Docket No. TG-940411 Exhibit No. T _____ (PJP-1)
Witness: Phillip J. Popoff

BEFORE THE

UTILITIES AND TRANSPORTATION COMMISSION

of the

STATE OF WASHINGTON

In the Matter of

KING COUNTY DEPARTMENT OF PUBLIC WORKS, SOLID WASTE DIVISION

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TESTIMONY

OF

PHILLIP J. POPOFF

Utilities Rate Research Specialist

JUNE, 1994

Q. Please state your name and business address.

A. My name is Phillip J. Popoff. My business address is 1300 South Evergreen Park Drive S.W., P.O. Box 47205, Olympia, Washington 98504-7250.

Q. By whom are you employed, and in what position?

A. I am employed by the Washington Utilities and Transportation Commission as a Utilities Rate Research Specialist.

Q. Please provide a summary of your background.

A. Please refer to Exhibit____(PJP-1) of this testimony.

Q. Please identify the purpose of your testimony in this case.

A. The purpose of my testimony is to illustrate that the incentive-based rate differentials supported by King County for Eastside Disposal will have little effect on the behavior of Eastside Disposal's customers, relative to Eastside Disposal's current cost-based rate differentials. As a result, this testimony will show that rejecting Eastside Disposal's cost-based variable rates in favor of incentive-based variable rates would provide very little benefit to Eastside Disposal, its customers, and the rest of King County's residents.

Q. Please explain the organization of your testimony.

A. Part I of my testimony is an introduction of microeconomic issues relevant in this case. This section introduces and discusses basic economic issues associated with demand for Eastside Disposal's services. The discussion includes the

theory of demand, focusing on how consumers react to changes in variables including prices, availability of substitutes and other variables, and also introduces demand elasticities.

Part II builds on information from Part I. This section analyzes information submitted by King County's witnesses in light of the discussion provided in Part I. Using information provided by King County's expert witnesses, Part II will indicate that rejecting Eastside Disposal's cost-based variable rates in favor of King County's incentive-based variable rates will not have much of an impact on the behavior of Eastside Disposal's customers.

Finally, Part III of this testimony summarizes the findings of Part II. This section will reinforce the point that King County's progress toward meeting its recycling goals will not be significantly affected by adopting incentive-based variable rates over cost-based variable rates. This section will also contain concluding remarks.

PART I: ECONOMIC INTRODUCTION

Q. Please introduce the concept of a demand function.

A. A demand function is a mathematical or graphical representation of a consumer's (or group of consumers')

purchasing decisions for a particular good. Demand functions are useful to predict how consumption of a good will change, given a change in some variable.

Q. Please identify relevant assumptions economists use to describe demand functions.

A. Economists make several assumption to describe demand functions. Two simple, yet very important assumptions, are relevant to this discussion. The first assumption is that consumers seek to maximize what they consider to be their own well-being. More formally, this assumption is stated that individuals seek to maximize their utility.

An individual's utility of consuming a particular good or taking a particular action is determined by a complex set of individual preferences. Economists do not attempt to determine what preferences are or how they are formed--these inquiries are in the realms of marketing and psychology. While economists do make basic assumptions concerning preferences (which are beyond the scope of this testimony) it important to understand that economists take preferences as given.

One must be careful not to make a common mistake. The assumption that individuals are utility maximizers does not rule out "selfless" behavior. An individual may give money, time, or even his/her own life to a charity or cause out of a feeling of social responsibility. An individual who acts

selflessly does so because of their preferences--behaving selflessly must make the individual feel better than if he/she had behaved differently. Therefore, behaving selflessly can certainly provide an individual with utility--depending upon the individual's preferences.

Q. What is the second assumption you will discuss?

A. The second assumption is that individuals face a binding budget constraint. This means that individuals cannot afford to purchase and/or do everything that--according to their individual preferences--provides them with some utility.

Q. Earlier, you mentioned that a demand function is useful to predict how an individual's (or group of individuals') consumption of a good will change when different variables change. Please identify some variables that affect demand functions.

A. Consider the demand for waste collection services. For purposes of this testimony, residential, post-consumption waste is broken into two categories, recyclables and waste. Waste includes non-recyclables and recyclables that have not been separated for recycling; ie., waste collected by the transportation company headed for a landfill. Thus, there would be a demand for recyclable collection service and waste collection service. The following variables are relevant in this case:

1) consumers' preferences--how individuals perceive the benefits of purchasing recycling and waste collection services,

2) the availability of substitutable goods--recycling and other waste reduction opportunities,

3) the cost of substitutes--the cost of recycling or waste reduction including personal costs associated with preparing waste to be recycled or searching for items with minimal packaging, and,

4) the price of waste collection itself--price changes and elasticity of demand.

Q. How do changes in each of these variables affect the demand for waste collection service?

A. Changes in each of the variables will be considered below. However, before examining how changes in those variables affect the demand for waste collection service, consider Exhibit____(PJP-2). This diagram illustrates what a demand curve in Eastside Disposal's market may look like. This demand function shows that at price P1, the quantity of waste collection service Q1 is demanded. Notice this diagram illustrates that if the price of waste collection service rises from P1 to P2, the quantity of waste disposal service will decrease from Q1 to Q2. Changing the price of waste collection service will cause a movement along the

demand curve. How changes in the four variables identified above affect the amount of waste collection service demanded is the subject under investigation.

While the demand curve in Exhibit____(PJP-2) does not represent an empirical estimation of Eastside Disposal's demand function, King County's witnesses present evidence that supports such a shape (not a particular function, however).

Changes in Preferences.

Q. Please explain the meaning of a change in preferences.

A. A change in preferences means that consumers perceive a different level of satisfaction (or utility) from consuming a good or service, such as waste collection service. This, in turn, means that the value consumers place on waste collection service changes.

For an example of changing preferences, consider an education campaign designed to inform Eastside Disposal's customers about the environmental benefits of recycling over disposing of waste in a landfill. If the education campaign is successful in affecting Eastside Disposal's customers, they will demand more recycling collection service (assuming they are not already recycling all of their recyclables) and demand less waste collection service. The reason they will opt for less waste collection service is that the value

consumers perceive from consuming waste collection service is lower than it was before the education program. Because consumers value waste collection service less, they will demand less service for the same price.

Q. How does a change in preferences, such as the education program discussed above, affect the demand curve for waste collection service?

A. Refer to Exhibit____(PJP-3), which illustrates two demand functions. This diagram illustrates that a change in preferences causes a shift in the demand function. Please note the following concerning this diagram:

Demand1--the demand function before the education campaign;

Demand2--the demand function after the education campaign;

Q1--the quantity of waste collection service demanded before the education campaign at price P;

Q2--the quantity of waste collection service after the education campaign at price P.

Notice from Exhibit____(PJP-3) that for the same price, P, the quantity of waste collection service demanded by Eastside Disposal's customers decreases from Q1 to Q2. Similarly for every price, less waste collection service will be demanded after such a campaign.

Notice the difference between Exhibit____(PJP-2) and

Exhibit____(PJP-3). Exhibit____(PJP-2) illustrates a change in the price of waste collection service which causes a movement along the demand curve, while Exhibit____(PJP-3) illustrates an inward shift in the demand for waste collection service.

Introduction of Substitutes.

Q. How does the introduction of a substitute, such as availability of recycling programs, affect the demand for waste collection service?

A. Introduction of a viable substitute will cause an inward/leftward shift in demand similar to the change identified for a change in preferences discussed above. Refer again to Exhibit____(PJP-3). If new recycling opportunities become available, consumers will have an option that was not previously in their set of opportunities. This causes a re-ordering in preferences. Some individuals may exhibit a shift in their demand function for waste collection service due to the new recycling option. Thus their demand curve for waste collection service will shift in or left, as shown on Exhibit____(PJP-3).

Note that the magnitude of the shift in the demand function for waste collection service depends on the particular recycling opportunity introduced. The less

expensive the recycling opportunity, the larger the inward shift in demand for waste collection. This begins to overlap with discussion of the next variable, the cost of a substitute.

Cost of a Substitute.

Q. How do changes in the price of a substitute, such as a change in the price per unit of recycling, affect the demand for waste collection service?

A. Changing the price of a substitute good also shifts the demand function for waste collection. If the consumer's cost of recycling is lowered, then the demand function for waste collection service will shift in or leftward, as shown on Exhibit____(PJP-3). Conversely, if the consumer's cost of recycling increases, then the demand for waste collection would shift out or right. An outward shift indicates that given the same price for waste collection, consumers will demand more waste collection service if the cost of recycling increases.

Q. You switched from discussing a change in the price of recycling to the consumer's cost of recycling. Is there a difference?

A. Yes. The consumer's cost of recycling refers to the cost to the consumer for purchasing recycling collection service, including the price but also including the time involved

with preparing and perhaps the time of hauling recyclables to a collection center. This does not refer to the cost of providing recycling collection services by a company such as Eastside Disposal. To clarify, consider two recycling programs, one that has non-source separated curbside recycling, and a second that has only source separated collection centers. Assume that neither program charges a price for collecting the recyclables--ie., all recyclables are collected or accepted at no charge for each program. To participate in the collection center program, individuals must separate and transport their recyclables to a collection center. This consumes an individual's valuable time which could be spent in other, utility enhancing activities. Relative to the collection center program, the curbside program entails significantly less time and effort, thus has a lower cost to the consumer--even though neither has a price.

Changes in the Price of Waste Collection and Demand Elasticity.

Q. How do changes in the price of waste collection service change the quantity of waste collection service demanded?

A. Price changes cause a movement along the demand function, as explained earlier, and illustrated on Exhibit____(PJP-2)

Q. Does this mean that the quantity of waste collection service can be decreased by increasing the price of that service?

A. Yes. The effectiveness of price as a tool to lower the quantity of waste collection service demanded can be estimated using the elasticity of demand. Elasticity of demand measures the sensitivity of quantity demanded to changes in price.

Q. Please explain the concept of demand elasticity.

A. Demand elasticity is measured by dividing the percentage change in quantity demanded by the percentage change in price that caused the quantity change. More concisely:

Demand Elasticity= (%change in quantity)/(%change price).

Refer to Exhibit____(PJP-4). This demand curve illustrates that if the price rises from $10 to $15, the quantity demanded drops from 25 units to 24 units. The percentage change in quantity is (24-25)/25=-4%, the percentage change in price is (15-10)/10=50%. Therefore, the elasticity of demand for this change is -4%/50%=-.08.

Q. Do economists define any benchmarks when examining demand elasticities?

A. Yes. If the elasticity of demand is less than -1 (ie., -1.1, -2, -10 etc.) then demand is considered elastic. This means that quantity demanded is sensitive to price. In percentage terms it means that quantity responds greater than the price change--the quantity response is flexible or

elastic.

A demand elasticity between -1 and zero is considered inelastic. The elasticity of -.08 from the example above is considered inelastic. In percentage terms, it means that the quantity response is weaker than the price change--ie., the quantity response is rather inflexible or inelastic.

Q. How many ways are there to change the quantity of waste collection services demanded?

A. There are numerous ways to affect the demand for waste collection service. The preceding discussion, however, was designed to illustrate that changing price is only one way of affecting behavior--by moving along the demand function (the effectiveness of which can be measured using the demand elasticity). Any other method, such as changing preferences or introducing substitutes, etc., would result in a shift in the demand function.

Q. Does this complete your discussion of basic economic issues?

A. Yes, it does. My testimony will now proceed to combine the discussions above with information provided by King County's witnesses. This will show that not only is the demand for waste collection inelastic, but the demand will become even more inelastic (ie., less sensitive to price) over time.

PART II--ANALYSIS OF EVIDENCE PRESENTED BY KING COUNTY

Q. Have you reviewed testimony provided by King County in this case?

A. Yes, I have.

Q. Do several witnesses explain that they believe incentive based variable rates, in conjunction with recycling programs, are an important part of waste reduction and recycling strategies?

A. I think that statement is an accurate interpretation of their testimonies.

Q. In Staff's opinion, is there a difference between incentive rates and cost-based variable can rates?

A. Yes, Staff does not consider cost-based variable can rates to be incentive rates. Staff considers the concept of variable can rates to be cost justified. Several of King County's witnesses use the terms variable can rates and incentive rates interchangeably.

Q. Why do you bring up that point?

A. For the following discussion, it is important to keep in mind that Staff is not rejecting variable can rates. The distinction between incentive-based variable can rates and cost-based variable can rates is in how to define the rate differentials between service levels. The analyses below are based on comparing the incentive-based rate differentials proposed by King County with Eastside

Disposal's current cost-based rate differentials, not the rejection of variable can rates.

Q. Have any of King County's witnesses presented evidence to support their belief that incentive-based variable rates as opposed to cost-based variable can rates are an important part of a waste reduction and recycling program?

A. No. While several witnesses provide landfill statistics both pre and post recycling programs, none have submitted any conclusive evidence (other than their belief) that incentive rates played an important role in those reductions. Actually, the evidence presented by King County's witnesses suggests just the opposite--that incentive based variable rates could have only a minimal impact on waste reduction and recycling, relative to cost-based variable rates, and further that the effect will diminish over time.

Q. Did any of King County's witnesses present a study that isolated the effects of incentive-based variable rates from other aspects of recycling programs?

A. No. Several witnesses discuss the impact that incentive rates (including variable can rates) and recycling programs have had on several cities, including Seattle. None provide or have conducted studies to support their belief that **incentive-based** variable rates as opposed to **cost-based** variable rates are an important part of a waste

reduction/recycling program.

Q. Please identify important aspects of a recycling and waste reduction program, excluding rates options.

A. A few examples were given in Part I, which were:

1) education concerning the environmental benefits of recycling--recall from part I, this changes customer preferences, which creates an inward shift in the demand for waste collection service;

2) availability of recycling opportunities--an introduction of substitutes, which also causes an inward shift in the demand for waste collection service;

3) the ease of recycling--as discussed in Part I, the lower the cost of recycling to the consumer, the greater the inward shift in the demand curve for waste collection.

These are only a small subset of important aspects of a waste reduction and recycling strategy. An extremely important point to note about items 1-3 above, and nearly any other possibility, is that they will all have a similar effect. These items create an inward shift in the demand function for waste disposal service, as identified in Exhibit____(PJP-3). Recall that these changes differ from changing waste collection prices, which results in a

movement along the demand function.

Q. Did Staff perform a study to isolate the effect of incentive based variable rates from other aspects of recycling programs?

A. No, Staff did not have the time to conduct such a study, nor is Staff of the opinion that it should conduct such a study in the future.

Q. Why is Staff of the opinion that it should not conduct a study to isolate the effects of incentive-based variable rates from other aspects of a waste reduction/recycling program?

A. Staff does not believe committing its scarce resources to such a study would be prudent. The relationship between price and quantity of waste collection service appears to be inelastic and will most likely become even more inelastic in the future. While distorting price signals from cost-based to incentive-based would have some effect on the quantity of waste collection service demanded, that effect would most likely be minimal. Therefore, because the benefits of distorting the price signal appear to be minimal, where as the costs of distorting the price signal appears to be substantial (refer to Staff witness Colbo's testimony), there seems very little reason to pursue the topic further.

Q. Does Staff have any evidence to support its belief that incentive-based variable rates, as opposed to cost-based

variable rates, will have little effect on the quantity of waste collection services demanded by Eastside Disposal's customers?

A. Yes. Two types of evidence form the basis for Staff's beliefs. First is the testimony provided by King County's witnesses. As will be shown below, King County's witnesses illustrate that the price-quantity relationship for waste collection service is inelastic, thus not very responsive to price. Second, there are county and municipal waste reduction and recycling programs in the State of Washington that are successful without relying on incentive-based variable rates. Examples of these programs will be provided later in this testimony.

Q. Have you reviewed the information presented by King County's witnesses concerning elasticity estimates?

A. Yes, I have.

Q. Please discuss your findings and interpretations of that information.

A. There are different elasticities presented in the testimony of several of King County's witnesses. These elasticities can be grouped into two categories. The first category consists of average price elasticity measures. These elasticities were calculated based on changes in average prices (or rate levels) of waste collection service and weight of waste collected. The second set of elasticities

examines the relationship between subscription levels and rates for those services. These elasticities will be termed service level demand elasticities.

Q. Please identify the average price elasticity measures presented by King County's witnesses.

A. The following table summarizes the average price elasticity information provided by the witnesses:

Witness:	Average Price Elasticity:
Skumatz	-.09 to -.14
Albert	-.2
Pealy	-.14 in 1988 to -.07 in 1992

Q. Please explain the average price elasticity measures.

A. Recall from the earlier discussion that demand elasticity measures the percentage change in quantity demanded divided by the percentage change in price that caused the quantity change. These average price elasticities, on the other hand, refer to the relationship between the weight of waste collected and change in the average price charged for waste collection service. These measures are not associated with any individual or market demand function, which is why I do not refer to them as demand elasticity estimates. These measures still provide important information.

Q. How are these average price elasticities useful?

A. These elasticities are useful for describing the general

relationship between average rate level and weight of waste sent to the landfill. For example, consider Mr. Pealy's estimate of -.07. This measure means that if the rate level of waste collection is increased by 100%, the quantity of waste sent to the landfill (measured in weight) will decrease by 7%. Obviously, all of these measures indicate that rate level does not have much of an impact on weight of waste landfilled.

Q. Please discuss the service level demand elasticities presented by King County's witnesses.

A. King County's witness Skumatz provided a set of service level demand elasticities, which she stated were "based on preliminary empirical work." The demand elasticity estimates were based on information from Seattle in 1987, and were used for rate studies in Seattle during 1989, according to responses by Dr. Skumatz to Staff data requests 36 and 37. A subset of the demand elasticities from attachment LAS-6, page III.42 are presented on the following table:

Subscription Level Change	Demand Elasticity
One can to zero cans	-0.01
Two cans to one can	-1.00
Three cans to two cans	-1.53

Q. What do these service level demand elasticities measure?

A. These measures indicate the percentage change in subscribers between the different service levels for a percentage change in the price differential between the service levels, again for 1987 data from Seattle.

Q. Demand elasticities for two to one can service, and three to two can service indicate that the demand between those service levels is elastic. Is that true?

A. Simply examining the table would suggest such a conclusion. However, there are problems with how these numbers were calculated. On page III.43 of attachment LAS-6, Dr. Skumatz noted that there was a discrepancy between the estimated elasticities from the study based on 1987 information and the actual data observed in response to price changes in Seattle's 1989 rate study. In noting the differences between the estimates and actual results, Dr. Skumatz concluded "This implies that all elasticity measures were too low...." This means that these elasticities should be closer to zero, or less elastic--by how much she did not indicate.

Q. Does Dr. Skumatz provide an explanation for why the elasticity estimates were not accurate?

A. Yes. On page III.43 of attachment LAS-6, Dr. Skumatz indicated that the following three factors affected the quality of the elasticity measures:

1) the problem of poor data,
2) the introduction of an entirely new service level, and
3) the fact that a number of new waste reduction and recycling programs were introduced along with the rate change.

Q. Did these service level demand elasticity estimates consider changes in variables other than prices?

A. No, all of the behavioral changes in the 1987 data were presumed to have been caused solely by price changes, thus did not net out effects of other, demand shifting variables. This is another factor which contributed to the over-estimation of the sensitivity in subscriber levels to price.

Q. Why is it important to isolate the effect of a change in price from changes in other, demand shifting variables?

A. Recall the difference between Exhibit____(PJP-2), which illustrated a change in price as a movement along a demand function, and Exhibit____(PJP-3), which illustrated a shift in demand. It is possible that prices changed and demand shifted at the same time. It would thus be misleading to assert that all of the reduction in subscribers occurred because of the price increase.

To clarify, consider Exhibit____(PJP-5). This diagram illustrates a simultaneous increase in price and an inward shift in demand (recall the difference between moving along the demand curve and shifting it). These demand curves show how the numbers of two can service subscribers change as prices for two can service change. If the shift in the

demand curve and price increase occur simultaneously, we would observe a decrease in the numbers of two can subscribers from Q1 to Q2. The decrease should, however, be broken into two components: one component of the change is due to the shift in demand; the second the component is due to an increase in price. On Exhibit____(PJP-5) the drop in subscribers from Q1 to A is due to the shift in demand, and the decrease from A to Q2 is the decrease due to the price increase.

Q. Continuing with the discussion of Exhibit____(PJP-5), what is the implication of using the entire change from Q1 to Q2 in calculating the elasticity of demand?

A. Using the entire change from Q1 to Q2 to calculate the demand elasticity will over-state the sensitivity of the change in two can subscribers to price changes--thus show a measure that is too elastic. The appropriate demand elasticity would be based on just the subscriber change from A down to Q2. This properly estimated demand elasticity would thus be more inelastic (or less elastic) than the incorrectly stated demand elasticity based on the entire change from Q1 to Q2.

Q. What implications does the over-estimation of price responsiveness have for this case?

A. The subscriber level demand elasticities shown on the table are very close to the elastic/inelastic border. In fact,

the elasticity for the two to one can service level was right on the border. If the two to one can demand elasticity was revised up at all, as Dr. Skumatz and the discussion above indicates it should be, the measure would clearly indicate that the demand for waste collection service was inelastic for that service level (recall that demand elasticities greater than -1 are inelastic).

Q. You mentioned that in her attachment LAS-6, Dr. Skumatz indicated that the results of the elasticity study were "based on preliminary statistical results." Did Staff obtain results of the final study?

A. In a way, yes. The results from the study presented in Attachment LAS-6 were the final empirical results of the study, not preliminary results as Dr. Skumatz indicated in her testimony and in the attachment to her testimony. In response to Staff data request 37, which asked for a clarification of what she meant by preliminary, Dr. Skumatz responded that preliminary meant "...the work was not written in a detailed study format." This data request also requested a summary of the differences between the final study and the preliminary study. In response to that question, she indicated that the study had not been finalized, and that no changes were made to the study. Therefore, the written study was preliminary, not the results.

Q. Why is Staff concerned with relying on the service level demand elasticities provided by Dr. Skumatz?

A. Staff has three major areas of concern: 1) these service level demand elasticities were overstated, as illustrated above; 2) these elasticities relate to numbers of subscribers, not weight of waste; and 3) the demand elasticities will most likely become less elastic (or less responsive to price) in the future.

Q. What is the significance of the elasticities referring to the number of subscribers rather than weight of waste?

A. The subscriber level demand elasticity is a very important measure, but does not indicate a change in the weight of waste headed for the landfill. Some individuals who switched from two can to one can service may have been borderline one-can customers; ie., some individuals may have regularly used only a portion of the second can. In response to the price signal, these borderline individuals may simply have become more efficient at packing their waste into one can. Thus some of the customers that switched service levels may have been placing less than the average weight of waste in their second can. While there is no data to support this claim, it is certainly a reasonable concern.

Recall that the service level demand elasticities presented in LAS-6 have already been shown to over-state the price sensitivity of the numbers of subscribers to price

changes. Considering that the actual quantity of waste collected for landfill disposal could have been even less responsive than the numbers of subscribers, one should conclude that the relationship between the weight of waste collected and price for that service is likely to be even less responsive than the price-subscriber relationship.

Q. You are asserting the evidence supplied by Dr. Skumatz illustrates that the quantity of waste disposal service demanded is not very sensitive to changes in price. Is that correct?

A. That is correct.

Q. You stated another concern: that the demand elasticities will most likely become even less elastic over time. Please continue with your explanation of that concern.

A. Staff's expectation of decreasing elasticity is reasonable, and is shared by King County's witness Pealy. As individuals recycle more of their waste and pay closer attention at the grocery store to purchase items with less packaging, it becomes harder for them to find ways to reduce their demand for waste collection service. On page 9 of his prefiled testimony, with regard to the movement of Seattle's estimated average price elasticity from -.14 in 1988 to -.07 in 1992, Mr. Pealy provided the following explanation:

> ...given the high curbside recycling participation rate in Seattle, and our high recovery rates, we would expect this elasticity to decline over time.

> High recovery rates (of recyclables) means that less recyclable material remains in the garbage stream, so the rate increases produce smaller and smaller increases in recovery rates over time.

An alternative way to describe this phenomenon is that as price increases and/or demand shifts inward, demand for waste collection service becomes more and more inelastic (or less sensitive to price). This is why I chose to present a steeply bowed demand curve in all of my Exhibits.

Q. What is the significance of decreasing demand elasticity over time?

A. As per the discussion above, Dr. Skumatz's testimony establishes that service level demand elasticities in 1987 were borderline inelastic, which should actually have been revised upward to consider shifts in demand. In 1989, the overstated elasticities were observed to be too sensitive. (It is important to recall that this does not take into account that the price-weight relationship is probably less responsive than the price-subscriber relationship.) Several demand shifting variables have most likely changed in the past 7 years since these estimates were made--at least should have changed if King County has been successfully implementing its waste reduction and recycling program. Thus there is strong support to suspect that the elasticities are even less elastic than in 1989, and certainly less elastic than in 1987. This indicates that not only would incentive-based variable rates have had

little impact on waste disposal decisions in Seattle during 1989, but that over time the effects of using incentive-based variable rates over cost-based variable can rates will become smaller and smaller.

Q. What does establishing that the demand for waste collection service is not very sensitive to price mean for this case?

A. Based on the evidence presented by King County's witnesses, Staff is asserting that implementing incentive-based rather than cost-based rate differentials will have only a slight effect on the behavior of Eastside Disposal's customers. Further, this effect will diminish over time.

Q. How can King County use its information on demand elasticities to make further progress toward meeting its recycling goals?

A. King County can use the information in one of two ways. The County has established that price is not a particularly effective tool for decreasing the quantity of waste collection service demanded, and will become less effective in the future--not to mention that there are costs involved with grossly distorting price signals. In light of this information, King County could use its resources in ways to shift the demand function for waste collection service, rather than move along the demand function. Discovering new demand shifters and improving existing demand shifters could be the focus of its efforts. This approach seems

reasonable, considering that the County's witnesses and consultants have established that the relationship between price and quantity is not particularly responsive.

On the other hand, King County can try to convince the Commission to distort prices for waste collection service charged by Eastside Disposal. The demand elasticity estimates become important because King County will have to argue the need for enormous price distortions to have a significant effect on the behavior of Eastside Disposal's customers. This approach would entail using a substantial amount of tax-payers' resources from both King County and the State of Washington. If King County succeeds in its endeavors, and convinces the Commission to adopt such rates, it will not really assist the County in meeting its recycling goals, but will cause a large distortion of prices, thus imposing the negative impacts of such price distortions identified by Staff witness Colbo upon its own citizens. This is the approach King County has decided to take.

Q. Could you identify a few aspects of a waste reduction and recycling program, other than incentive-based variable rates, that could assist King County in meeting its goals?

A. Through out my testimony are several examples. It is important to remember that any program based on anything other than waste collection rates will result in a shift in

the demand for waste collection service, which differs from changing the price of waste collection service, which results in a movement along the demand function.

Q. You mentioned earlier that you would present successful waste reduction and recycling programs that do not rely on the incentive-based rates such as those proposed by King County. Please identify some of these examples.

A. The Washington Department of Ecology gave two awards to four areas in the State that do not have solid waste transportation companies with incentive-based variable rates similar to the ones proposed by King County.

The city of Tacoma and Pierce County shared the Department of Ecology's 1994 Best Western Washington Waste Reduction and Recycling Government Program award. The City of Tacoma provides its own waste disposal service, and charges for only two service levels--60 gallon can service (roughly 2 can service) and 90 gallon service (roughly 3 can service). Thus, Tacoma barely even has variable can rates at all. Pierce County is served by three waste removal companies regulated by the WUTC. All three of the companies have variable can rates. None of these companies have rate differentials similar to the ones proposed by King County. In fact, none of these companies have rate differentials greater than ~~[illegible]~~ 38% between any service level. alr

Walla Walla and Columbia counties shared the Department

of Ecology's 1994 Best Eastern Washington Waste Reduction and Recycling Government Program award. There are four cities in these two counties that provide their own trash collection service: Walla Walla, College Place, Waitsburg, and Dayton. None of these communities have variable can rates. Two solid waste removal companies serve the remainder of these two counties, both are regulated by the WUTC, and both charge variable can rates. Once again, the rate differentials charged by these companies are not similar to the ones proposed by King County--the largest rate differential between any service level is 32%.

Q. Is it surprising that these political entities in the State of Washington received awards from the Department of Ecology, even though none of these areas have incentive-based rates for waste collection service similar to those proposed by King County?

A. No. As established in my testimony above, King County's witnesses show that the demand for waste collection service is inelastic, thus not very responsive to changes in price.

Q. Does this conclude Part II of your testimony?

A. Yes, it does.

PART III--CONCLUSIONS.

Q. Please summarize Staff's findings presented in the preceding testimony.

A. The following summarizes Staff's findings:

1) According to information supplied by King County, the demand for waste collection service is not very responsive to changes in rates.

2) The demand for waste collection service will become even less responsive to rate changes in the future.

3) There are real world examples of successful recycling programs in the State of Washington which do not rely on incentive-based rates such as proposed by King County.

Therefore, based on this evidence, Staff concludes that the benefits of rejecting Eastside's cost-based variable rates in favor of King County's incentive-based variable rates will provide King County with a minimal amount of assistance in meeting its waste reduction goals, which would decrease in magnitude over time, while bestowing the costs associated with price distortions upon Eastside Disposal and its customers.

Q. Do you have any concluding remarks?

A. Yes. According to the evidence supplied by King County, the County should concentrate its resources and efforts on ways to shift the demand for waste collection service in the county rather than attempt to move along an inelastic demand

function. Efforts to shift demand for waste collection service in King County would provide two benefits: 1) such endeavors would assist the County in meeting its waste reduction and recycling goals, and 2) would not waste County and State resources in tough economic times to try and take a course of action its own experts prove is marginally effective.

Q. Does this conclude your testimony?

A. Yes it does. Thank you.