction education. Such information is contained in records and documents that are not readily available to Commission staff. Ease of administration is a high rate-setting priority for an industry such as solid waste collection in Washington, where over 100 collection companies have tariffs that must be approved by the Commission. Since avoided costs are driven by disposal decisions to a large degree, this jurisdictional division between collection and disposal indicates that it is not feasible for the Commission to administer an avoided cost rate design approach at this time.

Second, the Commission lacks statutory authority to levy a tax or to create funds for undefined future uses. The absence of such authority limits our ability to implement policies that would charge ratepayers for costs other than those directly involved in providing service. Some proposed rate design approaches would raise rates above actual revenue requirement in order to generate funds for local government solid waste purposes. Others proposed creating a fund which would be used to compensate a hauler for revenue shortfall due to reductions in service levels by customers.

B. Recommendations

As a consequence of the limits discussed above, staff recommendations focus on improvements to the Commission's existing cost allocation methodology. The current approach (through the "Meeks" model) meets essential criteria of fairness and reasonableness, yet provides flexibility that will allow the model to be adapted to reflect new assumptions in the future. The current approach is capable of producing rates that provide incentives for reducing waste, while recovering no more than the actual cost of providing convenient solid waste collection and disposal service to homeowners and businesses. One advantage of the Meeks model is that it already allocates certain shared costs (such as those

associated with "run time," time spent traveling to and from the landfill) by weight, thus providing a price incentive for customers to reduce weight by reducing their subscription levels.

Based on this investigation, staff recommends implementation of the following proposals for improving the Meeks model:

- New weight and time studies should be performed. Such studies should include new service level options such as occasional extras, toters, and mini-cans.

- Working with haulers and local governments, the Commission should develop guidelines, standards, procedures or criteria to use in performing specific local time and weight studies.

- Class A companies, independently or in conjunction with local governments, should continue to perform studies to develop weights and times specific to their operations. The Commission should develop standards such that Class B companies may use average weight and time figures, with the caveat that such averages should accurately reflect their company's operating characteristics.

- The Commission should acquire data sufficient to allow the staff to determine the effect of rate changes on customer behavior. This would include data on rate levels, customers per service level, and weight being disposed and/or recycled.

- Staff recommends that mini-cans and every-other-week service should be available to all customers of Commission-regulated companies, regardless of the provision of curbside recycling, in order to provide service options and price incentives for people who can successfully reduce the amount of waste they generate.

In addition, staff recommends that the Commission consider adopting the following changes:

- Billing notices should assist customers to identify costs and services more clearly and easily, such as usage data now contained on electric and telephone utility bills. Such information can provide incentives for customers to change their behavior by linking such changes to specific aspects of service.

  Staff believes that bills should separately disclose: 1) recycling rates, 2) taxes, and 3) local government surcharges. A longer term goal should be to develop billing formats that show a fixed "customer service" charge separately from a variable "usage" charge. This would tend to produce rates that increase with increasing usage (a goal of many commenters), yet still help ensure recovery of the company's revenue requirement through the fixed customer service charge.

- Garbage-by-the-pound rates seem to provide the best alternative for providing customers with information and incentives to reduce the amount of waste they put out for disposal. The Commission should study technology options, system costs, and potential incentives the Commission might adopt to encourage regulated firms to use such a system.

III. Discussion of Policy Issues

The workshops produced a number of proposals, suggestions, and comments that related less to technical rate design approaches and more to procedures, policies, and larger issues. These are discussed below.

POLICY ISSUE 1: What Is The Appropriate Local Government Role In Rate Design?

There was considerable interest by workshop participants in having the Commission defer to the rate design direction of local governments. This interest took a number of forms in small group discussions and produced a number of recommendations, including the following:

- Allow counties to set rate policy through comprehensive solid waste plans or a service level ordinance, and have the WUTC determine revenue requirement and set the actual rate.

- Include direction from the county on rate structures.

- Allow counties to design rates.

- The Commission should honor (respond to; respect; adhere to; defer to) local jurisdictions' rate structure proposals, service levels, etc.

- Commission staff should form rate design teams that include county staff.

- Let Commissioners know that counties are willing to take rate design responsibility.

- Formalize a process for intergovernmental communication.

- The Commission could quantify the revenue requirement and the local government could provide input, regional perspective, on rates.

- Put out a call for different rate design ideas, try each in a pilot area, and evaluate the results, keeping in mind the differences in areas.

DISCUSSION: The Commission currently has no established policy on local government involvement in rate design. Several counties have included rate design criteria as part of their service level ordinance. In some cases, county staff have met with Commission staff to discuss the county's objectives and how rates may be designed to help achieve those objectives. Not all counties have expressed an interest in rate design.

Commission staff believes that involving local governments in discussions is worthwhile. However, accountability is a major issue when considering what role local governments may play. The Commission is charged by law with setting rates that are just, fair and reasonable. In addition, since setting of utility charges represents taking ratepayer property (i.e. their money), the Commission must ensure that ratepayers are provided with due process of law. This means that any process established by the Commission for setting collection rates must be open for ratepayer scrutiny and involvement. In sum, the Commission is accountable to ratepayers, regulated companies, and the legislature for both the level of rates and the process by which rates are established.

Counties do not operate with the same statutory and constitutional obligations in terms of solid waste collection. If local governments are to have a role in rate design, the Commission must ensure that the same standards of accountability are met. This indicates that any rate design proposals, standards, or criteria, whether contained in a service level ordinance or a solid waste plan, should be based on principles that are just, fair and reasonable. In addition, the Commission must be assured that ratepayers have been provided with both notice and opportunity for involvement. If these conditions are met, local

government input on rate design may be appropriate. Unless the legislature changes statutory authority, however, the final responsibility for rate setting rests with the Commission and the Commission will be legally accountable for the process and specific justification that produces rates. Therefore, any local government input on rates approved by the Commission pursuant to its authority must remain advisory to a greater or lesser degree.

Commission staff already communicate with local solid waste officials during solid waste plan review, and are often contacted by such officials during rate filings. Since not all counties are interested in or need incentive rates, and since Commission staff are currently available to meet with local officials on an as-needed basis, a formal mechanism for intergovernmental involvement may not be necessary at this time.

Appropriate local government roles in rate design should include:

- Receiving notification by haulers of proposed rate increases;
- Obtaining access to information such as rate levels, customer counts, etc.;
- Helping perform cost-of-service studies, including time and weight analysis;
- Involving the public through the local Solid Waste Advisory Committee;
- Preparing solid waste management plans;
- Monitoring population and disposal changes to help assess changes in waste generation;
- Meeting with Commission staff to discuss local objectives and specific hauler rate proposals;

- Testifying at Open Meetings;

- Participating in formal rate case hearings.

POLICY ISSUE 2: Should The Commission Use A Single Rate Design Method, Or Should It Have Multiple Approaches Depending On Regional Differences, Local Desires, Or Different Haulers' Characteristics?

In testimony in TG-2016 about applying the Meeks model, Commission staff said they were ready to distinguish between large and small garbage collection companies -- i.e. larger companies would do their own cost-of-service studies, while smaller ones could get help from staff. A consistent theme in small group discussions at the workshop was using different rate design approaches to some degree, e.g.:

- Meeks weights and times should be updated, but using data from specific locales.

  Comment: Staff agrees.

- Rate design should be sensitive to local characteristics.

  Comment: Staff agrees, to the extent that such differences are demonstrated by valid time and weight studies, actual tipping fees, etc.

- Rate design should maintain enough flexibility to recognize different community needs, regional differences, and community desires.

  Comment: Staff agrees that rate design should be flexible, and believes that current adaptions of Meeks demonstrate that flexibility. A single state-wide incentive rate design is probably not necessary, given research showing that a relatively large percentage of customers already subscribe to the minimum available service level,

one-can collection (see Table 1, "Report on the Workshop Held March 5 and 6, 1992," attached as Appendix 1, below, and the first NOI report pp. 10-12).

- The Commission could develop a menu of acceptable techniques from which local governments would select the rate design approach they wished to be used in their jurisdiction.

  Comment: If a local government wishes to use an alternative rate design, they are free to propose it in the context of a rate filing for the Commission to evaluate through a formal hearing process.

POLICY ISSUE 3: Treat Solid Waste As A Utility.

Several small groups recommended treating solid waste as a utility rather than as a transportation industry. Several types of concerns seemed to come under this issue, including considering long-run whole-system costs and using a two-part billing structure. One group pointed out that solid waste is a mixed industry, half transportation and half utility, and recommended developing allocation factors that recognize this factor.

DISCUSSION: To a large extent, solid waste regulation at the Commission is already based on utility principles.

- The Lurito-Gallagher approach, used to determine revenue requirement, is a modified rate-base approach. Thus, it is similar to techniques used for setting utilities' rates of return, and less like the operating ratio method used to set rates of return for transportation companies.

- The Meeks approach to rate design is essentially identical to that used by utilities to allocate costs among functional categories of service.

- Each solid waste company has a unique tariff approved by the Commission, unlike motor freight tariffs which apply to all carriers.

Adopting two-part tariffs for solid waste companies would make their bills more closely resemble other utility bills (e.g. phone or electric bills). This is one of staff's recommendations. One important barrier to complete utility-style regulation of the solid waste industry, by either local governments or the Commission, is the fact that under current statute the Commission has jurisdiction only over collection and not any other part of the solid waste management system. In contrast, Commission jurisdiction over electric utilities includes all aspects of the system, including planning, generation, transmission, distribution, resource acquisition, and so on.

POLICY ISSUE 4: To What Extent Should The Commission, An Economic Regulator, Be Responsible For Encouraging Waste Reduction?

Workshop discussions brought up the issue that waste reduction may best be accomplished by means other than solid waste rate structures. One group recommended that the Commission recognize that it may be easier for the Commission to encourage recycling, but that waste reduction should be left to other decision makers.

DISCUSSION: Staff agrees that waste reduction may best be left to other decision makers. As discussed in the first NOI report, a change in price may produce a change in behavior but there is no guarantee that consumers are actually reducing the amount of waste they generate even if they reduce the amount they put in their garbage cans. Instead they may be disposing of waste in an unsanitary or illegal manner.

To maximize socially desirable waste reduction behavior, wide-spread public education and promotion programs should be implemented at the same time as a rate increase. Providing such programs is not currently the role of the Commission, whose major statutory responsibility is regulating economic conditions of private industries. The Commission could

require regulated companies to provide education, but this could be inefficient for several reasons. First, regulated companies have direct access only to their customers. People who subscribe to garbage service represent only a portion of total households even in the most populous areas of the state. Second, decentralized decisions about how to educate for waste reduction are likely to be less effective than uniform and universal programs that deliver the same message to all citizens in an area. This suggests that local government should take primary responsibility for waste reduction education and promotion. This is precisely where the state's solid waste management law now places such responsibility (see RCW 70.95.010(6)(c)).

POLICY ISSUE 5: Should Implementation Of Incentive Rates Be Based More On Observed Behavior And Less On Theory?

DISCUSSION: Proper disposal of solid waste is a vital public need so it is important that people have access to reasonably-priced basic service. There is a danger that pricing this service too high will cause hardship to ratepayers on one hand, or encourage illegal disposal on the other.

Parties submitted very little objective evidence about behavior changes due to price changes. In fact, while the primary evidence came from Seattle, the City submitted a letter following the first NOI report suggesting that elasticity of demand was less than they had originally thought (see Appendix 2). This underscores the need to gather good information about the effect of rate changes. One of staff's recommendations addresses the need to gather data from regulated companies on customer behavior.

I. REPORT ON WORKSHOP

A. General Description

On March 5 and 6, 1992, the Commission sponsored a workshop on solid waste collection rate design at the Tacoma Dome Quality Hotel. The goal of the workshop was to present and discuss specific alternative rate design approaches so staff had the basis for recommending a preferred approach. Representatives from the solid waste collection industry, state and local government, and consultants active in solid waste management issues attended the workshop.

Workshop participants began the first day discussing criteria that could be used to evaluate the alternatives presented at the workshop. Following discussion, the attendees responded to a survey which asked them to rank and comment upon various criteria.

The remainder of the first day of the workshop was primarily devoted to cost-of-service based solid waste collection rate approaches. The first Commission staff presentation by Bob Colbo covered the principles of cost-of-service. A second presentation by Ananda Rao of the Commission focused on the Meeks approach used by Commission staff today.

As part of the Notice of Inquiry, Commission staff surveyed solid waste collection companies to determine the number of customers subscribing to different service levels and the rates charged for those services. Steve Wamback described the results of that survey, with a specific focus on the large number of customers already subscribing to one-can and mini-can service. Discussion followed on the link between rates and subscription, a theme repeated throughout the workshop.

Since the first Commission-regulated haulers requested recycling rates, the Commission has allowed various incentive rate approaches. Teresa Osinski summarized current Commission

incentive programs and rate structures. There was discussion on the appropriateness and limitations of these existing incentives.

After a lunch break, Lisa Skumatz from Synergic Resources Corporation spoke about "Garbage by the Pound," a rate setting method that allocates and assigns costs based on actual can weights rather than can size or averaged can weights. In the final presentation for the first day of the workshop, Steve Wamback and Ananda Rao discussed alternative approaches to rate setting that could be accomplished by adjusting Meeks allocation assumptions. The presentation included methods through which Meeks could be modified and a sample of the resulting rates. Offered as a counterpoint was the effect of disposal fee changes on rate spreads. Staff demonstrated how many of the same incentives resulting from modifications to the Meeks approach also resulted from increased disposal fees.

The first day of the workshop concluded with discussions of preferred rate design approaches by the participants in small groups. Following group discussions, the assembly reconvened and the groups reported their results.

Day two focused loosely on avoided cost rate making approaches. Ken Elgin, the Commission's Assistant Director for Energy, began with an examination of how the Commission uses avoided cost techniques in the regulation of electric utilities. Representatives from the King County Solid Waste Division, the City of Seattle Solid Waste Utility, and the Clark County Department of Public Services proposed a variety of ways to incorporate avoided costs into solid waste collection rate making. John Sturdivant of King County focused on the issue of long-run marginal cost pricing. Nick Pealy explained Seattle's three-part allocation method. George Sidles of Clark County proposed a rate stabilization mechanism to insure haulers against risk.

Two final alternatives were offered by Jeffrey Showman of the Commission's Policy Research office. One proposed that the Commission split solid waste collection bills into two components--one for fixed costs and the other for variable costs, which could include

disposal fees. The second was an avoided cost alternative in which rates would be set by identifying possible collection and disposal scenarios. Rate structures would reflect the customer classes' contribution to the need for trucks, employees, and disposal capacity.

As on the first day, the assembly divided into small groups for discussions. Attendees were asked to discuss and recommend policy issues that they wanted to see included in the Notice of Inquiry.

B. 1991 Collection Company Survey

Commission staff surveyed Washington State's certificated haulers in 1990 to see if there was any connection between rates and subscription levels. Sixty percent of households receiving solid waste collection at that time subscribed to one can of service weekly, while only three and one-half percent subscribed to three or more cans per week. There was great variability among collection companies: one-can subscriptions ranged from 35% of customers up to 98% of customers.

Staff repeated the survey in November, 1991. Customers now have a wider array of service options available to them: mini-cans, monthly and bi-weekly collection, recycling and yardwaste collection have augmented the traditional one-can, two-can or three-can service. (See Table 1).

Compared to the previous survey, a smaller percentage of customers subscribe to one-can weekly service. However, adding together all customers subscribing to toter services, mini-cans, bi-weekly, and monthly collection options, nearly 74% of customers have one or fewer units of waste collected each week. Even fewer customers subscribe to more than two cans per week: the percentage fell from 3.5 percent in 1989 to less than 2 percent in 1991.

Comparing haulers with recycling programs to those without shows certain similarities. Both groups have reduced the level of multiple can subscriptions (i.e. two or more cans per week). One difference is that haulers with recycling programs have eight percent fewer one-can customers than haulers without recycling. This is in part due to customers switching to mini-can service, but also due to larger numbers of toter subscribers. This may reflect the fact that toters and recycling tend to be available in the same areas. It may also reflect higher demand for one-can service in areas with lower household income (see first NOI report, October 1991, p. 10), and these areas may be in rural counties that do not have curbside recycling in place.

(On Table 1, lines reading "Company Average" represent the rate charged by the average company (i.e the sum of rates divided by the number of companies). In contrast, the "Ratepayer Average" is the rate paid by the average ratepayer (i.e. the sum of rates divided by the number of ratepayers), and essentially represents a weighted average rate with the number of customers as the weighting factor. As a result, company average rates and ratepayer average rates are not the same because different companies serve different numbers of customers.)

TABLE 1

Hauler Survey of service levels and rates

	Total Cust. Count	Weekly: Mini Can	1 Can	2 Can	60 Gal Toter	90 Gal Toter	Other Weekly Service	Monthly: 1 Can	EOW: 1 Can
Service Areas with Recycling									
Customer Count	316545	10178	164791	75454	28825	20704	8095	6619	1879
Service Level Share		3.22%	52.06%	23.84%	9.11%	6.54%	2.56%	2.09%	0.59%
Company Average		$7.95	$10.47	$14.12	$14.11	$15.05	$17.24	$6.22	$9.26
Ratepayer Average		$6.82	$9.85	$13.09	$12.38	$12.63	$16.41	NA	NA
Median Rate		$7.85	$9.79	$13.00	$14.26	$14.58	$16.00	$5.78	$9.34
Service Areas Without Recycling									
Customer Count	158236	211	95297	40452	4223	9922	3476	2036	2619
Service Level Share		0.13%	60.22%	25.56%	2.67%	6.27%	2.20%	1.29%	1.66%
Company Average		$6.07	$8.31	$11.30	$10.93	$13.09	$14.41	$4.38	$6.78
Ratepayer Average		$6.96	$7.98	$10.14	$11.47	$11.39	$12.18	NA	NA
Median Rate		$6.03	$7.98	$11.00	$10.20	$11.97	$13.95	$3.83	$7.00
All Companies									
Customer Count	474781	10389	260088	115906	33048	30626	11571	8655	4498
Service Level Share		2.19%	54.78%	24.41%	6.96%	6.45%	2.44%	1.82%	0.95%
Company Average		$7.73	$9.13	$12.36	$13.00	$14.07	$15.51	$5.32	$7.53
Ratepayer Average		$6.82	$9.17	$12.06	$12.26	$12.23	$14.87	NA	NA
Median Rate		$7.65	$8.90	$12.08	$12.30	$13.32	$15.65	$5.05	$7.35
1990 Survey									
Customer Count	214299	0	128523	78341			7435		
Service Level Share		0.00%	59.97%	36.56%			3.47%		
Company Average			$7.67	$10.87			$14.27		

II. Discussion and Evaluation of Alternatives

A. Process, Criteria, and Ranking System

The classic text on ratemaking by Bonbright identifies ten attributes of a sound rate design (see James C. Bonbright, Albert L. Danielson, and David Kamerschen, Principles of Public Utility Rates, Second Edition (Public Utility Reports, Inc.: Arlington Va., 1988), pp. 383-384). Staff has used these criteria with minor adaptions (e.g. incorporating "Does it promote waste reduction and recycling" into Bonbright's "Does it promote efficient use of the service") to evaluate the various rate design options. Commissioners were asked to give their preferences for the different criteria to give staff guidance on how to weight the different objectives. Additional input on criteria was provided from a survey of workshop participants.

The NOI team described each alternative, then identified and discussed advantages and disadvantages of each. Each member, on their own, ranked each alternative from one to seven on how well it performed in terms of meeting each criteria. A score of "7" meant that the alternative did an excellent job of meeting a particular criterion, a "1" meant that it did a poor job, and a "4" meant that it was average. All of the team members' scores were added to give a group average score. The team discussed the scores and proposed recommendations based on scores, discussions of advantages and disadvantages of alternatives, and consideration of Commissioners' criteria ranking.

B. Discussion of Alternatives From The Workshop

1. Current Cost-of-Service

The Commission currently uses an embedded cost-of-service approach called the Meeks approach or Meeks model after the consultant who proposed using it. Several things are

embodied in this approach, including a model contained on a computer spreadsheet and a process for obtaining data and running the model.

There are three basic components to the cost-of-service model:

- An expense matrix which is used to allocate costs among customers based on various criteria (in columns AA to AU);
- A price-out (columns C to K on the spreadsheet); and
- The Meeks model, an allocation of costs according to various indicators such as time or weight (columns O to W).

The proforma income statement from a suitable test year is used as input into the model.

The basic steps in the process are:

1. An audit is performed on a solid waste collection company that has requested a rate increase to gather data from a typical test year. This information is used to produce a proforma income statement, which gives effect to anticipated changes in the company's expenses and revenues. These inputs are provided to the Commission staff member who performs the cost-of-service study.

2. A price-out is constructed from data supplied by the company. The proforma is used to check on the price-out, and to true-up the company's price out figures compared to actual reported revenues.

3. The Meeks model is completed using the expense matrix.

    a. Drop box disposal fee pass-through revenues are given special treatment, subtracted from other revenues.

b. The Meeks recommended figures (e.g. unit weight by customer, unit stop and run time per customer, etc.) are used in the model to develop estimated times and weights, and used to allocate costs among the various service levels.

c. Total tonnage from the Meeks model is checked against actual tonnage, and, if necessary, revised to reflect actual weight.

d. The resulting total allocated cost by service category is divided by total pick-ups to arrive at cost by service level.

4. The result is a cost-of-service rate structure. This is given to the accountant, who uses it as a tool in analyzing the reasonableness of company proposed rates. They may also use it in bargaining or negotiating a new rate structure with the company. While rate structure will tend to reflect the cost-of-service model, final rates may or may not be exactly the same as the rate design given by the model.

POTENTIAL ISSUES OR PROBLEMS

1. Some disposal sites still charge according to cubic yards rather than tonnage. Since Meeks' weights are distributed by weight, the analyst must either make assumptions about converting yards to tons using conversion factors, or use the Meeks weight factors to distribute yardage costs.

2. Weight and time are the two key allocation factors in the Meeks model. The Meeks study was performed on 12 companies owned by three firms (Rabanco, RST, and Waste Management). All of these are relatively large and are located in urbanized western Washington locations. Thus, the Meeks time and weights may reflect a bias toward large, urban companies. Garbage collection companies in more rural areas of the state may not have the same time or weight per customer, although the 1988 Best

Management Practices study of solid waste found, through state-wide sampling, that all areas of the state tended to generate the same amount of waste per day.

3. Time and weight figures came from relatively few observations by companies and WUTC staff during a relatively brief period. Thus, the data may not reflect variations in time or weight that result from weather (wet garbage is heavier, and rain may slow down crews), seasonal variation, or other statistical variations.

4. The Meeks model was part of a settlement agreement that included common rates in overlapping certificate areas. Thus, Meeks time and weights reflect a hypothetical garbage company rather than actual figures.

5. Although class A companies are supposed to do their own cost-of-service studies, many have not.

6. In several instances, data may not match the information needs of the cost-of-service model.

   a. Rather than getting the number of customers, auditors may obtain the number of pickups and then estimate the number of customers from this.

   b. Staff does not have a standard form or checklist to ensure that they have obtained data necessary for the cost-of-service study. Staff are instructed in the types of information required to complete the cost study, but individual circumstances in different audits sometimes affect customers.

   c. Recycling and yardwaste programs are outside the cost-of-service study.

   d. City contracts, both revenue and expense, should be outside the Commission's cost and expense data, but expenses are commingled in an estimated ten to 20

percent of cases. It is difficult to separate contract expenses when they are mixed.

e. Truing up according to the proforma is intended to be a "reality check" on the Meeks numbers, but it can be thrown off. For instance, under a scenario where there has been growth in number of residential customers but residential customers have successfully reduced their weight, while commercial waste reduction and recycling has not been successful in reducing waste, the true up will tend to shift weight to the residential class.

f. Because the cost-of-service model may have lower variance and more accuracy when applied to large numbers of customers, it may tend to decline in accuracy when applied to firms with fewer customers.

g. The Meeks study was conducted several years ago. Since that time, several changes have taken place that either may not be accounted for in the model or may have changed the basic assumptions of the model. For instance, per-can weights may have dropped due to increased recycling and waste reduction in response to price increases and education. New services (e.g. toters) and new service levels (e.g. the mini-can) have been added by many companies, but have not been studied for weights or times. Staff and companies have made assumptions about times and weights.

2. Recent Adaptions of Cost-of-Service

a. $4.00 Spread Between Service Levels:

The current cost-of-service rate design has tended to produce rates with about a $2.00 difference between cans. Generally speaking, this difference is made up of the additional disposal expense for the garbage in the additional can(s). With increasing tipping fees, this same cost-of-service model has resulted in a difference of about $4.00 per can. Though still cost-of-service based, this rate spread should encourage people to use only the minimum level of service necessary to meet their needs, and encourage them to meet that minimum level by recycling and reducing waste.

PROS

- Uses cost-of-service.

CONS

- Only happens with high tip fees.

b. Mini-Can Option:

Most areas that currently have Commission regulated recycling programs have a 20 gallon mini-can as an option in the tariff. Staff considers this to be an incentive to solid waste customers because it allows a customer to move from one can to a lower service level when they begin removing recyclables, and/or reduce their waste.

PROS

- Encourages recycling.
- Provides opportunity for customers to have an alternative service level.
- Provides choice.
- Provides a legal and environmentally sound collection alternative when rates increase.

CONS

- Having a mini-can doesn't mean they will recycle.
- Not shown that mini-can leads to diversion.
- Could lead to less environmentally safe disposal of some waste.

c. Service Frequency:

To give customers a menu of options to suit their specific needs, the Commission has approved various frequencies for collection. Alternatives include collection once per month, every other week, and weekly.

PROS

- Provides convenience and service choice.
- Good to give selection as part of menu as long as people pay for service they receive.
- Some people will read the tariff and choose to reduce waste.

CONS

- May lead to low collection efficiency as haulers have to track and bill such options.
- Volume/option combinations may mean that the same volume will have different rates (e.g. a 60-gallon toter per month pays less than a mini-can a week, despite being the same volume).
- Too many options may confuse customers; require more familiarity with the tariff than most people have.

d. Recycle Only Service Option:

The Commission has approved rates for customers who want to have only their recyclables collected.

PROS

- Encourages recycling: provides convenient opportunity.
- Provides customer choice.
- May reward waste reduction.

CONS

- Uncertain how to allocate certain overhead and other fixed costs to garbage customers.

e. Mini-Can Rate Structure Guideline:

In implementing recycling programs and mini-can service levels in tariffs, the Commission has used the following informal guideline for rate design: mini-can service plus curbside recycling should cost less than or equal to the one-can rate before recycling.

PROS

- Rate neutral: immediate message sent when recycling implemented.
- May encourage recycle sign ups.

CONS

- Rate education is limited to only one time and to existing customers -- not ongoing.

f. Occasional Extras at Cost:

Staff has attempted to keep the fee for occasional extras at low cost. Staff considers this an incentive because it encourages customers to stay at a lower overall level of service while allowing them to dispose of infrequent extra waste at a reasonable fee.

PROS

- Keeps customers subscribing to the level of service most appropriate for their generation habit.
- A high rate for occasional extra service could encourage customers to subscribe to a higher service level on a permanent basis, which in turn might encourage them to fill the additional capacity with material, such as yard waste or recyclables, rather than segregating them.

CONS

- A low rate may encourage frequent use of extras, which goes against waste reduction goals.

g. Universal Recycling Fees:

The Commission has approved recycling rates in which all solid waste customers are charged for service regardless of their participation.

PROS

- It allows the recycle rate to be less than it might be if based solely on a per-user basis.
- Because customers pay whether they use the program or not, they will be more likely to use the program to recycle.
- When combined with solid waste rates in this manner, customers can more readily see the benefit of reducing their current level of solid waste collection.
- Universal programs allow revenue stability.

CONS

- Households may pay for something they may not use because they recycle elsewhere or because true waste reducers do not produce recyclables.
- This may discourage waste reduction efforts because it gives customers an opportunity to throw material in recycling bins.
- Recycling is flat fee no matter what quantity or quality or mix of materials.

h. $ 1 Penalty Fee for Non-Participation:

Some counties want customers who do not put out recyclables to be charged an additional fee besides the normal recycling and solid waste rate.

PROS

- May encourage actual participation and maximize use of recycling.
- Appropriate to have non-recyclers subsidize those who participate since non-users also receive benefits of conservation.
- More likely to have penalty apply to non-recyclers than to people who use buy-backs.

CONS

- Whether encouragement works is not documented.
- Not all customers use (or need) curbside recycling.
- Fee may be arbitrary.
- May add enforcement/administration costs and require enforcement action to be effective.
- This may be anti-competitive, in that it penalizes choice of using a buy-back center.

i. Offsets to Penalty Fees:

In some areas using a penalty fee system, the Commission has approved a program allowing customers to recycle elsewhere but to be exempt from the non-recycler penalty by presenting a coupon or receipt ("sticker") with their payment to the hauler.

PROS

- Provides choice and options for customers.
- Equity allows penalty to be assessed only on those who don't recycle anywhere.

CONS

- Requires a program in cooperation with recyclers.
- Difficult to administer by haulers, recyclers and local governments.

Table 2 (next 4 pages)

COST OF SERVICE - BASE CASE ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	$ SPREAD BETWEEN SERVICE LEVELS (2)
uses the "Meeks" weights and times	1-Can per month	34	16.84	$3.72	-----
	Mini-Can per week	26	15	$7.94	$4.22
	1-Can per Week	34	16.84	$9.71	$1.77
disposal fee is $50 per ton	2-Can per Week	51	23.62	$13.54	$3.83
	60 gallon toter	47	25.26	$12.82	($0.72)
	90 gallon toter	68	33.68	$17.49	$4.67
	Extra Can pickup rate	34	16.84	$1.82	-----

COST OF SERVICE ALTERNATIVE - Ia ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	$ SPREAD BETWEEN SERVICE LEVELS (2)
"Linear" weights and times	1-Can per month	25	12	$3.37	-----
	Mini-Can per week	17	12	$6.32	$2.96
	1-Can per Week	25	12	$8.16	$1.84
	2-Can per Week	50	24	$14.35	$6.19
	60 gallon toter	50	18	$14.08	($0.27)
	90 gallon toter	75	18	$19.64	$5.57
	Extra Can pickup rate	25	12	$1.46	-----

COST OF SERVICE ALTERNATIVE - Ib ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	$ SPREAD BETWEEN SERVICE LEVELS (2)
Weight and time based on can capacity	1-Can per month	32	16	$3.55	-----
	Mini-Can per week	20	10	$6.30	$2.75
	1-Can per Week	32	16	$8.95	$2.65
	2-Can per Week	64	32	$15.93	$6.98
	60 gallon toter	60	30	$15.08	($0.85)
	90 gallon toter	90	45	$21.58	$6.50
	Extra Can pickup rate	32	16	$1.65	-----

COST OF SERVICE ALTERNATIVE - II ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	$ SPREAD BETWEEN SERVICE LEVELS (2)
Weight and time inputs reduced by 25% for customers who subscribe to less than 1 (32 gallon) can per week; and by 10% for customers who subscribe to 1 can per week. Weights and times increased by 10% for frequent collections or larger can sizes.	1-Can per month	26	12.63	$3.29	-----
	Mini-Can per week	20	11.25	$6.47	$3.18
	1-Can per Week	31	15.16	$8.97	$2.50
	2-Can per Week	56	25.98	$14.73	$5.76
	60 gallon toter	52	27.79	$13.94	($0.79)
	90 gallon toter	75	37.05	$19.09	$5.15
	Extra Can pickup rate	37	18.52	$2.00	-----

1) Rates are monthly charges for residential collection; except Extra charges are listed on a per-pickup basis.
2) Rate Spreads reflect the potential savings if a customer reduces to the next most frequent level of service. In the Base Case, a "Mini-Can per week" customer could save $4.22 by reducing to "1-can per month" service.

3. Possible Adaptions to Cost-of-Service: Modifications to Weight/Time Inputs

Two alternative approaches discussed at the Workshop changed weight and time assumptions. The Meeks model uses the weight of, and time to collect, each can at each service level as a basis to allocate many expenses to each service level. Changes are discussed in relation to a Base Case rate, in which the existing Meeks cost-of-service approach is used to determine rates for a representative collection company. Base case rates are presented in the attached table, Cost of Service - Base Case.

a. Linear and Capacity Related Weight/Time Inputs:

Assume that can weights and collection times increase in a linear manner. Two variations of this alternative are hypothesized. In the first, staff assumed that each standard 32-gallon can contains 25 pounds of waste and takes 12 seconds to collect. (This was determined from an averaging of the existing Meeks weight/time inputs.) The second example links weight and time to can capacity and hypothesizes that each can could be collected in 16 seconds and weighs 32 pounds. The attached tables, Cost of Service Alternative - Ia and Cost of Service Alternative - Ib, show these examples including weight/time inputs and the resulting rates.

PROS

- Method sets the can weight input based on can weights averaged across all levels of service. This indirectly considers existing practices.
- Easily implemented because the basic cost-of-service premises do not change.
- Weight and time inputs could be modified, as is presently allowed, based on local circumstances.
- If large rate spreads encourage customers to subscribe to lower service levels this model would encourage significant subscription changes.

CONS

- Hypothesized weight and time inputs do not directly reflect current experience.
- Although generation of waste may happen in a linear fashion, collection services do not double every time disposed wastes double. Likewise, as waste is reduced by fifty percent, the need for collection services will fall, but to a degree less than fifty percent.
- No solid evidence exists to support a conclusion that rate design inherently leads to subscription level changes.
- The weight and time inputs for commercial services were not altered in this example. Further analysis will be required to determine the appropriate changes to commercial service levels that would test the assumptions investigated in these examples for residential services.

COUNTERPOINT - I ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	$ SPREAD BETWEEN SERVICE LEVELS (2)
weights and times allocated as in the base model	1-Can per month	34	16.84	$4.18	-----
	Mini-Can per week	26	15	$9.46	$5.28
	1-Can per Week	34	16.84	$11.70	$2.24
disposal fee increased to $75 per ton	2-Can per Week	51	23.62	$16.53	$4.83
	60 gallon toter	47	25.26	$15.58	($0.95)
	90 gallon toter	68	33.68	$21.48	$5.90
	Extra Can pickup rate	34	16.84	$2.28	-----

COUNTERPOINT - II ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	$ SPREAD BETWEEN SERVICE LEVELS (2)
weights and times allocated as in the base model	1-Can per month	34	16.84	$4.45	-----
	Mini-Can per week	26	15	$10.38	$5.93
	1-Can per Week	34	16.84	$12.89	$2.52
disposal fee increased to $90 per ton	2-Can per Week	51	23.62	$18.33	$5.43
	60 gallon toter	47	25.26	$17.23	($1.09)
	90 gallon toter	68	33.68	$23.87	$6.64
	Extra Can pickup rate	34	16.84	$2.56	-----

1) Rates are monthly charges for residential collection; except Extra charges are listed on a per-pickup basis.

2) Rate Spreads reflect the potential savings if a customer reduces to the next most frequent level of service. In the Base Case, a "Mini-Can per week" customer could save $4.22 by reducing to "1-can per month" service.

COST OF SERVICE ALTERNATIVE - IIIa					$ SPREAD BETWEEN
ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	SERVICE LEVELS (2)
weights and times allocated as in the base model	1-Can per month	34	16.84	$6.72	-----
	Mini-Can per week	26	15	$9.42	$2.70
	1-Can per Week	34	16.84	$10.51	$1.10
"run time" (seconds between collections) allocated equally to all customers, rather than by weight	2-Can per Week	51	23.62	$12.93	$2.41
	60 gallon toter	47	25.26	$12.55	($0.38)
	90 gallon toter	68	33.68	$15.46	$2.91
	Extra Can pickup rate	34	16.84	$4.81	-----

COST OF SERVICE ALTERNATIVE - IIIb					$ SPREAD BETWEEN
ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	SERVICE LEVELS (2)
weights and times allocated as in the base model	1-Can per month	34	16.84	$2.11	-----
	Mini-Can per week	26	15	$6.76	$4.66
	1-Can per Week	34	16.84	$8.72	$1.96
"office and overhead" expenses allocated by weight rather than by customer	2-Can per Week	51	23.62	$12.97	$4.25
	60 gallon toter	47	25.26	$12.16	($0.81)
	90 gallon toter	68	33.68	$17.33	$5.17
	Extra Can pickup rate	34	16.84	$2.01	-----

COST OF SERVICE ALTERNATIVE - IIIc					$ SPREAD BETWEEN
ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	SERVICE LEVELS (2)
weights and times allocated as in the base model	1-Can per month	34	16.84	$2.08	-----
	Mini-Can per week	26	15	$6.69	$4.61
	1-Can per Week	34	16.84	$8.60	$1.91
"office and overhead" expenses, plus "officers' payroll and fringes" allocated by sum of how other expense categories were allocated, rather than an allocation by customer	2-Can per Week	51	23.62	$12.77	$4.17
	60 gallon toter	47	25.26	$12.00	($0.77)
	90 gallon toter	68	33.68	$17.08	$5.08
	Extra Can pickup rate	34	16.84	$1.98	-----

1) Rates are monthly charges for residential collection; except Extra charges are listed on a per-pickup basis.
2) Rate Spreads reflect the potential savings if a customer reduces to the next most frequent level of service. In the Base Case, a "Mini-Can per week" customer could save $4.22 by reducing to "1-can per month" service.

COST OF SERVICE ALTERNATIVE - IVa					$ SPREAD BETWEEN
ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	SERVICE LEVELS (2)
expenses allocated by the Base Model	1-Can per month	34	16.84	$1.88	-----
weights	Mini-Can per week	26	15	$6.24	$4.35
	1-Can per Week	34	16.84	$8.15	$1.92
certain "accessorial" charges (i.e.	2-Can per Week	51	23.62	$12.23	$4.08
container delivery) allocated through	60 gallon toter	47	25.26	$11.27	($0.96)
cost of service	90 gallon toter	68	33.68	$16.31	$5.04
	Extra Can pickup rate	34	16.84	$1.88	-----

COST OF SERVICE ALTERNATIVE - IVb					$ SPREAD BETWEEN
ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	SERVICE LEVELS (2)
expenses allocated by Model 2	1-Can per month	25	12	$1.48	-----
weights	Mini-Can per week	17	12	$4.37	$2.89
	1-Can per Week	25	12	$6.42	$2.06
certain "accessorial" charges (i.e.	2-Can per Week	50	24	$12.84	$6.42
container delivery) allocated through	60 gallon toter	50	18	$12.84	($0.00)
cost of service	90 gallon toter	75	18	$19.27	$6.42
	Extra Can pickup rate	25	12	$1.48	-----

COST OF SERVICE ALTERNATIVE - IVc					$ SPREAD BETWEEN
ASSUMPTIONS	SERVICE LEVEL	pounds per can	seconds per can	RATE (1)	SERVICE LEVELS (2)
expenses allocated by Model 3	1-Can per month	32	16	$1.71	-----
weights	Mini-Can per week	20	10	$4.63	$2.92
	1-Can per Week	32	16	$7.40	$2.78
certain "accessorial" charges (i.e.	2-Can per Week	64	32	$14.81	$7.40
container delivery) allocated through	60 gallon toter	60	30	$13.88	($0.93)
cost of service	90 gallon toter	90	45	$20.82	$6.94
	Extra Can pickup rate	32	16	$1.71	-----

1) Rates are monthly charges for residential collection; except Extra charges are listed on a per-pickup basis.
2) Rate Spreads reflect the potential savings if a customer reduces to the next most frequent level of service. In the Base Case, a "Mini-Can per week" customer could save $4.22 by reducing to "1-can per month" service.

b. Linking Weight/Time Inputs to Service Level Choices:

Give customers who dispose of less than an "average" amount of solid waste a reward for doing so. Grant households subscribing to monthly, bi-weekly, or mini-can services a percentage reduction in the calculation of can weights and collection times to reflect their choice. 32-gallon can weekly service subscribers should be allowed a slightly smaller incentive. Assess a percentage premium on other customers' can weights and collection times. The table, Cost of Service Alternative - II, shows the results of 25 and 10 percent incentives and a 10 percent penalty in factoring the input weights and times for each of the three types of generators.

PROS

- The percentage incentives and penalties could change according to local circumstances.
- Seeks to reward and penalize within the existing rate-making approach.

CONS

- Performing better or worse than an "average" may be an arbitrary method to award and penalize customers.
- The average can change. This might lead to rate instability and customer uncertainty.
- Haulers operating in more than one jurisdiction might be subject to various percentage incentives and penalties. This would be difficult for haulers and the WUTC staff to administer.
- The weight and time inputs for commercial services were not altered in this example. Further analysis will be required to determine the appropriate changes to commercial service levels that would test the assumptions investigated in these examples for residential services.

Alternative Allocation Methods

Another set of alternatives were based on different ways to allocate expenses to the customer classes.

c. Reallocate Haulers' Run Time:

Allocate "run time" (the time spent traveling between collection stops and to/from the disposal site) equally to all (residential, commercial, and drop-box) customers. Under the Meeks method, run time is allocated according to the weight of the can. The table, Cost of Service Alternative IIIa, displays the result.

PROS

- Customers are treated equally for that part of the service not directly related to collection requirements.
- This method of allocation includes the commercial and drop-box customers.

CONS

- The net result of this model is to transfer collection costs from commercial to residential customers and from customers who subscribe to more frequent service to those that subscribe to less frequent service.
- Part of run time is related to can weights. Customers who dispose of greater quantities contribute to the need for the truck to more quickly go to the disposal site. This relationship is lost in the reallocation.
- An allocation by customer pickups would better reflect the goal of the hypothesis.

d. Reallocate Office Staff and Overhead Expenses:

Allocate expenses for "office staff and office overhead" by can weights. Under Meeks this expense is allocated equally to each customer account. The table, Cost of Service Alternative - IIIb highlights this proposal.

PROS

- This proposal does not appear to have the deleterious cost transfer effects of the previous example.
- Rate spreads are slightly greater than in the Meeks base case.
- Format would affect not just residential customers. Expenses for commercial and drop-box customers could be reallocated in the same fashion.
- Customer choice (the amount placed at the curb for disposal) would impact allocation of expenses.

CONS

- Overhead is related to the fact that a household or business signs up for service, and is not related to the amount to be collected and disposed.
- Implementation effort may not be worth the small change in rate spread.

e. Reallocate Office Staff and Overhead Expenses:

Allocate expenses for "office staff and office overhead" in the same manner Meeks recommended for "officers' payroll and fringe benefits" (i.e., by the summed percentage allocations of all expenses minus payroll, disposal fees, and taxes). Under Meeks this expense is allocated equally to each customer account. This hypothesis is displayed in the table Cost of service Alternative - IIIc.

PROS

- This proposal does not appear to have the deleterious effects of example c.
- Rate spreads are slightly greater than in the Meeks base case.
- Format would affect not just residential customers. Expenses for commercial and drop-box customers could be reallocated in the same fashion.

CONS

- Implementation effort may not be worth the small change in rate spread.

f. Allocate Disposal-related Costs Based on Can Weights:

Allocate solid waste expenses related to disposal by can weight, with certain accessorial charges (e.g. walk-up or drive-in charges) allocated based upon the cost of providing the service. Three possible ways to implement this are explored in the tables Cost of Service Alternative IVa, IVb, IVc. In the first, the weight inputs are the same as in Meeks' methodology. The second and third examples use the weights hypothesized for, and explained in, the tables Cost of Service Alternatives Ia and Ib, above.

PROS

- Of all the models tested, this methodology creates the greatest rate spreads between can service levels.
- Weight-based rates create a strong link between the customers' choices and their bill.

CONS

- If input weights are incorrect, this current approach to rate-making magnifies existing errors.
- Some disposal-related expenses are less closely related to weight than others. This model relates everything back to can weight.
- Examples IVb and IVc do not consider the added impact of changing commercial container weights. Further analysis will be required to determine the appropriate changes to commercial service levels that would test the assumptions investigated in these examples for residential services.

g. Effects of Disposal Fee Increase on Rates:

Staff explored how changes in disposal fees would affect rates. The attached tables Counterpoint - I and Counterpoint - II reflect changes in the disposal fee from $50 per ton in the Base Case to $75 and $90 respectively. When disposal costs increase faster than collection costs, the rate spread between service levels will increase.

PROS

- This results in rate spreads that many comments saw as providing incentives.
- Disposal fees that include all expenses (including siting, enforcement, etc.) will tend to be higher.
- This ease of administration can produce incentive rate design with no changes in current Commission practice.

CONS

4. Fully Implement Meeks Approach

Only about half of the companies regulated by the Commission have rates that are cost-of-service based. In some companies, the cost study is used as an information tool but is not adopted in total. The Commission could move to 100% cost-of-service rates, both in terms of companies to which it is applied, and in terms of the rate structure.

PROS

- Would be equitable to apply to all.
- Would provide consistent policy.
- May result in more progressive rates in some areas.
- May keep companies from finding themselves in Chapter 11.

CONS

- Small companies may have difficulty complying or it may be too costly for some companies.
- Full cost-of-service basis in some areas may result in more regressive rates.
- May result in "rate shock" if done all at once.
- Commission policy is to use cost-of-service as a tool to inform decisions, not as an inflexible requirement.
- If cost-of-service is flawed, this would further exacerbate problems with rate design, etc.

5. Garbage by the Pound

The concept of "garbage by the pound" is similar to metering in other utilities: rates are linked directly to the usage of the system, in this case, the amount of weight in the garbage can. Seattle's experiment with garbage by the pound used two different sets of technologies. A "simple, off-the-shelf" system consisted of a crane scale on the back of the truck, a bar code scanner for recording the weight and a hand-held computer. An alternative system was customized for the City in which semi-automated cans were automatically weighed by the tipping arm; customer account data was encoded on radio-frequency tags attached to the can; and an on-board computer automatically recorded the data.

PROS

- Customers are familiar with metered billing from other utilities.
- Households are not tied to discrete subscription units and may instead use the system as their needs dictate.
- Every bill provides customers with direct feedback about the cost of waste disposal behavior, encouraging waste reduction.
- It is an intuitively fair way to charge for waste disposal.
- The approach is flexible, in that rates can be structured to provide "increasing block rates" for higher levels of use; a fixed "customer service charge" can be assessed, etc.
- Because waste disposal fees seem to be highest in urbanized areas, such a program in those areas may be most equitable and most influential on generation habits.
- Eliminates the "need" for subsidization to encourage behavior changes.

CONS

- Technology may not be well developed yet.
- Because the technology is a system, several elements must be acquired and deployed at once, which can have scheduling, training and cost impacts.
- Technical considerations might hinder implementation in any but the largest service areas. This would decrease inconsistency in the treatment of the regulated haulers.
- Customers on the upper end of disposal volumes may experience significant rate shock.

6. Seattle Cost Allocation Approach

The City of Seattle allocates costs among customers, as does the Commission, but uses different allocation assumptions. The City has three elements in allocating utility costs: overhead, a stopping charge, and tonnage.

OVERHEAD is charged to all customers, and includes

- Billing expenses;
- Customer service expenses;
- Other administration and planning expenses;
- Recycling programs;
- Low income assistance contributions; and
- Landfill closure funds.

STOPPING CHARGE is assessed per can according to Seattle's collection contracts and include those costs that are independent of weight.

A TONNAGE allocation includes:

- Collection cost attributable to can weights;
- Transfer station operations;
- Long-haul; and
- Disposal.

PROS

- According to Seattle's analysis, this process reduced waste.

CONS

- If implemented at the state level, this may be difficult under current split of authority among different levels of government.
- Seattle does not include commercial customers, so customer class is considerably simplified vis-a-vis WUTC.
- Under Commission regulation, the relationship between overhead, stopping charge and tonnage allocation would vary between haulers. This may be a consistency problem.
- Without local access to final disposal points, may not be equitable at state level.

7. King County: Interim Rate Structure Alternative

As a first step toward a long-term evolution of linear rate structures, King County proposes the use of service level rate spreads based on assigned percentages of cost. The theory is that a consumer must see an ever increasing expense for not using the alternative options available to them. Percentage spreads would be determined (and King County derived their proposal in this way) by following the example set in cities that have already begun using this type of rate design.

PROS

- May meet certain of the Bonbright criteria: fairness, equity and stability.

CONS

- Does not contain guidance for cities to follow on how to adapt their rate design approach to the WUTC.
- Not clear that the spreads meet the arbitrariness criterion or the fairness criterion, since the basis used to determine spreads is not clear.
- No evidence to show it would encourage behavior change in the way the county anticipates.

8. Conservation Incentive Stabilization Reserve Fund -- Clark County Proposal

Clark County proposed that the Commission should establish a "conservation incentive stabilization reserve fund." A collection company's revenue requirement may fluctuate because customers change their subscription levels (and hence revenue) in response to changes in rates. The purpose of the reserve fund would be to stabilize the revenue stream to the company when customers change levels of service. Any excess revenues could be used for "future ratepayer benefits."

PROS

- May provide rate stability.

CONS

- This may be illegal in the absence of a statutory grant of authority.
- This may represent a "taking" of ratepayer funds.
- Collection companies may file for a rate increase as needed, so a reserve fund is not necessary.

9. Two-Part Tariff

Similar to utility bills, the approach would have bills display two rate components: a basic "customer charge" and a separate "usage" charge.

PROS

- Customers are familiar with such a billing approach from other utilities.
- Customers would have an incentive to reduce waste (i.e. to reduce their variable costs) through billing information.
- Current rates would assume some aspects of a linear rate design, without having to change underlying assumptions, methods, etc.
- Increases in local disposal fees drive many requests for rate changes at the Commission. Having disposal fees as a separate line item on the bill would have two advantages:
  - It may be administratively easier to change a single line item on the tariff than having to change the entire rate structure, as is currently the case.
  - Customers would be better able to identify the entity responsible for particular rate increases.
- New Jersey uses a similar approach, so may be a resource for implementation.
- Having a "customer charge" helps ensure that revenue requirement is recovered.

CONS

- It may cost money for individual haulers to develop such a billing method.
- This would ideally be linked to a "by-the-pound" metering system. Otherwise, averages would need to be used for the variable portion of the rate, and not everyone sets out the average weight every week.
- Segregating disposal on the bill would require making assumptions about the weight in the can, and this may be open to controversy.
- Disposal is not the only variable cost, but isolating and pricing other variable costs would be more difficult.
- A lot of work for what may be a zero change in total rate.

10. Scenario Analysis

Scenario analysis is a long-run marginal-cost approach based on the concept that rates for each service level should reflect the optimal system size necessary to manage that amount of waste. Developing rates would involve a three-step process:

1. The current solid waste management system would be modeled and certain key indicators (e.g. pounds of waste per gallon; customers per route; landfill capacity; landfill closure cost; etc.) would be quantified.

2. An "optimum system" would be developed for each service level by developing scenarios which assume that all customers subscribe to a particular level of service (e.g. a mini-can). Using indicators from step 1 (such as current amounts of waste per gallon, number of customers, etc.), an optimum system would be defined (including landfill life) and have costs applied to it (including the tipping fee necessary to recover closure costs in that projected lifetime). This step would be repeated for every service level, to result in a table of "whole system costs" reflecting the "optimum" cost of providing solid waste collection and disposal service to each particular subscription level.

3. Rates would be set to reflect the proportional relations among service levels from the table of system costs developed in step 2. A potential fourth step might be to project service level shifts due to a change in rates, and then to reallocate revenue requirement based on the projected mix of customers.

PROS

- Equitable: customers would pay relative to their contribution to causing costs.
- The results of this should reflect the long-run marginal cost of serving each customer class.
- Data for this should be relatively available from solid waste plans, company audits, etc.
- The approach has theoretical antecedents, dating back to pricing TVA services, Puget Power avoided costs, etc.

CONS

- The rate analyst would have to make a number of assumptions, including the interest rate for valuing future closure costs. This is likely to be controversial.
- This approach would require segregating tip fee amounts dedicated to current operations from the tip fee component that goes toward closure. While some data on landfills (e.g. expected volume and life) is theoretically available from local solid waste management plans, many of them may not go into detail on allocation of tip fees among different funds.

CONS

- WUTC may not have all information available, or route information may be difficult to obtain.
- Would have to be on a case-by-case basis, i.e. each county would have different landfill life, each hauler would have different route characteristics, etc.
- WUTC does has no control over landfills regarding operations now or closure later.
- Are "avoided" costs really avoided or just delayed? Will funds be there to cover costs at the delayed date?
- Counties could dispute involvement of WUTC in their books without clear legislative authority to do so.
- May not be equitable: today's consumers would seem to be paying for yesterday's, today's and tomorrow's waste management systems.

11. Company's Cost Structure Approach

One small group discussion proposed having different cost allocation approaches depending on a particular company's cost structure. For instance, if a company faces high disposal fees (e.g. more than 40% of their total costs), weight could be used as the predominant cost allocation factor. For other companies, time would be used to allocate costs.

PROS

- Would recognize different nature of collection costs in programs in urban versus rural areas.
- May be more equitable geographically than current system, thus result in fewer rate filings and changes.

CONS

- Too variable, hauler could be subject to regulation by one method today, another tomorrow.
- Neither weight nor time alone adequately link to cost causers.
- May discriminate against haulers who happen to collect in areas with low or high disposal cost.
- Determination of "high" could be arbitrary.

C. Alternatives From the Written Comments

1. Use Rates as a Tax

Several respondents to the NOI proposed setting solid waste rates higher to encourage waste reduction, and using surplus revenue for financing pollution control and mitigation; promoting waste reduction and recycling; and general government revenues. These correspondents correctly identified this as a tax.

PROS

- Such a tax would raise revenues.
- It would contribute to an increase in price, helping send a price signal.

CONS

- The Commission is not a taxing body, nor can it tax customers implicitly, since Washington courts have held that the power to tax must be explicitly authorized by the legislature.

2. Develop a Mechanism to Include External Costs Into the Rate Model

Whatcom County's reply to the NOI documented several types of costs that were not charged to collection companies (including enforcement of illegal dumping, siting new facilities, and closure of facilities). They suggested that a mechanism should be developed to include such external costs in rate structures.

PROS

- In theory, including external costs in ratemaking would send more accurate price signals to consumers about the "true," replacement, or whole system costs of solid waste management.

CONS

- Since such external costs vary from place to place, no set, single dollar amount could be used in rates.
- Determining, quantifying, and justifying "actual" external costs in any given area could put a considerable burden on a company, a local government, or Commission staff.
- Any particular figure chosen for any given externality could be subject to debate and dispute.
- The Commission has no way of ascertaining which costs may have been incurred in an area or the level of such expenditures. If a local government has already increased tipping fees to pay for siting costs (for instance), it would be unfair to ratepayers to make them pay such external costs again.
- Many such costs are outside the Commission's regulatory purview.
- People who have bought into the system are doing the "right" thing; this would have them pay for those who do not (e.g. illegal dumping).

3. Fixed Cost Distribution Alternative

One response suggested that fixed costs should be distributed over all service levels rather than being applied predominantly to the first can, which would mean allocating fixed costs on a per-can basis.

PROS

- This would tend to resemble a volume-based rate, and so tend to give strong incentives to subscribe to the minimum level of service.

CONS

- Fixed costs are distributed to all customers already, but allocated by contribution to the need for those fixed costs, not equally as recommended/ suggested above.
- Proposal would allocate more costs to less frequent service users and transfer costs from commercial (frequently serviced) to residential customers.
- The number of cans set out is not necessarily related to the fixed costs of providing service.

4. Calculate a "Baseline" Rate for Average Waste Generation Minimum.

A weight study would determine the average waste generation. A rate would then be calculated for that level of usage and additional rates would be added to those using more than the "baseline" minimum.

PROS

- Would allow "average" waste producers to pay a reasonable amount.
- Would encourage people to produce the "average minimum" amount.

CONS

- May be arbitrary.
- Not easy to implement since how much is "minimum" or what is "average" would be open to dispute.
- Average weights would change with alternate program availability, changing technology, etc.

5. Use Avoided Costs Where They Can Be Accurately Calculated and Collected by Those Who Are Paying the Cost.

Rate designs should consider and include costs related to siting, closure, illegal disposal, etc.

PROS

- Would make avoided costs "real," i.e. not theoretical.

CONS

- This does not say how to use avoided costs in setting rates.
- Produces a dichotomy/split in authority that we currently have (i.e. local government versus WUTC).
- What is "accurately" is open to dispute.
- This can already be accomplished by including such costs in disposal fees.

6. Allocate Education, Promotion and Marketing Expenses to Upper-End Service Levels.

Because two-can or more customers are the target of educational and promotional campaigns, they may be appropriately charged these expenses.

PROS

- Would be equitable.

CONS

- Would require judgment about what constitutes these costs (e.g. what percent of management salaries).
- Is likely to be a relatively small amount.
- Penalizes large families who do recycle and do take part in the services available.

7. Price Recycling Based on Type and Cost of That Service.

Using a "cost-of-service" rate design for recycling service may reduce the fees currently charged for these programs by some and increase the service for high generators (people who purchase high volumes of products).

PROS

- Would be fair and equitable -- recycling costs money to provide, and customers who choose convenience of curbside should pay for service.
- Encourages waste reduction over recycling if it costs more money to recycle.
- Avoids subsidy of recycling, thus making it less likely for hauler to provide inefficient or unnecessary service.

CONS

- Tends to make recycling more costly, and so less attractive.
- May not promote goals of the state.

8. Marginal Cost Based Rates.

1. Develop an estimate of avoided or long-run marginal costs:

   a. Develop a list of potential new disposal resources;
   b. Estimate the total costs associated with each resource; and
   c. Create a new resource acquisition model or plan to give year-by-year estimates of marginal cost.

2. Use the marginal cost estimates from step c., above, to set the disposal component of the rate schedules.

3. Adjust the non-disposal elements of the rate schedule to ensure that revenue requirement is not over-recovered.

PROS

- Would send accurate price signal about long-run costs of disposal and so tend to encourage waste reduction and recycling.

CONS

- Possibly a lot of work for relatively little substantive rate change.
- Does not capture full range of marginal costs, only marginal disposal costs.
- WUTC does not regulate disposal sites, so modeling disposal system is outside our jurisdiction and expertise.
- WUTC-prepared disposal model may be open to dispute, debate.
- Significant variations possible from year to year.

9. Percentage Spread Based Rates.

Price second can no less than 60 percent of first can. Sixty percent is relatively arbitrary, but should be high enough to catch people's attention and psychologically impact the ratepayer, yet small enough to not encourage illegal dumping.

PROS

- May send price signal.

CONS

- Is not necessarily fair.
- Is arbitrary.
- With high disposal costs, cost-of-service could begin to approach this.
- Possibly would have no impact on behavior except to increase inappropriate use of highways, gullies, etc.
- People do not see that the next can is 60 percent higher than one; they only see the amount on their bill.

10. Commercial Recycling Incentives for Haulers

Provide incentives for haulers to offer commercial recycling. Possibilities include:

- Allow more discretion in price-setting, within defined limits (e.g. a price-cap approach); or
- Allow variable rates of return, or higher rates for companies that offer recycling.

PROS

- Would provide incentives to collection companies.
- Might increase recycling opportunities.

CONS

- Because of regulatory split between chapters RCW 81.77 (garbage) and 81.80 (commercial recycling), fairness suggests that monopoly garbage customers should not subsidize competitive firms.
- Commercial recycling is already much more successful than residential recycling, without such incentives. (Ref: WDOE 1991 Recycling Survey)
- Current rate of return does allow a higher return for some recycling.
- May require subsidies from customers that would not be able to recycle at more than present levels.

11. Different Rate Designs for Residential and Commercial Sectors.

Develop different rate design methodologies for residential and commercial sectors because: commercial waste stream has different characteristics; commercial recycling is particularly important; commercial waste is potentially more competitive; and commercial recyclables are legally different that solid waste.

This comment also proposed the possibility of separate regulatory approaches for commercial waste, since commercial waste collection has the potential for greater competition, and because the rationale behind regulation (obligation to service and economies of density) may be less applicable to the commercial sector.

PROS

- Might increase opportunities for recycling.
- Would provide encouragement for process modification in industry, with potential large waste reduction consequences.
- Reduces subsidies between commercial and residential services.

CONS

- Regulatory change may not be within Commission's power; may take legislative action.
- Difficult to administer: difficult to distinguish residential and commercial operations in practice, so different rate design would tend to be arbitrary to a greater or lesser degree.

12. Customer Classification Rate Design

Implement alternative customer classifications (size, variability, type of waste, etc.) for cost of service approach.

PROS

- Would be fair.
- Not arbitrary; rates would be fine-tuned as much as possible.

CONS

- Cost-of-service already does consider many customer classifications.
- Greater complexity is more difficult to measure and administer.
- More discrete classifications, at least in present cost-of-service formula, could lead to lack of stability within those classifications -- will be short-term.

APPENDIX 2:

SEATTLE AND CLARK

COUNTY LETTERS

Seattle
Solid Waste Utility
Division of Seattle Engineering Department

Gary Zarker, Director of Engineering
Diana Gale, Director, Solid Waste Utility

December 3, 1991

Paul Curl
Washington Utilities and
Transportation Committee
1330 Evergreen Park Drive Southwest
Olympia, Washington 98504

RE: TG-901250: Notice of Inquiry on Solid Waste Incentive Rates

Dear Mr. Curl:

The Seattle Solid Waste Utility wholly supports the efforts underway to conduct a thoughtful evaluation of solid waste rates which encourage waste reduction and recycling. Accordingly, the Utility looks forward to participating in the upcoming workshops on the subject and to share relevant experience with other participants.

One issue that we would like to address in advance of these workshops is the degree to which waste generation levels respond to higher disposal prices. The Utility recently completed RPA '91, an update to the 1988 Recycling Potential Assessment. An important component to RPA '91 was the respecification of the waste generation model and the estimation of the model equations over a period which included the introduction of curbside recycling programs and substantially higher prices.

The new equations suggest that the elasticity of residential waste generation with respect to residential disposal prices is the neighborhood of - 0.1. This new elasticity estimate is substantially lower than the RPA '88 estimated of - 0.7. Since incomplete information on non-Utility recycling levels was unavoidably present in the data in both the 1988 and 1991 analyses, there is likely a wide confidence interval around both of the elasticity estimates.

The RPA '91 residential generation model, using the lower elasticity estimate, appears to produce better disposal forecasts than the RPA '88 model. However, we have not yet had the opportunity to determine what portion of this improvement can be attributed to the revised elasticity estimates.

Although we also respecified the non-residential generation model as part of the RPA '91 effort, we did not have the 1989 or 1990 DOE Recycling Survey data to use in

updating our estimates of private recycling activities for these years. As an alternative, we trended off the 1988 estimate to derive the 1989 and 1990 private recycling estimates. Not surprisingly, when we estimated the non-residential generation equations, we ended up with the same generation elasticity as we did in 1988, that being - .07. We believe that when we develop better estimates of 1989 and 1990 private recycling levels (they should be higher), the generation elasticity for the non-residential sector should fall in magnitude.

We wanted you to be aware of these changes to our generation model both because generation elasticities are an important element in the discussion of incentive rates, and because our previous generation elasticities are cited in the October 1991 NOI document. If you have any questions, please call Ray Hoffman at 684- 7655.

Sincerely,

Diana Gale

DIANA H. GALE
Director

DHG/RH:sj

CLARK COUNTY
WASHINGTON

DEPARTMENT OF
PUBLIC SERVICES
Environmental Services

March 5, 1992

Washington Utilities and Transportation Commission
1300 S. Evergreen Park Drive, S. W.
P. O. Box 9022
Olympia, WA 98504-9022

Honorable Commissioners:

INTRODUCTION:

The adoption of House Bill 1671 in 1989 triggered a dramatic and aggressive shift in the focus of solid waste management in Washington State. This shift, largely the result of the legislated emphasis on waste reduction and recycling has seriously tested solid waste handlers and the agencies that administer them. No individual or organization associated with solid waste management has escaped some form of challenge or stress as a result of this test. It has challenged our physical capacities, forced us to reconsider the very foundations of our individual and institutional philosophies, and has driven us toward new associations and partnerships in previously unheard of efforts of communication and cooperation.

Local circumstances impact the nature of our individual and institutional tests. However,we all share an interest in each success. In this spirit, Clark County, the City of Vancouver, and Clark County Disposal Group (CCDG) have been working cooperatively to prepare for the WUTC rate incentive work shops. We sincerely appreciate the opportunity to participate here.

The 1995 deadline for achieving of the state's 50% waste reduction and recycling goal looms near. We are anxious to begin to experiment with solid waste service levels and rate incentives as an instrument of our programs. Our discussions have included consideration of linear rates, options for alternate week service or monthly collection, financial incentives for seniors and others who demonstrate significant success in minimizing waste generation and penalties within the rules for heavy generators.

1408 FRANKLIN STREET • P.O. BOX 5000 • VANCOUVER, WASHINGTON 98668
FAX 206-699-2011 • (206) 699-2375

While some of these approaches may be achievable from a cost of service approach, we believe a strict adherence to cost of service inhibits the kind of flexibility this problem demands. We are also convinced that there are clear advantages to local experiments or pilot programs to explore alternative options and experiment with aggressive manipulation of rate and service level incentives to reduce waste and enhance recycling. We propose that WUTC authorize local pilot areas for experimentation. This paper outlines the rationale and approach we would like to consider in Clark County.

ASSUMPTIONS:

Generally, we propose that WUTC set parameters that will allow the local jurisdictions and haulers to agree upon the means for setting and implementing objectives through development and testing of rate incentives. It is our belief that rate incentives may differ from region to region. The issues specific to southwest Washington, which advocate a more localized system versus a statewide approach, include:

A. In a border area, such as Clark County, we must continue to be cognizant of a potential for leakage, which is less common in an insulated region. Leakage from competition or self-haul to a facility with a lower disposal rate than the local transfer station impacts not only the local hauler but also the transfer station and disposal operator and the local general governmental jurisdictions in their ability to plan. The two components of leakage problems are flow control and enforcement. Both are best handled locally but are of concern in any statewide discussion.

   There is also the problem of potential future liability. Local public entities and major waste generators cannot escape designation as potentially reponsible parties, whether material is directed by flow control or leaked into an unauthorized disposal facility.

B. The components of our joint county/city solid waste program provide a novel set of conditions which would facilitate experimentation. The county and the city have relied upon private industry to provide solid waste services. Clark County is unique in that the G-hauler is separate from the curbside recycling program provider. Moreover, the components of the solid waste collection system have been arranged in a deliberate fashion to insure the maximum degree of measurement. The configuration of private service providers within the cooperative structure of the county/city planning and management structure yield a singular opportunity for structured experimentation.

C. Clark County, the City of Vancouver, and Clark County Disposal Group (CCDG) have demonstrated an unique ability to communicate and work together toward resolving the issues before us at this workshop.

It is our belief that if we are provided with greater flexibility than the current WUTC structure permits, we may be able to incorporate issues unique to Southwest Washington in our experimentation process, all in an attempt to encourage reduction and recycling of the solid waste flow within legislative goals and mandates.

PROPOSAL:

Because of the complexities involved in integrating state regulation with the need for local flexibility for designing and implementing waste reduction and recycling plans, we propose:

A. WUTC should consider use of alternative ratemaking methods to achieve altered behavior. For instance, a utilities rate-making methodology might be used for residential and small commercial customers (recognizing that solid waste service to these customers is more closely akin to a utility than to a transportation service); a transportation (i.e., common carrier) rate-making methodology might be used to apply to the larger commercial customers (e.g., roll-off units).

B. WUTC might consider authorizing a conservation incentive stabilization reserve fund to provide resources which would stabilize the revenue stream when customers change levels of service. This will allow management flexibility in cases of over-recovery or under-recovery. The customer census/mix change occurs when (1) rates increase and customers become self-haulers; (2) rates increase and customers change level of service, i.e., two cans to one can; and/or (3) new programs such as curbside recycling or yard waste programs are put into place and there is waste diversion. The fund is intended to avoid over burdening the system when a sharp reduction in revenue is experienced prior to obtaining a rate increase to meet necessary expenses. Over-recovered or excess revenues can be captured and applied to future ratepayer benefit. A stabilization reserve fund could be patterned after the landfill closure reserve fund in use in Clark County. This stabilization fund would be held and managed by the County for the benefit of the ratepayers.

C. In any experiment, a premium should be placed upon measurement. Rate incentives are not the sole factor in altering consumer behavior but education (e.g., to inform consumers as to why it costs to recycle, of alternative disposal methods, and to alert them that they have a choice in purchasing products with less or recyclable packaging) is also necessary. Since some of these efforts will be happening simultaneously, a pre-established system for monitoring each measurable variable must be developed.

D. Consider further examining service levels to determine if resources should be restructured or reallocated (e.g., base solid waste charges on weight as opposed to a volume basis).

THE CLARK COUNTY CASE:

Assuming WUTC is willing to afford some flexibility in implementing programs, Clark County, the City of Vancouver and Clark County Disposal Group (CCDG) are interested in implementing various pilot programs to test assumptions and ideas. We have a variety of reasons why Clark County could serve as a good test area:

A. Clark County currently has an extremely high single can usage; Clark County residents have taken advantage of "incentive rates" and thus are likely to further react to rate manipulation.

B. CCDG and the City of Vancouver maintain excellent accounting systems and good working relationships with WUTC staff and thus can comply with any monitoring requirements.

C. Clark County is a border community which poses a continual threat of leakage (i.e., an unique issue to a pilot program).

D. Clark County, the City of Vancouver, and CCDG have had experience with the closure fund and feel confident in adopting and implementing a stabilization fund concept.

E. Clark County, the City of Vancouver, and CCDG have a good working relationship and it is likely that all parties could easily continue to work together in designing and implementing pilot programs to achieve maximum waste reduction and recycling objectives.

CONCLUSION:

Despite the amount of time already spent on these concepts we realize considerable work would be essential in any effort to pursue experiments. We are all faced with the challenge of integrating these efforts with the nearly simultaneous implementation of new recycling programs. Each of these programs, yard waste recovery, commercial recycling, rural recycling, multi-family recycling, all require accommodations by all parties to this proposal.

Since historical data is largely unavailable, we all face considerable risk in our efforts to design, implement and fund new programs. This paper argues in favor of local jurisdictions, haulers and commission staff working together to design and implement programs and rates.

In many ways rate design strategies represent one of the most untried and theoretical approaches available to us. These strategies resemble the conservation models used in utilities. This resemblence should not be lost upon us. Ultimately, the measurement of our performance is the degree to which we are able to minimize disposal needs and costs and maximize resources.

We look forward to further discussions with WUTC staff on these matters.

Respectfully submitted,

for Clark County:

George Stillman
Director of Public Services

for the City of Vancouver:

Ronald E. Bartels
Assistant City Manager

for Clark County Disposal Group:

Mark Leichner
President

Item 1E
Attachment A

STATE OF WASHINGTON

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

1300 S. Evergreen Park Dr. S.W. • Olympia, Washington 98504-8002 • (206) 753-6423 • (SCAN) 234-6423

Notice of Inquiry on Solid Waste Collection Rate Design Docket TG-901250

The Washington Utilities and Transportation Commission is seeking comments on alternative rate designs for solid waste collection service.

The Commission regulates solid waste collection companies in unincorporated areas and in cities which have chosen not to provide or contract for collection service themselves. These collection companies are franchised by the Commission and must have their rates approved by the Commission.

The Commission is required by statute to set rates which are just and reasonable. RCW 81.04.250. To do this, the Commission has developed a methodology that sets rates for collection service according to the cost of providing the service. The Commission most recently revised its cost of service methodology in 1988. At that time the charge for pickup of second and subsequent cans generally increased, reflecting higher disposal costs.

In 1989 the Washington State Legislature passed a comprehensive bill designed to promote integrated solid waste management (Chapter 431, Laws of 1989). This legislation directed the Commission to require "certificate holders under chapter 81.77 RCW to use rate structures and billing systems consistent with the solid waste management priorities set forth under RCW 70.95.010 . . ." RCW 81.77.030.

These priorities are: (1) waste reduction, (2) recycling, with source separation of recyclable materials as the preferred method, (3) energy recovery, incineration, or land filling of separated waste, (4) energy recovery, incineration or land filling of mixed waste. RCW 70.95.010(8).

The Commission has approved numerous recycling tariffs from regulated solid waste collection companies, using a variety of rate structures. These tariffs have been approved on a trial basis, so that the Commission can evaluate the results. Several interested parties have proposed that the Commission also make major revisions in the way it sets rates for solid waste collection service.

These parties have requested that the Commission depart from its cost of service methodology when setting solid waste collection rates. They favor a rate design which would sharply increase the price for pick up of second and subsequent cans, in order to encourage customers to reduce waste and recycle. These rates are generally known as "inverted" rates, "linear" rates or, generically, as "incentive" rates.

In order to assess the viability of "incentive" rate structures, the Commission is seeking comments from interested parties. Comments should focus on the following questions, and on other information which addresses the legal requirements, underlying assumptions, probable results, optimum structure, and methodology for incentive rates.

1. Do incentive rates encourage waste reduction and recycling? What level of rate incentive is needed to induce customer action?

2. Is there a conflict between the Commission's current method of setting rates based on historic cost of service, and adopting incentive rates, which may not be based on actual costs?

3. Do incentive rates reduce waste volume, or do ratepayers compress substantially the same volume of garbage into fewer cans?

4. If incentive rates are adopted, should the long-term "avoided cost" of disposal be used to calculate the rate. If so, how should the long-term "avoided cost" be calculated?

5. Can the Commission's existing cost-of-service methodology be altered to provide greater rate incentives, or must a new methodology be developed?

6. If rates for collection service rise significantly, will customers seek alternative means of disposal? If so, what would be the effect on remaining regulated ratepayers.

7. In order to show customers the cost of different collection options, should rates for recycling collection be set out separately from rates for solid waste collection?

To be most useful, comments should focus on empirical evidence which supports the position of the commenter. The Commission is especially interested in qualifiable research, rather than theoretical studies, which address the policy questions. Depending on issues raised in the comments, reply comments and/or an oral hearing may be scheduled.

Comments should be submitted by December 14 to:

Secretary
Washington Utilities and Transportation Commission
1300 S. Evergreen Park Drive S. W.
Olympia, Washington 98504

Please note Docket TG-901250 on comments.

For additional information, contact:
Jeffrey Showman at 586-1196

8

707-443-8326

707 - Misha Schwartz

444-8330

STATE OF WASHINGTON

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

P.O. Box 9022 • 1300 S. Evergreen Park Dr. S.W. • Olympia, Washington 98504-9022 • (206) 753-6423 • (SCAN) 234-6423

October 18, 1991

Dear Interested Person:

In November, 1990, the Commission initiated a notice of inquiry (NOI) on solid waste collection rate design (TG-901250). The focus of the inquiry was how the Commission might structure solid waste rates to encourage waste reduction and recycling. The NOI generated extensive comments by a variety of interested parties. This staff report presents background research on rate design and a summary and discussion of comments. We welcome your comments on this report. Comments should reference Docket No. TG-901250, and should be sent to Paul Curl, Commission Secretary, 1300 Evergreen Park Drive SW, Olympia, WA, 98504-9022. Please submit your comments by November 20, 1991.

Because the inquiry did not provide enough information to allow the Commission to reach a decision on incentive rates, staff will soon be hosting workshops on the technical feasibility of alternate rate design methods. Based on the NOI comments, comments on this report, and results of the workshops, the Commission will decide whether to adopt an alternate rate design approach, and, if so, which approach to adopt, by early 1992.

We appreciate commenters' time and efforts, and hope that the results of our future inquiries will further the goals of better solid waste management in the State of Washington.

Sincerely,

Paul Curl
Secretary

Sharon L. Nelson, Chairman
Richard D. Casad, Commissioner
A. J. "Bud" Pardini, Commissioner

STATE OF WASHINGTON

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

1300 S. Evergreen Park Dr. S.W., P.O. Box 9022 • Olympia, Washington 98504-9022 • (206) 753-6423 • (SCAN) 234-6423

NOTICE OF INQUIRY:

SOLID WASTE COLLECTION RATE DESIGN

INCENTIVE RATES

TG-901250

OCTOBER, 1991

Printed on Recycled Paper

NOTICE OF INQUIRY ON SOLID WASTE COLLECTION RATE DESIGN
DOCKET TG-901250

THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

OCTOBER, 1991

Table of Contents

EXECUTIVE SUMMARY

The Washington Utilities and Transportation Commission (WUTC) issued a Notice of Inquiry (NOI) on how it might structure solid waste rates in order to provide incentives for customers to reduce waste and increase recycling. Over 25 parties responded to the NOI, including haulers, local governments, non-profit organizations and a legislator. The comments and additional research support the following proposed findings:

- Rate design may influence the level of use of recycling programs and give households an incentive to reduce the amount of waste they produce. Seattle has calculated that a 10 percent increase in rates reduces waste by 1.1 percent, while people subscribe to 1.4 percent fewer cans. Results elsewhere may differ since waste generation is also affected by factors such as household income; amount of material already recycled; etc.

- Almost every respondent strongly supported some type of incentive rate design. Most favored using an avoided cost or marginal cost approach to design rates.

- Creating incentive rates does not necessarily mean adopting a "linear" rate structure that rises arbitrarily as the number of cans increases. Rate design must be based on sound economic principles such as a quantifiable marginal or avoided cost.

- Before it can reach a decision on whether to adopt an incentive rate design technique, the Commission needs more information about the technical feasibility of an avoided cost methodology and the feasibility of altering existing cost of service assumptions. Staff should conduct a workshop with invited local government representatives and other technical experts to obtain such information.

- Households have a number of solid waste management options available to them. An increase in rates will cause a household to evaluate the use of all options available to it, including illegal methods. A challenge in incentive rate structures is to maximize use of socially sanctioned management options and to minimize use of illegal or undesirable options. It may be critical to have local governments prepared to provide programs before an incentive rate structure is implemented.

I. INTRODUCTION AND BACKGROUND

In November, 1990, the Washington Utilities and Transportation Commission (WUTC) issued a Notice of Inquiry (NOI) on how it might structure solid waste rates in order to provide incentives for customers to reduce waste and increase recycling. Over 25 parties responded to the NOI, including solid waste collection companies, local governments, non-profit organizations and a legislator. In addition, staff conducted research into rate design theory and practice in solid waste and other regulated industries. This report does not contain a new rate design method, and is rather intended to be a transition document that will summarize background issues in economic regulation and responses to the Commission's Inquiry, to set the stage for the next steps in this process. There are three main sections to this report: an introduction to economic regulation; a discussion of responses to the NOI; and a discussion of findings and next steps.

WUTC Regulation. The WUTC regulates private utilities and transportation companies that offer service to the public under Titles 80 and 81 of the Revised Code of Washington (RCW). The Commission regulates solid waste collection companies under chapter 81.77 RCW. The WUTC is primarily an economic regulator rather than an environmental, health, or safety regulator. In order to achieve the purposes of economic regulation, the WUTC authorizes entry to the industry; approves rates; sets systems of accounts; requires annual reports; and supervises safety. Rate setting, however, is the key activity.

The Commission has several objectives when it sets solid waste collection company rates. The Commission is required by statute to set rates that are just and reasonable (RCW 81.04.250). This means that the Commission must strike a balance between ratepayer interests on one hand, and company interests on the other. Ratepayers must be protected from potential abuse by monopoly service providers; from paying for costs they did not incur; and from paying for imprudent decisions by a company. A company must be allowed to recover its reasonable costs of doing business and be given an opportunity to earn a fair profit.

The 1989 legislature further refined the objectives for solid waste rates when it directed the Commission to require solid waste collection companies:

> . . .to use rate structures and billing systems consistent with the solid waste management priorities set forth under RCW 70.95.010 and the minimum levels of solid waste collection and recycling services pursuant to local comprehensive solid waste management plans (RCW 81.77.030(6)).

The state's solid waste management priorities are, in descending order of preference: waste reduction; recycling, with source separation of recyclable materials preferred; energy recovery, incineration, or landfill of separated waste; and energy recovery, incineration, or landfill of mixed wastes (RCW 70.95.010(8)).

Price and Consumption. Commission regulation is, among other things, a substitute for market forces. A general objective of economic regulation is to produce the socially efficient outcomes that we expect from competitive market conditions. Thus, effective regulation must be based, in part, on an understanding of market forces. Four main concepts, supply, demand, price and quantity, are the foundation of the analysis of markets.

The implicit objective of incentive rates for solid waste is to reduce the amount of solid waste going to disposal by changing the behavior of consumers of solid waste services. The theory is that incentive rates bring about changes in behavior by changing the price structure of solid waste collection services.

In a perfectly competitive market, price is theoretically set by supply and demand. Prices should, in theory, include the cost of all the inputs used by society in providing a good or service, so that prices convey information to consumers about the relative value to society of resources used to provide that good or service. In turn, economic theory says that consumers evaluate a number of things on their purchasing decisions, including: which goods and services are available to them; the relative prices of goods and services; their particular preference for these goods and services given their income, tastes, preferences, and so on. Consumers purchase the combination of goods and services which best meets their needs. In this way, prices communicate to suppliers the relative value that consumers place on goods and services. The challenge to a regulatory body is to set prices, i.e. rates, that accurately reflect both the costs and the value of solid waste services to society.

Prices also affect the behavior of both producers and consumers by affecting the quantity that they either produce or consume. As prices increase, consumers will tend to purchase less of a good or service; as prices decrease, they will tend to purchase more of it. As prices increase relative to costs, producers will be willing to produce more of a good or service; if prices decline relative to cost, they will tend to supply less of it. The degree to which producers or consumers change their production or consumption in response to changes in price is known as "elasticity". A commodity or service is said to be price inelastic if consumers only change their demand by a small amount in response to a large increase in price. Demand is not uniformly

elastic for all quantities of a particular good or service, but instead depends on how much of it is consumed. For instance, demand for solid waste collection may be relatively elastic for three-can service, but tends to be inelastic for one-can service. This reflects the fact that almost all households make some waste, and that one-can service is often the lowest available subscription level.

Economic theory says that within the constraints of a particular household's budget, people can choose any mix of goods or services to satisfy their needs. If the price of one good goes up, consumers may switch to a substitute for it. Thus, a change in the price of a particular good or service may produce changes in demand not only for that item but can also change demand for related goods as well. These relationships assume particular importance in this NOI. Consumers have a number of substitutes for solid waste collection available to them, some fairly benign, some which have distinct social problems.

Recycling and waste reduction are substitutes for traditional solid waste collection and disposal. The objective is to increase consumption of these substitute goods by changing the price of collection. There is a risk that consumers may choose alternatives that carry fairly large social costs. Some substitutes for solid waste collection include:

- Waste reduction;
- Reuse, repair, or donation of goods;
- Self-haul of trash to a landfill;
- Self-haul recycling to a buy-back center;
- Curbside recycling;
- Backyard composting;
- Curbside or centralized yard waste collection;
- Backyard burning;
- Compacting trash, so a larger weight fits in a given volume.
- Use of neighboring business or apartment dumpsters for household trash; etc.
- Dumping waste in street ends, vacant lots, parks, etc.;

An objective in an incentive rate system should be to maximize use of socially desirable disposal methods, and to minimize use of undesirable methods.

There are several terms for rate structures, including "variable can rates", "volume-based rates", "incentive rates", and "linear rates". These should be defined so that differences among them can be distinguished. "Variable can rates" and "volume based rates" are essentially the same thing. Households do not pay a flat fee for unlimited service, and rather, "payment varies with

the amount of waste disposed".[1] Virtually all current WUTC approved rates are volume based. "Incentive rates" are a type of volume based rate that attempts to modify consumer behavior by manipulating the price structure for solid waste service. A "linear rate" structure has each can priced as a multiple of the first can price, e.g. 1 can at $5, two cans at $10, three cans at $15, and so on.

Regulatory Rate Setting. Setting rates is a two-step process. The first step is to determine the revenue requirement, i.e. how much revenue a company needs in order to cover its costs and to earn a fair profit. The second step is rate design, allocating the revenue requirement equitably among customers. This NOI is concerned with rate design rather than revenue requirement[2].

Conventional rate design uses an accounting approach known as "cost-of-service" to allocate rates. Cost-of-service (also known as embedded cost of service) is considered an accounting approach because it uses known, historical costs determined by the company's actual expenditures.

An alternative method of designing rates, based on economic principles rather than accounting principles, is known by various names such as marginal-cost pricing or avoided-cost pricing. Marginal cost pricing is based on economic theory, which says that the most efficient allocation of resources takes place when price equals marginal cost (P = MC). Setting a company's rates (i.e. price) equal to its marginal cost will, therefore, achieve economic efficiency. Another reason for using a marginal cost or avoided cost approach is because the historic costs of providing a resource (that is, the costs used in a cost-of-service analysis) may not recognize the fact that it will be more expensive to provide or replace the resource in the future. A price that sends a message to consumers about the costs of depleting a resource quickly and having to replace it will be more accurate than one which is based on the cost of providing it in the present or past. A final rationale for marginal cost pricing is because prices frequently exclude the "external" or social costs of providing a good or service. Marginal cost or avoided cost pricing can include such externalities in prices and so bring supply and demand to a more socially efficient level.

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[1] Skumatz, Lisa and Cabell Breckinridge, Volume-Based Rates in Solid Waste: Handbook for Solid Waste Officials, EPA, 1990, 2.

[2] One of the major issues in a contested case currently before the Commission, Sno-King Disposal v. WUTC, TG-900657 et al., is the appropriate method of determining revenue requirement for recycling programs under WUTC jurisdiction.

Both rate design methods have advantages and disadvantages. Because they are based on actual incurred costs, cost-of-service methods are relatively easy to apply compared to the difficult task of measuring unknown future costs. Rates designed to reflect cost-of-service arguably meet the criterion of equity, since total revenue requirements will be distributed fairly among the beneficiaries of a service. It is fairly easy for a regulatory agency to develop and administer cost-of-service rate design techniques. Finally, because cost-of-service distributes actual revenue requirement, there is no need to distribute a shortfall or overage of revenues.

However, cost allocation is an inexact science. Costs may be attributed to a customer class only to the extent that there is clear causation of them. For indirect costs, administrative overhead, planning costs, and or other such expenses which are not clearly attributable to a particular set of customers, the rate analyst must make cost assignments based on more or less arbitrary assumptions. As already noted, historic costs do not take into account the future costs of acquiring new resources, so a cost-of-service rate design may not send proper signals to consumers about the actual present costs of their consumption.

Although marginal cost or avoided cost techniques meet the criterion of promoting economically efficient consumption, future costs, avoided costs, and external costs are difficult to measure with any precision. Characterizing a future system and quantifying its costs can be a difficult and costly administrative burden to a regulatory agency. An avoided cost pricing system may also carry the risk of under- or over-recovering the company's revenue requirement.

The Commission adopted a particular cost-of-service methodology for solid waste collection companies in 1988 in Cause No. TG-2016. This method is called the Meeks approach, after the expert witness who proposed it in that case. The Meeks method allocates costs among residential, commercial, and drop-box customers on the basis of statistical units that reflect the cause of expense variations. These statistical indicators are, in turn, based on cost-of-service studies performed on garbage routes. (See Table 1. For a more detailed explanation of the Meeks method, see Appendix B).

TABLE 1.

SUMMARY OF MEEKS COST-OF-SERVICE ALLOCATION ASSUMPTIONS

	Item:	Based on:	Allocated to:
7	Dump fees	By ton	Weight
6	Containers	Depository	Weight
20	Drive, unload time	Shared portion	Weight
13	Supervisors	Drivers	Wages
2	Driver/helper fringes	Actual expenses	Wages
17	Drop box	Single customer	Trip
18	Routes	Multiple customers	Time, weight
4	Collection equipment	Vehicle operating	Time
5	Maint. persnl, facil.	Vehicle operating	Time
10	Insurance	Per vehicle	Time
14	General office	Performed for all	Service units
15	Dispatchers	Performed for all	Service units
16	Officers	Control of $	Revenue
11	Bad debts	Risk for all	Revenue
8	Regulatory fees	Percent of $	Revenue
9	Taxes	Percent of $	Revenue
3	Vehicle tires	Miles	Miles
1	Driver/helper wages	Hour	Labor Hours
12	Advertising	Expenses	Expense
19	Stop time	Service to cust.	Customer class

From testimony in WUTC Cause No. TG-2016. See Appendix B.

II. RESPONSES

The notice issued in November, 1990, had seven questions about rate design and the effectiveness of solid waste incentive rates. This section discusses the responses and the issues they raised on a question-by-question basis. Respondents are cited in parentheses; see Appendix C for a list of respondents.

Question 1. Do incentive rates encourage waste reduction and recycling? What level of incentive is needed to induce customer action?

Evidence from responses and other research suggests that, although rate design does encourage waste reduction and recycling behavior, there are several caveats to this. The evidence appears to suggest that behavior effects are not particularly strong; that changes in behavior depend on both the initial rate level and on the rate increment between subscription levels; and that behavior also depends on factors other than rate design. Several respondents based replies upon their belief that incentive rates would encourage waste reduction, or upon economic theory, which predicts that consumers will reduce waste when rates go up. Only a few had data to document their view.

The City of Seattle provides the best documented example of the effects of incentive rate design. Since 1981, when the city introduced variable can rates, the average subscription dropped from 3.5 cans to just over 1 can (St. Germain). 1989 tonnage to the landfill was reduced by over 20% from 1988 (Gale).

The City of Seattle's response indicates that people have both lowered the amount of solid waste they generate, and increased the amount they recycle. The City estimates that for every 1% increase in price there was a .14% decrease in the quantity of garbage disposal services demanded. This represents the elasticity of <u>demand for garbage services</u> with respect to price. Although less data was available, Seattle estimates that for every 1% increase in price, there was about a .07% decrease in garbage generated; this represents the elasticity of <u>garbage generation</u> with respect to price. These numbers must be used with some caution, however. First, they were derived using total tonnage data, not subscription data. Second, they do not include recycling since city recycling programs were not available over the entire period. Despite these caveats, the City of Seattle concludes that, as the price of disposal increased in Seattle, people increased the use of private recyclers and reduced the amount of garbage they generated.

Seattle found that both the rate level and the per can increment affect customer disposal behavior. For instance, in 1982, with the first can priced at $6.65 and a per-can increment at $3.00, more than 55% of the city's single-family customers still sub-

scribed to four cans or more per week. Fewer than 30% were one-can customers. By 1984 the one-can rate had risen to $7.45 but there was still only a $3.00 per can increment; about 50% of all single-family customers still subscribed to four or more cans and only about 30% were on one-can service. In 1986 the first can rate increased to $11.85 and the per-can increment to $3.30. After this increase, the percent of four-can customers was halved, to about 25% of the total, while the percent of houses subscribing to one-can service increased to about 45%. 1989 rates were $13.85 for the first can, with a $5.00 per can increment. Following adoption of this rate structure, the city has virtually no four-can customers left. Only about 25% of all customers subscribe to two or more cans, and 75% of the single-family customers subscribe to one-can or a mini-can per week (Gale, pp. 2, 8; City of Seattle, Draft 1989-90 Solid Waste Rate Study, pp. 27, 29). Note that while this is an incentive rate, it is not a linear rate.

However, we must be cautious about concluding that the change in rates alone caused these changes in behavior. Since 1989 was also the year that Seattle made convenient, curbside recycling programs available to customers, the change in subscription levels may be due to use of the recycling program as much as due to rate incentives. Seattle calculated that its residential tonnage decreased by 20.4% between 1988 and 1989 following this change in rates and service (Gale, 18).

One respondent (Mercer) pointed out that the City of Olympia has experience with incentive rates. Olympia has a ten-gallon mini-can rate of $2 per month, a one-can rate of $7.00 per month, and a two-can rate of $19.40 per month. Although Olympia has a high participation rate, with over 80% households subscribing to recycling service, there is no data that links waste reduction or recycling to the presence of incentive rates. As in Seattle, provision of convenient curbside recycling was part of the city's total program.

Other Research. Despite the limits on conclusions from Seattle's experience, other documents lend support to the view that rates will affect subscription decisions. A recent EPA document examines the effects of solid waste pricing on waste behavior, including waste generation, waste reduction, and recycling. Although the focus of this EPA report was on weight- or volume-based pricing, some of its conclusions may apply to incentive rate design. The report looked at waste generation behavior in three cities: Perkasie, Pennsylvania; Ilion, New York; and Seattle, Washington. The study found that, for a 10% increase in the price of waste collection, consumers generated from 1 to 1.7%

less waste, subscribed to about 2.6 to 2.2% less waste collection service, and increased recycling by about 5%.[3]

Commission staff surveyed Washington solid waste collection companies in late 1990 to examine the effect of rate design on service levels for residential customers. This survey indicated that subscription rates for one-can depended on the price of the second can. Table 2 shows, for the companies that responded to the staff questionnaire, the number of customers subscribing to each level of service; the price of the various subscription levels; the price differential of the second can; what percentage of the first can price is represented by the second can price; and the percentage of customers subscribing to one-can service level. However, Table 2 shows that the relationship between one-can service and the price of the second can is not a clear-cut relationship. For instance, Peninsula and Bingen Disposal both price the second can $3.50 above the first, but 95% and 90%, of their respective customers subscribe to one-can service. Other examples are Metalines and Ione where the second can costs only $1.10 more than the first can, yet about 83% of the customers subscribe to one-can service.

One explanation for this observation is that garbage generation is correlated with household income. For instance, in a review of literature on the economics of solid waste management, the 1990 EPA study found researchers consistently concluding that higher income is associated with higher demand for solid waste collection. Studies have estimated income elasticities of demand of .40 (Chicago, 1973); .27 (Detroit, 1976); .39 (Riverside, California, 1975); and .20 to .40 (five communities nationwide, including Tacoma 1979) (EPA, pp. A-1, A-2). Using the data in Table 3, a WUTC intern estimated average customer income of each hauler based on the average county income in the hauler's territory. Using this income information, along with other data from Table 3, he proposed models that tied the proportion of one-can customers to several variables. In his regression analyses of these models, average household income and the price of the second can were consistently significant in explaining the proportion of one-can customers. A conclusion to be drawn from this is that in areas of relatively lower household income, a higher proportion of customers will already subscribe to one-can service. This raises questions about the need for applying incentive rates on a uniform state-wide basis, since lower-income communities may already be achieving the results to be sought through incentive rates.

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[3] Charging Households for Waste Collection and Disposal: The Effects of Weight or Volume-Based Pricing on Solid Waste Management, EPA, September, 1990, 5-4.

Table 2: Responses of Regulated Collection Companies to WUTC Staff Survey, 1990

Company	Total customers	Number of Customers				Price of Service				Price of second can	Second can as % of first	% taking one can service
		1 can	2 can	3 can	4 can	1 can	2 can	3 can	4 can			
Twin City	2113	2079	33	1	0	$8.00	$12.00	$18.00	$24.00	$4.00	50.00%	98.39%
Pennisula	4390	4164	225	1		$10.00	$13.50	$17.80		$3.50	35.00%	94.85%
Bingen	330	300	24	5	1	$8.75	$12.25	$15.75	$19.25	$3.50	40.00%	90.91%
Sanitary	19	17	2			$5.75	$9.00			$3.25	56.52%	89.47%
EGH	1447	1287	153	5	2	$8.25	$13.05	$18.25	$23.40	$4.80	58.18%	88.94%
Ridgefield	303	269	33	1	0	$7.25	$13.65	$20.05	$26.45	$6.40	88.28%	88.78%
Montesano	421	360	59	2		$7.56	$12.62	$17.69		$5.06	66.93%	85.51%
Clark County	4715	4029	666	19	1	$7.65	$14.60	$21.55	$28.50	$6.95	90.85%	85.45%
Metalines	103	86	14	1	2	$5.20	$6.45	$7.70	$8.95	$1.25	24.04%	83.50%
Ted's Woodland	818	678	129	11		$7.00	$12.50	$17.50		$5.50	78.57%	82.89%
Ione	57	47	9	1		$4.70	$5.80	$6.90	$8.00	$1.10	23.40%	82.46%
Olympic	2876	2306	542	21	7	$11.00	$15.60	$20.35	$26.40	$4.60	41.82%	80.18%
Vancouver	26913	21106	5654	152	1	$6.97	$12.77	$18.57	$24.37	$5.80	83.21%	78.42%
Empire	2297	1789	493	12	3	$7.51	$10.28	$13.29	$16.44	$2.77	36.88%	77.88%
Skamania	526	408	113	3	2	$10.00	$15.00	$20.00	$25.00	$5.00	50.00%	77.57%
Ted's	616	476	132	7	1	$7.50	$10.25	$14.55	$19.50	$2.75	36.67%	77.27%
Olsons	1251	960	265	20	6	$9.85	$13.20	$16.45	$19.80	$3.35	34.01%	76.74%
TriCity	666	505	157	4		$7.80	$10.65	$13.25		$2.85	36.54%	75.83%
North Cascades	145	108	36	1		$7.50	$10.50	$13.50		$3.00	40.00%	74.48%
City of Vancouver	12553	9005	2633	838	77	$8.07	$14.87	$21.67	$28.47	$6.80	84.26%	71.74%
Nooksack	877	615	235	20	7	$11.50	$15.00	$18.50	$22.00	$3.50	30.43%	70.13%
Stans	3655	2545	1075	33	2	$9.35	$11.25	$14.25	$18.00	$1.90	20.32%	69.63%
Rbatino	12346	7945	4026	290	85	$6.87	$10.05	$13.22	$16.37	$3.18	46.29%	64.35%
Zippy	546	349	175	17	5	$7.45	$9.65	$10.45	$11.80	$2.20	29.53%	63.92%
RST	839	527	291	17	4	$7.10	$9.85	$12.80	$15.80	$2.75	38.73%	62.81%
Island	5570	3329	2139	92	10	$9.00	$11.75	$16.45	$21.00	$2.75	30.56%	59.77%
Nick Raffo	3865	2308	1441	107	9	$7.10	$9.85	$12.80	$15.80	$2.75	38.73%	59.72%
Lakewood	8583	5011	3126	388	58	$8.85	$11.55	$14.25	$16.95	$2.70	30.51%	58.38%
Excess	591	343	228	19	1	$6.00	$8.50	$11.00	$13.00	$2.50	41.67%	58.04%
Basin	907	522	342	35	8	$5.75	$7.30	$9.50	$10.25	$1.55	26.96%	57.55%
Snoking	8985	5124	3861			$7.25	$12.00			$4.75	65.52%	57.03%
Valley Garbage	26479	14269	11082	986	142	$6.10	$10.05	$13.95	$17.75	$3.95	64.75%	53.89%
Snoking	3456	1824	1511	111	10	$7.60	$8.68	$10.26	$11.84	$1.08	14.21%	52.78%
WMI Wenatchee	1828	951	768	89	20	$5.26	$7.44	$9.63	$11.82	$2.18	41.44%	52.02%
Bill's Disposal	2394	1223	1111	52	8	$5.55	$7.30	$9.30	$11.35	$1.75	31.53%	51.09%
Western	1889	950	839	88	12	$6.75	$9.25	$12.75	$14.70	$2.50	37.04%	50.29%
Snoking	48	24	23	1		$7.50	$11.50	$15.50		$4.00	53.33%	50.00%
Federal Way	9297	4489	4472	310	26	$7.10	$9.85	$12.80	$15.80	$2.75	38.73%	48.28%
WMI Spokane	10057	4730	4922	355	50	$6.85	$10.17	$13.33	$16.49	$3.32	48.47%	47.03%
Yakima Valley	9879	4626	4647	513	93	$4.09	$5.78	$7.47	$9.17	$1.69	41.32%	46.83%
Consoloidated	1872	874	887	95	16	$7.31	$9.42	$11.47	$13.57	$2.11	28.86%	46.69%
Snoking	14036	6360	7054	555	67	$8.05	$10.65	$13.50	$16.35	$2.60	32.30%	45.31%
Dahl Smith	1199	542	599	45	13	$6.65	$8.90	$11.10	$13.20	$2.25	33.83%	45.20%
Snoking	1293	560	667	61	5	$8.45	$10.10	$11.65	$14.85	$1.65	19.53%	43.31%
WMI Wenatchee	4571	1924	2408	212	27	$5.26	$7.44	$9.63	$11.82	$2.18	41.44%	42.09%
Lawson	4310	1803	2294	192	21	$8.45	$12.20	$16.25	$20.15	$3.75	44.38%	41.83%
Snoking	378	153	212	8	5	$16.20	$20.85	$27.21	$32.80	$4.65	28.70%	40.48%
Snoking	9180	3559	4971	570	80	$7.62	$8.90	$10.50	$12.10	$1.28	16.80%	38.77%
Clarkston	1695	650	923	108	14	$6.00	$7.25	$8.50	$9.75	$1.25	20.83%	38.35%
Snoking	796	303	461	28	4	$11.45	$15.45	$19.45	$23.45	$4.00	34.93%	38.07%
Ed's	319	112	179	17	11	$6.25	$7.70	$9.05	$10.50	$1.45	23.20%	35.11%
Totals and avgs.	214299	128523	78341	6519	916	$7.67	$10.87	$14.27	$17.37	$3.20	42.16%	59.97%

A final observation is that only 7,435 customers out of the 214,000 customers covered by this survey, less than three and a half percent, subscribe to more than two-cans of service. This may indicate that customers do not have very many options available for reducing their service levels, and that higher rates can only influence reduction to a limited degree.

Question 2. Is there a conflict between current cost of service method and incentive rates which may or may not be based on actual costs?

Based on the replies, it seems apparent that many respondents do not understand cost-of-service as practiced in regulatory rate-making. Several answers said, in effect, "There is no conflict with the current cost of service method, as long as avoided costs are used". This contains an internal contradiction: the cost of service method uses actual, historic costs, not hypothetical, avoided costs, so any method that moves away from the actual to the hypothetical is necessarily in conflict with the Commission's current practice.

Not all avoided costs are hypothetical. At least one respondent (Weiss) documented several external costs, including enforcement costs; the cost of siting new disposal facilities; and closure, remediation, and post-closure monitoring costs for landfills. Some respondents urged the Commission to incorporate environmental costs into rate design (St. Germain, Hansen), while the City of Seattle advised the Commission to use a long-run cost which includes a new disposal site (Gale).

Although these costs are known and documented, there is a problem in using them to set rates. Because avoided costs are not borne or incurred by the solid waste collection company, current cost-of-service methodology has no way of incorporating them into rates paid by customers of the solid waste company.

Question 3. Do incentive rates reduce waste volume, or do ratepayers compress substantially the same volume of garbage into fewer cans?

The City of Seattle, noted that incentive rates result in both compaction and reduction (Gale). Seattle's 1986-1987 rate increase resulted in a shift to single-can subscription levels without an equal percentage reduction in tonnage. The City remarked that, although tonnage stayed the same, this was also a period of rising personal income and increasing numbers of households, both of which would be expected to result in larger volumes of waste. Also, the city did not offer convenient alternatives (such as curbside recycling). The City observes that citizens will reduce their garbage bill the easiest way first. If they have over-subscribed to garbage service so that there is excess capacity in their trash cans, a household's rational first

action will be to reduce capacity, and hence demand, by compacting or by giving up one can. In one sense this makes the system more efficient, but it also produces two enforcement problems: overweight cans, and depositing more waste at the curb than has been paid for, for instance by placing bundles or bags alongside the can.

Most respondents observed that customers could be expected to compact their waste, but several had further observations. As long as reasonable waste reduction and recycling services are available as an alternative, people will have incentive to use those alternatives (Kelly-Clarke, Backlund). Compressing waste indicates that consumers are responsive to economic incentives (Hansen). Compressing waste is preferable to illegal dumping or burning (St. Germain). Assessing all rates on the basis of weight, rather than volume, may be a long-term solution (Boge).

Question 4. If incentive rates are adopted, should the long term "avoided costs" of disposal be used to calculate the rate? If so, how should the long term avoided cost be calculated?

Many respondents favored using long-term avoided costs in setting rates. The general approach seemed to be summed up best by Rep. Art Sprenkle, who stated: "I do not believe it is appropriate public policy to charge those citizens conserving landfill space (by recycling) more than those depleting it." One exception was a hauler representative (Graham), who supported continued use of cost-of-service.

Many responses favored including social costs. Quite a few of these costs were identified, and some were quantified. Avoided cost elements identified by respondents include:

- Collection operations.
- Transfer operations.
- Landfill operations.
- Landfill closure and post-closure monitoring.
- Environmental remediation.
- Local government liability.
- Planning.
- Siting.
- Replacement of disposal facilities.
- Abatement and enforcement of improper disposal methods.
- Contaminated air and water.
- Resource depletion (from discarding materials, using
- excess energy to produce packaging from virgin materials, etc).
- Other social costs (e.g. nuisance from landfills, etc).

At least two respondents suggested that quantifying long-term avoided costs would also allow the Commission to conduct benefit-cost analyses of recycling programs to see if they were justified (Gale, Hansen).

Local issues were raised by several commenters. Several said that only local jurisdictions know the actual lifetime and costs associated with their unique management systems, and local factors affect some costs such as route density and distance to the landfill (St. Germain, Boge, Hansen). Two replies suggested that avoided costs should only be used where they can be accurately calculated by the jurisdictions familiar with the avoided costs (Boge, Kelly-Clarke). At least one respondent suggested that, since local governments incur many of the external costs, they should be the ones to collect revenues from those who produce more waste (Boge). These comments may support structural reform of the State's solid waste laws to give local county governments greater authority over solid waste collection and rates or to give a state-wide body responsibility for setting both collection and disposal rates.

Two jurisdictions proposed avoided-cost techniques. The City of Seattle proposes a method that begins with preparing a hypothetical least-cost plan for potential new disposal resources both within and outside the region. Next, costs associated with each disposal resource, including environmental costs and replacement cost valued at future, not historical, values, would be estimated. The City suggests that the WUTC develop a "resource stack" from this plan, and a resource acquisition model using the resource stack as its main input. The output of the model would be a year-by-year least-cost acquisition plan for new resources and a year-by-year estimate of marginal cost. The city proposes that the WUTC set the disposal component of rate schedules using this marginal cost. If necessary, the Commission may need to adjust non-disposal elements of the rate schedule to meet the revenue requirement and ensure that the company does not earn excess profit (Gale).

King County suggested using avoided cost calculations in a couple of ways. The Commission could set the highest service level rate at the avoided cost so the marginal rate equals marginal cost. An alternative is to set the differential between service levels at the marginal cost. The County suggested that the first block should not be set below the average cost (Hansen).

Question 5. Can the Commission's existing cost of service methodology be altered to provide greater rate incentives, or must a new methodology be developed?

As noted earlier, many respondents did not understand the current cost-of-service allocation method used by the Commission. Some

parties confused cost-of-service with the determination of revenue requirement. Others proposed methods that were so different as to constitute a different approach. Proposed techniques included the following:

- Use cost of service to set the first can rate, then make the second can double the first can, the third can twice the second, etc. Revenues in excess of the cost of service could be directed to the local government body responsible for waste disposal to be used to prevent or prepare for potential liability problems. Haulers could keep their revenue requirement plus a small administrative fee to cover the cost of remitting the remaining amount to the local jurisdiction (Boge).

- Calculate revenue requirement in the same way, but distribute fixed costs proportionately over all service levels rather than applying them predominately to the first can service (Weiss).

- Distribute the revenue requirement by dividing it by the number of volume units to be collected (e.g. gallons, standard mini-cans, etc.) (Weiss).

- Calculate a baseline rate at an average waste-generation minimum, considering the household size (Weiss, Hansen). This would set an average base rate for average consumption. Rates for other "blocks" could be set at their marginal cost (Hansen).

Question 6. If rates for collection service rise significantly, will customers seek alternative means of disposal? If so, what would be the effect on remaining regulated ratepayers?

There is little empirical data available on illegal dumping tied to an increase in rates (Gale). Most respondents recognize that people will seek alternative disposal methods, and that some of these may be illegal or impose social costs.

None of the respondents discussed the effect that a shift of some customers switching to self-haul has on remaining ratepayers. However, at least two discussed the desirability of universal or mandatory collection (see Other Issues, below). Two jurisdictions pointed out that the tendency for people to stop garbage collection and to become self-haul customers may be discouraged by increasing the tipping fee or vehicle charge for self-haul customers at the same time that an incentive rate structure is adopted. For instance, Whatcom County experienced a mild increase in the number of garbage customers despite a dramatic increase in collection rates due to a tipping fee increase from $37.50 per ton to $90.94 per ton. The county reasons that such

an expensive tipping fee removes any incentive for customers to switch to self-haul (Weiss). In 1986, Seattle reported a drastic reduction in self-haul customers at their transfer station due to the imposition of a vehicle charge (Gale).

Question 7. In order to show customers the cost of different collection options, should rates for recycling collection be set out separately from rates for solid waste collection?

There was not a clear consensus among respondents to this question. Several support separate rates, two argued for consolidated rates, and one jurisdiction provided reasons for using both methods. An additional problem is that some answers seemed to have logical inconsistencies, such as the following restatements of responses: "People should be educated about solid waste costs, but not through their solid waste collection bills", and "Too many people have a misperception that recycling should be free of charge, yet combining recycling rates with garbage rates is preferred".

Reasons given for setting out recycling rates separately from solid waste rates on the bill include:

- Education, so people understand the hierarchy of waste disposal and its corresponding costs.

- Efficiency and consumer satisfaction: separate rates allow consumers to obtain price signals about different kinds of services so they can compare services, make well-informed decisions, and use the appropriate mix of services to satisfy their needs.

- The alternative (consolidated rates) has problems: If recycling is consolidated with garbage rates, and if recycling and waste reduction are successful in reducing waste volume, garbage rates may rise as fixed costs must be recovered from a smaller base. Having people see an increase in their bill, after they engage in the appropriate recycling behavior, would send them the wrong message.

Reasons given for preferring consolidated garbage and recycling rates include:

- Segregating recycling from garbage collection on bills may lead to ratepayer confusion.

- The most important information is that variable service levels are available, not the extra payment for recycling.

- It would be better to educate consumers to the reality that the entire solid waste management system costs money to provide and operate.

- If recycling costs are set out separately, why not set out the costs of the rest of the management system?

- To properly reflect state policy, recycling should be considered to be the basic service, with disposal treated as an add-on.

Seattle uses both methods. Recycling is not segregated in bills, whereas yard waste is billed separately. One reason for including recycling in bills is because recycling is, in part, subsidized through garbage rates. Costs of recycling are allocated to customers whether or not they choose to use the service. On the other hand, yard waste is an explicit line item because the city wanted to provide an incentive for customers to use a preferred alternative management method, backyard composting, which is more cost-effective for the city than providing yard waste collection.

OTHER ISSUES

Respondents raised a number of other issues besides the seven questions requested by the Commission. These issues include: commercial recycling collection; role of private companies; mini-can rates; and universal collection.

Commercial Recycling.

The consensus of responses seemed to be that incentives for commercial recycling are important, but rate design for the commercial sector may be difficult. The importance of commercial sector recycling for the state of Washington is underscored by the recent state solid waste management plan, which states:

> Without significantly higher material recovery from nonresidential sources of waste, it is unlikely that the state's 50% goal can be achieved. Business and institutions must enhance and expand their existing waste reduction and recycling programs. (Washington State Department of Ecology, Washington State Solid Waste Management Plan, January, 1991, page 37).

One difficulty in designing rate incentives for commercial customers comes from a change made by chapter 431, Laws of 1989, which created a regulatory distinction between residential recycling and commercial recycling. The former falls under chapter 81.77 RCW, while commercial recycling is regulated under chapter 81.80 RCW. Since garbage under chapter 81.77 is a monopoly while motor freight carriage under chapter 81.80 may have elements of competition, public policy suggests that the WUTC may not allow

subsidies of competitive commercial recycling with monopoly garbage rates.

Several respondents said it was important to increase commercial recycling, but there was only one solution suggested: altering the regulatory framework for commercial recycling. Two local government representatives (Weiss, Whatcom County; Hansen King County) said that their local solid waste management plans had ambitious waste reduction and recycling goals, and that maximizing recycling in the commercial sector was vital to achieving those goals.

At least two respondents (Lincoln, Fennell) pointed out that economic incentives are particularly important for commercial customers. Waste audits in King County by the Pacific Energy Institute (PEI) found: businesses view recycling and disposal as close substitutes for managing waste; businesses are sensitive to cost differentials when they decide which waste management method to choose; and businesses have diverging preferences and needs for recycling and disposal services (Fennell). Current commercial rates can be a barrier because it often costs more to recycle than to dispose.

Another commenter (Weiss) offered evidence of how current WUTC commercial recycling rates tend to provide disincentives for businesses interested in recycling. A Whatcom County hauler presented a recycling rate in which the total solid waste management costs (i.e. trash plus recycling) increased as the consumer recycled more. Assuming a customer with a four-cubic yard container, the following rates were provided:

	Trash Rate	Recycle Rate	Total Charge
Current	33.40	0	33.40
Recycle 25%	31.10	12.05	43.15
Recycle 50%	23.90	20.00	43.90

For the most part, responses did not propose ways to solve the commercial rate problem. A hauler's representative (Dunn) suggested "possible coordination and adjustments between trash and recycling rates", and suggested that the Commission try innovative rate designs on a test basis in order to try out different approaches and develop data. PEI suggested that the commercial sector could have a different regulatory approach than the residential sector. PEI observed that the rationale behind regulation in the residential sector (obligation to serve; economies of density) may be less applicable to the commercial sector. The response stated that collection and transport of waste and recyclables from the commercial sector could conceivably be a much more competitive industry, leading to lower costs and wider variety of services. PEI notes that the state's long-term goal should be to develop a sustainable market-driven recycling

system, which implies that it is crucial to preserve flexibility so that the system responds to market signals. PEI suggested that a heavy regulatory approach is unlikely to achieve this, whereas a more competitive commercial sector collection system may preserve such flexibility (Fennell).

Role of Private Companies.

While at least five respondents discussed the role of private companies in incentive rates, there was no clear consensus among the parties about the appropriate role. Where one respondent suggests incentives (such as a higher rate of return) for companies that diversify into recycling (Fennell, PEI), another suggests that "private sanitation companies should not benefit from an increase in rates, since the increase is a reflection of society's costs" (Duttlinger). A haulers' representative (Dunn) states that the Commission should allow rates that support the existing recycling infrastructure (i.e. use of both recyclers and haulers) by providing rate incentives no matter which recycling method a customer chooses: curb-side, private buy-back, or charitable or non-profit recycler. Another commenter suggested that the WUTC should study alternative regulatory structures which would provide more incentives for haulers to provide recycling services, such as allowing increased levels of discretion in price-setting by waste management companies, or by allowing a higher rate of return for companies that diversify into recycling (Fennell).

Mini-Can and Half-Can Rates.

There was a fair amount of support for mini-can or half-can rates. Representative Art Sprenkle suggested that mini-can or half-can rates should be universal, offered to all customers. A WUTC-regulated hauler (Don Schotz, Ted's Sanitary) recommended reducing the standard unit of service to a mini-can of 15 to 20 gallons instead of the current 32 gallon can. Only 24% of his customers currently subscribe to two or more cans. If variable rates affect only the second can, a message is sent to only one-quarter of the customers, or even fewer as people shift subscription levels.

An additional rationale for having a mini-can as a standard size is to make an appropriate service level available as customers reduce their waste and increase composting and recycling. A variation on the mini-can is the pre-paid bag, tag or sticker system. J.P. Jones of the Washington State Management Association supported this concept. Under this method, the garbage company will only collect authorized containers. Authorized containers can be pre-paid bags, or regular bags that are marked with a pre-paid tag or sticker. By making the price of additional bags or tags higher, a message can be sent to consumers about the desirability of reducing extra set-outs. A problem with this

system is the need to establish a system of distributing bags, tags or stickers to consumers.

Universal Collection.

Two respondents supported the concept of universal garbage collection. One noted that garbage disposal is a social problem and should be paid for by all of society, not just by some (Duttlinger). Another suggested that, while volume-based rates awaken people to prices, they do nothing to enhance equity. In essence, according to the commenter, incentive rates only effect those who are already on solid waste collection and therefore doing their part. The true cost of solid waste management should be assessed on every dwelling unit, business, and industry regardless of whether or not they subscribe to solid waste collection service, since volume-based rates do not extract income from self-haulers yet the system serves such non-paying customers (Carlson, WDOE).

III. DISCUSSION

Although limited, the evidence provided to the Commission in this inquiry supports the view that changing solid waste collection rates will cause people to evaluate the use of alternative solid waste management options and, in some cases, to rely more on waste reduction and recycling. Rate design can be used to change rates and thereby encourage or help bring about this change in behavior. However, rate design will probably not change behavior by itself. Rather, incentive rates should be viewed as just one tool to change behavior, and should probably be accompanied by other programs to maximize desirable behavior. This is discussed in greater detail, below.

To be fair, just, and reasonable to rate payers, regulators must justify the rate designs they approve. Marginal cost methods have an economic basis, while cost of service techniques have an accounting justification. The first part of this section discusses marginal (or avoided cost) rate design in more detail. The second part examines the assumptions in the Washington Utilities and Transportation Commissions current Meeks cost-of-service technique.

A. Marginal Cost Issues. Marginal cost is the change in total cost that results from a small change in consumption. In its purest sense, marginal cost deals with very small increments of change. In terms of solid waste rates, such a marginal cost would be the change in total cost that results when a household adds a single additional item to its garbage can. Measuring the change in costs of such small levels presents practical difficulties, so marginal cost analysis often uses somewhat larger increments such as the cost change due to a household placing an additional garbage can at the curb.

Short-term costs are often the basis for calculating marginal cost. For instance, the marginal cost of an extra can of garbage would be determined by examining the change in the total solid waste management costs that result from loading that can in the truck and taking it to the disposal site. In essence, this reflects the WUTC's current Meeks cost allocation method.

Two factors suggest that we could view marginal costs as longer term. The first factor is that some investments are "lumpy". For instance, an additional can of garbage can be accommodated in the short run by adding more inputs (e.g. gasoline, labor, disposal charges) but, in the longer term, adding more cans will require investment in a new truck.

The second reason for using long-term marginal costs is because long-run costs are different than short run costs. For instance, existing solid waste management infrastructure will accommodate additional cans of garbage for a few years, but at some point in the future a new landfill will be required. Closing the current disposal site and siting the future landfill will almost certainly be more expensive than existing disposal costs. Both of these factors affect the view of marginal cost. In the first case, we should not necessarily attribute all of the cost of the new truck to the final can of garbage that made it necessary, as a short-run marginal cost view would suggest. In the second case, we should not necessarily attribute the need for a new landfill to the final can of trash that enters it.

Economists claim that a marginal cost approach should assume a long-term equilibrium situation, so that short-run marginal costs are the same as long-term marginal costs (i.e. SRMC = LRMC).[4] This concept of long-run costs is similar to the term "avoided costs". An avoided cost is a present or future cost that would be borne under one scenario of demand or consumption, but which can be avoided under another scenario. Under this definition, avoided costs are essentially the same as long-run marginal costs. Economic theory says that economic efficiency is maximized when price equals marginal cost so, if avoided costs are the same as marginal costs, avoided costs provide a justifiable basis for solid waste rate design.

Marginal Cost Methods In Practice. Marginal cost rate design methods are being used or explored as a demand-side-management (DSM) tool to shape customer demand in many utilities, including

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[4] Pfannenstiel,Jackalyne, "Implementing Marginal Cost Pricing in the Electric Utility Industry", in Applications of Economic Principles in Public Utility Industries, Werner Sichel and Thomas G. Gies, eds, University of Michigan, 1981, 57.

telephone[5], electric[6], water[7] and natural gas[8]. In addition to the advantages and disadvantages of marginal cost pricing mentioned in Section I of this report, above, there are several practical obstacles to implementing rate designs using such methods. These obstacles include: choice of a planning period; the treatment of social or external costs; complications introduced by having a mix of services; accurate quantification of costs; and choice of a technique. These are discussed below.

Choice of a planning period. If we are using avoided costs as a long run marginal cost, we need to know what "long run" we are discussing. As noted by Rep. Art Sprenkle in his comments, we can view the landfill as a scarce resource. If one object of waste reduction and recycling is to extend landfill life, rate analysts will need to know the expected lifetime of the current facility. The choice of planning period (and discount rate) is important for assessing avoided costs in at least two ways: a longer time allows a community more time to gather closure and siting costs, and the time value of money allows closure funds to increase through interest earnings[9].

The treatment of social or external costs. Several respondents suggested defining avoided costs so that rates encompass the various external or social costs of solid waste management, such

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[5] Pollard, William, ed., Marginal Cost Techniques for Telephone Services: Symposium Proceedings, National Regulatory Research Institute, January, 1991, especially Ben Johnson, "The Marginal Costs of Subscriber Loops".

[6] Pfannenstiel,Jackalyne, "Implementing Marginal Cost Pricing in the Electric Utility Industry", Op.Cit. Malès, Rene H. and Robert G. Uhler, Load Management: Issues, Objectives and Options, National Association of Regulatory Utility Commissioners, 1982. Cecil, Edward A, and Michael R. Schmidt, Retail Rate Design For Publicly Owned Electric Systems, American Public Power Association, 1984.

[7] Beecher, Janice A., Patrick C. Mann, and James R. Landers, Cost Allocation and Rate Design for Water Utilities, National Regulatory Research Institute, 1990.

[8] Blaydon, Colin C., Wesley A. Magat and Celia Thomas, "Marginal Cost and Rate Structure Design for Retail Sales of Natural Gas", in Problems in Public Utility Economics and Regulation, Michael A. Crew, 1979.

[9] An example of quantifiable avoided costs due to extending the life of a disposal facility may be found in Washington Utilities and Transportation Commission, Cost Assessment Guidelines For Local Solid Waste Management Planning, 33-34.

as pollution, enforcement, etc. Inclusion of such costs in rates raises several questions, not the least of which is whether an economic regulatory commission such as the WUTC is the appropriate body to make judgments about social costs. Leaving that argument aside, the rate analyst faces the challenge of deciding which external costs to include in rates as well as the difficulty of quantifying such external costs. Recovering materials for reuse can save energy in industrial processes: should such energy conservation savings be reflected in solid waste rates? Landfills produce inevitable nuisances such as truck traffic, noise, odors, and birds: should such nuisances be included? If so, how should these be valued? Including such externalities may also be difficult because, with technological change, valuing them frequently becomes a "moving target". Finally, assessing such larger social costs can quickly become a complex undertaking -- witness the regular debates about the competing environmental costs and benefits of styrofoam cups versus paper cups; of refillable bottles versus one-use bottles; of disposable diapers versus reusable diapers, and so on.

Another issue is the potential for assessing external costs twice, thereby leading to distorted pricing. Landfill pollution, such as methane gas and leachate, can be a major external cost. The state's minimum functional standards (or MFS, WAC 173-304) are supposed to prevent this pollution by requiring investments in technology such as impervious liners to landfills and leachate collection systems. Landfill operators presumably pay for MFS improvements through tipping fees assessed at the landfill, which in turn are assessed to WUTC-regulated ratepayers through current rates. Thus, current rates should already reflect the cost of preventing environmental pollution.

Multiple service pricing complications. The Notice of Inquiry issued by the Commission looked primarily at how a change in solid waste rates might affect use of solid waste collection services. Respondents provided very little information on rate design for recycling or yard waste programs. Calculating solid waste rates on an avoided cost basis may be relatively straightforward, but it is much more difficult to determine the avoided costs when including yardwaste and recycling programs. For instance, yardwaste programs may reduce the amount of organic materials going into the landfill and hence reduce the need for methane collection equipment. Should the avoided cost of methane gas be attributed to yardwaste programs, or to solid waste collection overall?

A second difficulty involves rate design for recycling and yardwaste programs. Different objectives will produce different rate designs, so there is no single "right" approach to pricing such alternatives. For instance, the City of Seattle pointed out that they charge for yardwaste collection because they want citizens to use home composting methods. Some communities might want to

maximize participation in curbside programs (which would suggest universal, low rates), whereas others might want to allow homeowners to use drop-off or buy-back recycling (which would suggest optional charges).

A jurisdictional problem exists because local governments prepare solid waste plans, including defining particular objectives for the local waste management system, whereas the WUTC must set rates to implement such services. Local governments frequently do not articulate such policies explicitly enough for the Commission to determine what approach to use, nor is there an institutionalized means for local governments to communicate their policy objectives to the Commission.

Another problem arises because recycling and yardwaste programs cost money to provide, so that garbage collection plus recycling are more expensive than garbage collection alone. Who should pay for these recycling programs? The primary advantage of recycling is similar to the rationale for conservation in the electric industry: an investment in recycling today will be justified if it is less expensive than new disposal sites in the future. Arguments can be made for having all ratepayers pay: all ratepayers benefit from the extended landfill life, and all ratepayers would pay higher costs associated with future disposal sites. On the other hand, if a family recycles with a local charity or school, and so does not contribute to the cost of curbside recycling, it does not seem fair to charge them for a service they are not using. A final viewpoint would be that it is the non-recyclers and large waste producers who are contributing most to the need for a new disposal site, so arguments can be made for having them subsidize recycling through their rates.

Accurate quantification of costs. An important rationale for using avoided cost rate design is that such methods send accurate price signals to consumers about the "true" costs of solid waste management. But if the costs themselves are not accurate, avoided cost rates may be open to a charge of not being fair or reasonable. While estimates of many system costs are available, these vary considerably from place to place in the state. Projections of future costs are also subject to accuracy problems.

Choice of techniques. There is no single best technique for avoided costs. The electric industry, for instance, has four commonly used methods[10]. The only response to this Inquiry that proposed a specific technique for avoided costs (Seattle proposal) has certain attractive features, the most important being that it uses long-run avoided costs. While the Seattle proposal is an elaborate model, it uses the resulting avoided costs to set

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[10]Pfannenstiel, "Implementing Marginal Cost Pricing in the Electric Industry", 60-66.

only the disposal component of rates. Disposal represents a limited portion of consumer collection rates, so this may produce a rate that differs only slightly from current rates. In addition, a number of other system costs besides disposal (e.g. collection costs) might vary with usage. Since these could be considered as marginal costs (i.e. decrease with lower waste production) it would seem to make sense to include them in an avoided cost analysis.

Another possible approach could be called, "scenario analysis." This approach rests on the assumption that, if every household made less waste, the system could be down-sized to serve only that amount of waste: fewer trucks and crews would be needed; trucks would make fewer trips to the landfill; the landfill would last longer and so have longer to gather closure and siting funds, and so on. The appropriate rate for the lower quantity of waste should reflect those lower overall system costs. Likewise, if everyone made more waste, there would need to be more trucks and crews; trucks would fill up on the routes faster and so have to make more frequent runs to the landfill; the landfill would not last as long, so closure and siting funds would need to be collected in shorter periods, and so on. The appropriate rate for higher quantity of waste should reflect such higher overall system costs.

It may be possible to develop an avoided cost rate design approach on this basis by projecting scenarios for the overall system costs due to different quantities (or service levels) of waste. Such an approach has historic antecedents, having been proposed as a means of allocating costs among the various components of the TVA system of dams, flood control, and navigation[11]. For solid waste, this process could include the following steps:

1. Establish system components that will be included in the cost analysis.
2. Develop quantitative assumptions about the system, such as can weight per service level; customers per route; routes per company; volume per truck; distance to landfill; tipping fee; landfill lifetime; closure fund level; future site costs; etc.
3. Model the total system costs assuming that all customers subscribe to a given service level, e.g. mini-can service.
4. Perform the same analysis for every service level.
4. The result should be a table consisting of the overall system cost that would result if every household produced a particular level of waste.

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[11]Glaeser, Martin G., "Those Joint TVA Costs", Public Utilities Fortnightly (Vol. XXIV, No. 5), August 31, 1939, 259-269.

5. Use the table of costs to set rates so that company's revenue requirement is recovered. One possible approach may be to preserve the table's price proportionality among service levels.
6. Predict shifts in service levels due to new rates, using price elasticity assumptions from this Inquiry, and check to see if the company's revenue requirement will be recovered. If not, rates will need to be adjusted.

Several questions arise about the implementation and administration of either of these avoided cost rate design techniques, including: How much would it cost to develop a model of the system? Who would be responsible for providing specific local data? How easy would it be to apply such an avoided cost model in actual rate filings? Do the results of such an exercise produce a significantly different rate design, so that the cost and effort to develop and apply this technique is justified? Answers to these questions need to be explored before the Commission can make a final decision on use of an alternative rate design method.

B. Adapting the Current Cost-of-Service Method. As an alternative to developing an avoided cost rate design model, it may be possible to modify the Commission's existing cost of service rate design method (the Meeks approach) to develop a rate structure that provides greater incentives to reduce waste.

The Meeks model is based on assumptions of how costs should be allocated to customers. While these assumptions are reasonable, they are not the only basis for allocating costs. It may be possible to continue to use the Meeks model, but alter the allocation of costs among customers based on different assumptions. For instance, if every household subscribed to a mini-can, trucks could collect more waste before filling up. At some point, fewer routes, and hence fewer trucks, might be necessary. With less waste, trucks would not have to go to the landfill as often. The current cost of service method allocates vehicle costs according to time on the route. Based on the assumptions just stated, it may be reasonable to allocate some portion of truck costs on the basis of weight as well as time.

C. Other Considerations. This Inquiry raises issues other than those concerning rate design, including: programs that should accompany incentive rate designs; other demand-side management rate strategies; and structural changes to solid waste laws.

Programmatic Options. Although solid waste rates are the focus of this inquiry, elements other than rates can influence behavior. As stated earlier, households have a number of solid waste management options available to them. A change in rates must be accompanied by programs designed to maximize use of desirable alternatives (such as waste reduction and recycling) and minimize

use of undesirable options (illegal disposal, over-compaction of waste in the can, etc.). Table 3, below, outlines some programs that could accompany incentive rates in order to maximize their effectiveness.

One difficulty is that many such programs are not under the jurisdiction of the Washington Utilities and Transportation Commission. Since local governments would be responsible for providing some of them, the Commission may need assurance that the local government has such programs in place before it approves incentive rates in a particular jurisdiction. For programs that WUTC-regulated haulers would implement (such as overweight can enforcement), the Commission may need to adopt rules requiring action by the solid waste collection company before incentive rates are considered.

Other Demand Management Strategies. Incentives may be created by providing additional subscription options for households that successfully reduce the amount of waste they produce. These include such things as mini-can service or once- or twice-a-month collection options.

Other utilities, particularly water and electric industries, have adopted incentives for conservation based on time of day or time of year. Summer and autumn solid waste rates may be combined with yardwaste programs to help divert seasonal waste material.

Many regulated industries use two-part tariffs containing a basic service fee combined with a usage component. Adoption of such a tariff structure for solid waste would allow a company to recover certain fixed costs, such as billing and administration, through the basic service charge. The usage component would be more directly correlated with volume, and so would provide waste reduction incentives.

Changes to Solid Waste Laws. Responses to the NOI, and associated research, point toward several changes to solid waste laws that could assist local governments in achieving solid waste incentive rates. Such changes could include: providing county governments with the same authority over solid waste collection (including rate setting) that cities now have; allowing incentive rate structures for commercial solid waste and recycling; and shifting certain historical fixed cost recovery away from current rates. These are discussed below.

<u>Providing county governments with authority over solid waste collection</u>. Several responses underscored the fact that local governments have primary responsibility for solid waste management in this state, that rate design is a tool that many local governments want to use, and that local governments have unique information available about their management system. Having the Commission involved in rate setting makes local governments de-

pendent on the WUTC for rate decisions. Providing county governments with the same decision-making authority over solid waste collection that cities now have would give them control over rates, including rate design. A second benefit of county collection authority is that the ability to form a solid waste utility would allow a county to develop a more stable funding mechanism than having to rely on tipping fees. Finally, having authority over solid waste collection would allow counties to develop universal service, which would provide for more equitable rate assessments. Counties may now require mandatory collection only by forming a solid waste collection district.

Commercial recycling. As pointed out above, increasing the rate of commercial recycling may be the key to Washington State meeting its goal of 50% recycling by 1995. Because incentive rate design for the commercial sector may be impeded by current statutes, a change in legislation may be necessary to allow commercial recycling to develop further. Such changes could include: providing greater competition in the commercial recycling or solid waste sector; making commercial recycling part of commercial solid waste under RCW 81.77; or giving local governments greater responsibility for commercial recycling.

Alternate Finance Mechanisms. Most solid waste activities are financed through solid waste collection rates or through tipping fees charged at disposal sites. One of the barriers to establishing incentive rates may be that fixed costs must be recovered from all ratepayers, so that even small quantity subscribers face relatively high rates. Under current approaches, when the volume of waste decreases significantly, rates must increase to cover fixed costs.

Fixed costs may be attributed, in part, to the fact that the current generation of ratepayers is paying for three generations of waste management: funding closure of the past generation's landfills, paying for current operating expenses, and financing the solid waste management infrastructure for the next generation. If finance mechanisms other than solid waste collection rates could be used to pay for fixed costs, current rates would be more sensitive to changes in volumes and so provide greater incentives to reduce waste. A one-time property tax surcharge to fund landfill closure would be one means of equitably assessing past users of the management system for those particular costs. Paying for new infrastructure through bonds, to be redeemed by future ratepayers through their solid waste rates, would be a means of having future generation finance their system. While counties may have latent authority to enact solid waste taxes through disposal districts (RCW 36.58.100) and may be authorized to use bond funding, use of this authority may not be widespread. Other financing alternatives (such as "front end" fees assessed on materials that eventually become solid waste, or assessing a tax on disposal sites to discourage disposal and to reflect their

lower status in the state's waste management hierarchy) may be more equitable than user fees in the long run, and should be explored by the legislature.

IV. FINDINGS AND CONCLUSIONS.

- Changing solid waste collection rates will help cause people to evaluate the use of alternative solid waste management options and, in some cases, use one or more alternatives including waste reduction and recycling. Rate design can be used to change rates and thereby help to bring about this change in behavior. Seattle has calculated price elasticities of -.14 for use of solid waste collection and -.11 for waste generation. That is, for every one percent increase in rates, households reduce waste by .11 percent and subscribe to .14 percent fewer cans. Results elsewhere may differ since waste generation is also affected by factors such as household income; amount of material already recycled; whether collection is mandatory or not; etc.

- There is wide-spread public support for incentive rates: almost every respondent strongly supported some type of incentive rate design. Most favored using an avoided cost or marginal cost approach to design rates.

- Rate design must be based on sound economic principles such as a quantifiable marginal or avoided cost. Creating incentive rates does not necessarily mean adopting a "linear" rate structure that rises arbitrarily as the number of cans increases.

- Before it can reach a decision on whether to adopt an incentive rate design technique, the Commission needs more information about the technical feasibility of an avoided cost methodology and the feasibility of altering existing Meeks cost of service assumptions. Staff should conduct a workshop with invited local government representatives and other technical experts to obtain such information.

- Households have a number of solid waste management options available to them. These include: reducing the amount of waste created in the first place; reducing waste volume by compacting it; subscribing to recycling service; self-hauling to a dump or recycling center; composting materials in the backyard; illegally disposing of waste in a park, dead-end street, or the dumpster of the business next door; and so on. An increase in rates will cause a household to evaluate the use of all options available to it. The challenge in incentive rate structures is to maximize use of socially sanctioned management options and to minimize use of illegal or undesirable options.

- To maximize use of socially desirable options, an incentive rate system must be accompanied by other programs such as convenient recycling and yardwaste programs to maximize diversion of recyclables and organic materials, and public education programs on ways to reduce waste. Thus, it may be critical to have local governments prepared to provide such programs before an incentive rate structure is implemented.

- To minimize the use of undesirable or illegal disposal options, local governments may be requested to demonstrate that they have planned for sanctions and enforcement mechanisms before an incentive rate system is adopted in a particular jurisdiction.

- Households that successfully reduce the amount of waste they produce should have service alternatives available to them less than one-can per week. Although the Commission has an informal policy that recycling tariffs should be accompanied by mini-can service, a formal policy should be adopted that solid waste collection company tariffs include, at a minimum, mini-can service option.

- Incentive rates may not be appropriate everywhere in the state. Many rural collection companies have a high percent of customers already subscribing to one-can service even without rate incentives or recycling. The Commission should adopt criteria for when incentive rates are appropriate.

APPENDICES

APPENDIX A

STATE OF WASHINGTON

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

1300 S. Evergreen Park Dr. S.W. • Olympia, Washington 98504-8002 • (206) 753-6423 • (SCAN) 234-6423

Notice of Inquiry on Solid Waste Collection Rate Design Docket TG-901250

The Washington Utilities and Transportation Commission is seeking comments on alternative rate designs for solid waste collection service.

The Commission regulates solid waste collection companies in unincorporated areas and in cities which have chosen not to provide or contract for collection service themselves. These collection companies are franchised by the Commission and must have their rates approved by the Commission.

The Commission is required by statute to set rates which are just and reasonable. RCW 81.04.250. To do this, the Commission has developed a methodology that sets rates for collection service according to the cost of providing the service. The Commission most recently revised its cost of service methodology in 1988. At that time the charge for pickup of second and subsequent cans generally increased, reflecting higher disposal costs.

In 1989 the Washington State Legislature passed a comprehensive bill designed to promote integrated solid waste management (Chapter 431, Laws of 1989). This legislation directed the Commission to require "certificate holders under chapter 81.77 RCW to use rate structures and billing systems consistent with the solid waste management priorities set forth under RCW 70.95.010 . . ." RCW 81.77.030.

These priorities are: (1) waste reduction, (2) recycling, with source separation of recyclable materials as the preferred method, (3) energy recovery, incineration, or land filling of separated waste, (4) energy recovery, incineration or land filling of mixed waste. RCW 70.95.010(8).

The Commission has approved numerous recycling tariffs from regulated solid waste collection companies, using a variety of rate structures. These tariffs have been approved on a trial basis, so that the Commission can evaluate the results. Several interested parties have proposed that the Commission also make major revisions in the way it sets rates for solid waste collection service.

These parties have requested that the Commission depart from its cost of service methodology when setting solid waste collection rates. They favor a rate design which would sharply increase the price for pick up of second and subsequent cans, in order to encourage customers to reduce waste and recycle. These rates are generally known as "inverted" rates, "linear" rates or, generically, as "incentive" rates.

In order to assess the viability of "incentive" rate structures, the Commission is seeking comments from interested parties. Comments should focus on the following questions, and on other information which addresses the legal requirements, underlying assumptions, probable results, optimum structure, and methodology for incentive rates.

1. Do incentive rates encourage waste reduction and recycling? What level of rate incentive is needed to induce customer action?

2. Is there a conflict between the Commission's current method of setting rates based on historic cost of service, and adopting incentive rates, which may not be based on actual costs?

3. Do incentive rates reduce waste volume, or do ratepayers compress substantially the same volume of garbage into fewer cans?

4. If incentive rates are adopted, should the long-term "avoided cost" of disposal be used to calculate the rate. If so, how should the long-term "avoided cost" be calculated?

5. Can the Commission's existing cost-of-service methodology be altered to provide greater rate incentives, or must a new methodology be developed?

6. If rates for collection service rise significantly, will customers seek alternative means of disposal? If so, what would be the effect on remaining regulated ratepayers.

7. In order to show customers the cost of different collection options, should rates for recycling collection be set out separately from rates for solid waste collection?

To be most useful, comments should focus on empirical evidence which supports the position of the commenter. The Commission is especially interested in qualifiable research, rather than theoretical studies, which address the policy questions. Depending on issues raised in the comments, reply comments and/or an oral hearing may be scheduled.

SECTION II

EXPLANATION OF OUR COST ALLOCATION PROCESS

Q. WOULD YOU BRIEFLY DESCRIBE THE PROCESS THAT YOU USED TO MEASURE THE COST OF SERVICE UNDER SPECIFIC RATES?

A. The process involves dividing each carrier's base period statistical units (such as tons, hours, miles, and other quantifiable units) into adjusted re-distributed base period expenses in order to compute functional unit costs. The unit costs are then multiplied by like route or trip statistics to compute route or trip expenses. If a route or trip includes different services performed under several different rates, a second phase of allocations occurs to distribute those route or trip costs among those rates. The expenses related to each individual rate are then compared with the rate to determine the profit or loss, operating ratio and other analytical information. Many types of segments can be analyzed as long as segment statistics, operating characteristics and revenues are known. Examples of such segments are individual rates, tariffs, routes, customers, vehicles, drivers and others.

Q. WOULD YOU EXPLAIN YOUR COST ALLOCATION METHODS?

A. Yes. Our cost allocations are structured so that each cost element is allocated based on the statistical unit that most accurately reflects the cause of expense variations. During the first phase of allocations, the costs of each route or trip are identified and computed through a process of re-distributing expenses into related groupings with common functional characteristics such as labor,

collection equipment, general office, etc., and then computing unit costs for each expense group based on the route or trip statistical units that influence fluctuations in the expenses. For example:

Drivers and Helpers Wages: Drivers and Helpers are paid by the hour for performing collection service. Therefore, we have allocated their wages based on the driver's and helper's route or trip collection service hours.

Drivers and Helpers Fringes: Drivers and Helpers Fringes are computed based on the actual fringe expenses for drivers and helpers and are allocated per dollar of their wages.

Collection Equipment: Collection vehicle tire costs are allocated based on collection vehicle's miles because miles travelled have a significant effect on the generation of tire costs. Other collection vehicle costs (such as fuel, parts, depreciation and others) occur during both drive time and stop time along the routes because the vehicle continues to operate whether the vehicle is driving or stopping to pickup or unload. Therefore, such costs are allocated on a total route or trip time basis to loading, unloading and drive time. Maintenance personnel and facility expenses are also allocated based on total route or trip hours of the maintained equipment.

Container Expenses: Containers are used as a depository and, therefore, have been allocated on a weight basis.

Dump Fees and Charges are usually paid by the ton and, therefore, are allocated on a weight basis.

Regulatory Fees are assessed on a percentage of revenue basis and are, therefore, allocated on a percentage of revenue basis.

State Excise Tax is assessed on a percentage of revenue basis and is allocated on a percentage of revenue basis.

Franchise Tax: Some companies pay a Franchise Tax which is computed based on a percentage of revenue. Therefore, this expense is allocated based on revenue.

Insurance, Claims and Safety: Insurance premiums are paid based on a fixed premium per vehicle or fleet for a specified time period such as one year, so we have allocated insurance costs and related expenses for claims and safety on a time (hours) basis.

Bad Debts are a decline in revenue and represent a potential risk that occurs for all revenues. Therefore, they are allocated on a revenue basis.

Advertising is allocated based on expenses except revenue-based expenses, general office and officers' expense.

Drivers Supervisors are responsible for drivers activities and have, therefore, been allocated based on drivers wages, fringes and equipment expense.

General Office: The general office expenses consist of non-management salaries, fringes, equipment and facilities. The principal activities of the general office include documentation and record keeping. The primary element that generates the documents and records is the performance of collection services for customers. Therefore, the general office expenses are allocated based on the number of customer service units.

Dispatchers: Expenses for dispatchers salaries, fringes, equipment and facilities are allocated based on the number of customer service units.

Officers: The officers constitute the management of the companies. The preponderance of management's responsibilities involves the control and management of expenses and the sources of those expenses. Therefore, Officers expenses are allocated on the basis of total company expenses (excluding dump fees and all revenue-based expenses).

On single customer trips, such as Drop Box service, the total trip cost is charged to the specific customer along with an allocated share of indirect and overhead costs.

On multiple customer routes or trips, a second phase of allocations is necessary to isolate the costs associated with specific rates, after the route or trip costs have been allocated as described above. The costs of the specific route or trip are allocated to each individual rate based on time and weight factors.

One hundred percent of the stop time at the customer location is used as the basis for allocating stop time costs to an individual rate applicable for the service performed for the customer at that stop. The relationship of the weight picked up for that customer as compared with the total weight on the collection vehicle during that route or trip is the basis for allocation of the costs for the shared portion of the route or trip costs for drive time and unloading time.

Q. IS YOUR COST ALLOCATION METHODOLOGY DIFFERENT THAN OTHERS YOU HAVE SEEN?

A. Yes. Some cost allocation methods rely on studies of regional or national average costs, statistics and/or operational characteristics applied to specific activities in a particular state. The use of such average costs and average statistics tend to produce only average answers. I believe such a process is less accurate than the method we have used to measure the unique conditions and costs associated with operations in Washington State. Additionally, some allocation formulas are assigned and applied without consideration of the specific causal relationships between the statistics and the expenses of the carriers actually being studied. For example, even if a carrier pays his collection vehicle drivers and helpers by the hour some formulas will allocate these costs based on stops or some other statistical unit. This means that those costs are not being allocated based on the statistical units that generate those costs.

Another frequently used method of calculating costs is what I refer to as the "build up" method. It involves attempting to calculate the individual cost elements of labor, fringes, equipment, dump fees and other expenses by using the rates of pay, fringe rates, estimated cost of sample units of equipment, approximate or calculated overhead cost factors, etc. applied to sample route and customer statistics to estimate the costs related to the performance of certain types of services. Although this method is considerably better than making no cost calculations at all, it has some inherent flaws. The primary flaw

is that such a method produces answers that probably will not reconcile to the actual base period costs of the company. In other words, if all of the individual costs computed by such a method were applied to all of the service units of the company during the base period, it is very unlikely that they would total the same expenses, item by item, as the company actually experienced during the base period. The cost mix will be different and the cost totals will be different. Therefore, the method is not as reliable as it should be for such an important issue. I do not believe such an approach is the best or most accurate way to determine intrastate profitability of the garbage and refuse carriers' rates in Washington. I recommend using Washington intrastate garbage and refuse collection statistics and actual expenses along with a methodology such as I have used to compute Washington intrastate garbage and refuse companies' costs of service and rate levels.

Q. DOES YOUR ANALYSIS LEAVE AN AUDIT TRAIL AND PROVIDE A RECONCILIATION PROCESS?

A. Yes. The analysis leaves an audit trail for all revenues and expenses and provides reconciliation at various levels of the program.

APPENDIX C

RESPONDENTS, NOTICE OF INQUIRY, SOLID WATE INCENTIVE RATES

Name	Representing
Mark Backlund	Self, Skagit County SWAC
Bob Banderra	City of Redmond
Ric Boge	Skagit County Public Works
Scott Carlson	WDOE
Cliff Cooper	Whitman County Solid Waste [phone contact]
Paul Devine	City of Normandy Park
Pat Dunn	Heller Ehrman, Pierce County haulers
Carole Duttlinger	Skagit County SWAC
Bill Felsted	Pullman Disposal [phone contact]
Shelly Fennell	Pacific Energy Institute
Diana Gale	Seattle Solid Waste Utility
Joy St. Germain	Washington Department of Ecology (WDOE)
Signe Gilson/Ted Hunter	Solid Waste Interlocal Forum
Jan Glick	Washington Citizens For Recycling
Jerry Graham	RST Disposal
Marlene Guhlke	Lincoln Co. Environmental Health
Rod Hansen	King County
J.P. Jones	Washington Waste Management Association
Jeff Kelly-Clarke	Snohomish County
Eric Lincoln	Waste Technology, Inc.
Vicki Mercer	Black Hills Audobon
Lorie Parker	Seattle Solid Waste Utility
Don Schotz	Ted's Sanitary [phone contact]
Rep. Art Sprenkle	Self, Washington legislature
Jack Weiss	Whatcom County
Diane Yates	City of Lake Forest Park