Q.Please state your name and business address for the record.

A.My name is Rick Sterling.  My business address is 472 West Washington Street, Boise, Idaho.

Q.By whom are you employed and in what capacity?

A.I am employed by the Idaho Public Utilities Commission as a Staff engineer.

Q.What is your educational and professional background?

A.I received a Bachelor of Science degree in Civil Engineering from the University of Idaho in 1981 and a Master of Science degree in Civil Engineering from the University of Idaho in 1983.  I worked for the Idaho Department of Water Resources from 1983 to 1994.  In 1988,  I received my Idaho license as a registered professional Civil Engineer.  I began working at the Idaho Public Utilities Commission in 1994.  During my employment at the IPUC, I have attended the 1995 annual regulatory studies program sponsored by the National Association of Regulatory Commissioners (NARUC) at Michigan State University, the 1995 Lawrence Berkeley Laboratory Advanced IRP Seminar, an advanced IRP course sponsored by EPRI entitled “Resource Planning in a Competitive Environment,” and a 1998 workshop on Pricing and Restructuring Alternatives in a Changing Electric Industry sponsored by the New Mexico State University Center for Public Utilities.  My duties at the Commission include analysis of utility rate applications, rate design, tariff analysis and customer petitions.

Q.What is the purpose of your testimony in this proceeding?

A.The purpose of my testimony is to discuss the results of my analysis of the rate design proposed by United Water Idaho (United Water, UWI) witness Gradilone, to propose several alternative rate designs which I believe are superior, and to compare the proposed alternatives by pointing out the advantages and disadvantages of each.

Q.How is your testimony organized?

A.My testimony is organized as follows:

I. Introduction

II.Evaluation of the Existing Rate Design

III.UWI’s Proposed Rate Design

IV.Staff’s Proposed Rate Designs

V.Conservation

VI.Meter Sizing

VII.Micron

VIII.Other Issues

Q.Please summarize your testimony.

A.I agree with United Water that the existing summer/winter rate design is inequitable for some customers.  I support changing to an inverted block rate design consisting of three blocks, each with a progressively higher commodity charge.  I support abandoning the existing class designations of residential, commercial, and public authority, in favor of customer classes based on meter size.  I do not fully accept the rate design proposed by UWI.  I am proposing several alternative rate designs that I believe are more equitable and still achieve desired objectives.  I do not support increasing customer charges to full cost of service because it would result in an inequitably large increase to UWI’s smallest customers.  I recommend a rate design in which customer charges are moved halfway to cost of service, and generally, customers using less than average amounts of water in their respective meter class would realize a small decrease in their annual bills, while customers using substantially more than average amounts would see increases in their annual bills.  I believe that my proposed rate designs will still encourage conservation, although not as strongly as the existing summer/winter rate design.  I am also proposing that consumption limits be established for each meter size class so that customers whose usage exceeds these limits be entitled to move to a higher meter class where block size limits are higher.  Finally, I recommend that Micron be permitted to be in a class by itself, with rates set appropriately, because its usage differs so much from that of other customers.

I.INTRODUCTION

Q.What do you believe should be the primary considerations in appropriate rate design in this case?

A.The single most important consideration in my opinion should be to achieve as much equity as possible for all customers.  UWI serves a very diverse group of customers, each with very different usage characteristics.  Residential customers range from elderly, fixed income customers who may live in an apartment and who use a constant, small amount of water year round, to rural homeowners with an acre or more of grass to irrigate in the summer.  Commercial customers range from small businesses whose water needs may be as little as providing the daily domestic needs of a few employees working in an office building, to much larger customers who require large volumes of water for both indoor use and irrigation use, large office buildings with large landscaped areas, car washes, and laundries.  Public authority customers may use water only for irrigation during the summer, while industrial customers may use large volumes of water every day year round.  The wide variety of usage patterns between customers makes designing equitable rates a challenge.

A second consideration is simplicity in rate design.  Unfortunately, there is often a trade-off that must be made between fairness and simplicity.  Often, the fairer a rate design is for more customers, the more complex the rate design needs to be.  A rate design that is too complex is difficult for the utility to administer, and is often not effective if its objectives are not clearly understood by customers.

Q.Are there any other factors specific to this case that you feel are important in rate design?

A.Yes.  I believe a rate design that promotes conservation is important.  The summer/winter rate design now in place was devised, in part, to promote conservation.  I think it is important for conservation to continue to be an objective.  Conservation helps to defer the need to acquire new, more costly sources of supply, to build or expand expensive treatment plants, and to minimize the need for additional storage and pumping capacity.

II.EVALUATION OF THE EXISTING RATE DESIGN

Q.One of the primary reasons cited by United Water for proposing a rate design different from the one now in place is to help alleviate complaints from customers who believe that it is unfair to pay higher rates in the summer, even if their summer consumption is no higher than in the winter.  Do you agree that customers who use the same quantity of water during the summer as in the winter should pay the same rate per hundred cubic feet (ccf)?

A.Yes, in principle.

Q.Have you reviewed the complaints received by the Commission concerning summer/winter rates?  If so, what did your review reveal?

A.Yes, I have reviewed a summary of the complaints received by the Commission since January 1, 1993 through August 25, 1998.  In reviewing these complaints, I confirmed that a significant number of them appear to be related to the existing summer/winter rate design.

It was also interesting to note that while there have been a lot of complaints about summer/winter rates, there appear to be even more complaints about high customer charges (approximately 1½:1).  Many customers seem to believe that nearly all of their bill amount should be based on usage.  Many small users have a difficult time understanding why they have to pay almost as much as neighbors who use far more water.  They object to paying a fixed customer charge bimonthly even when they use very little or no water.  They seem to have difficulty understanding that the utility incurs significant costs to serve them, even when they consume little water.

Q.Do you believe an inverted block rate design as proposed by UWI in this case will help to address customer concerns about the inequity of paying higher rates in the summer?

A.An inverted block rate design will, in most cases, result in customers who use the same amount of water year round paying the same rate per ccf, regardless of when the usage occurs.  Thus, for example, a gallon of water in the summer will cost no more than a gallon of water in the winter as is now the case with summer/winter rates.

It is very important to point out, however, that under an inverted block rate design, customers using a constant amount of water year round will not necessarily have all of their usage billed at the rate of the lowest block.  For example, a residential customer who lives in an apartment, has no lawn watering, and who uses the same amount of water every billing period will likely have all his consumption fall within the first block, therefore, will pay the lowest rate per ccf for all water used.  On the other hand, an industrial customer may use the same amount of water every billing period, but may have portions of his consumption in each block.  This can happen when a customer’s consumption so far exceeds the average consumption for the particular rate class that some usage is recorded in each block.  Consequently, while the customer’s bill amount may be the same in all seasons if his usage is constant, he will not necessarily pay the lowest rate per ccf if his usage is high.

III.UWI’S PROPOSED RATE DESIGN

Q.What is your general overall opinion of the rate design proposed by UWI in this case?

A.In general, I agree that an inverted block rate design is appropriate.  It can effectively eliminate many of the inequities perceived under the summer/winter rate design, and, if carefully structured, can continue to achieve conservation objectives.

As proposed by United Water, however, the rate design is neither as equitable nor as effective in promoting conservation as I believe it could be.  Consequently, I will present several alternative designs, each of which I believe offers significant advantages over the rate design proposed by United Water.

Q.Did you review the cost of service study prepared by UWI witness Palko?

A.Yes, I, along with other Commission Staff, carefully reviewed the cost of service study.

Q.Generally, what do the results of the cost of service study show?

A.The cost of service study indicates that the costs associated with providing service which are unrelated to the quantity of water supplied are higher than the revenues now being collected through customer charges.  This suggests that customer charges should be increased.  The study also suggests that, in general, customer costs should be increased proportionately more for the smaller meter sizes than for the larger meter sizes.

The cost of service study also determines the amount of revenue that should be collected through commodity-related charges.  In addition, the study allocates costs for both private and public fire protection.

Q.What results from the cost of service study did UWI use in developing their proposed rate design?

A.UWI used the cost of service study results to determine how much revenue to collect from customer charges and how much to collect through commodity charges.  In addition, the cost of service study was used to determine the amount of revenue that should be collected for private fire service.

The cost of service study also determined those costs associated with meeting base demand, maximum day demand, and peak hour demand.  Costs associated with meeting base demand were used in establishing the first block of the commodity rate design.

Q.Do you think the method used by UWI to determine customer charges was appropriate?

A.It would be preferable, of course, to have a cost of service study that determines costs for exactly the same classes for which rates are set.  In other words, if customer costs could be allocated to each of the various meter size classes, customer charges in each meter class could be easily determined directly.  Admittedly however, that would be difficult, since UWI does not account for costs according to meter size.  In the absence of this level of detailed information, an alternate method such as that used by UWI is necessary.

Q.What else doesn’t the cost of service study tell us that might be useful in rate design?

A.There are many things the cost of service study does not tell us.  First, the cost of service study separated customers into only three primary groups: general service customers, private fire service, and public fire service.  The general service group basically includes all residential, commercial, industrial, and public authority customers.  By grouping all of these customers together, it becomes impossible to associate specific costs with specific customers.

Another thing the cost of service study does not tell us directly is how costs vary by season.  Although it tells us costs associated with meeting peak day and peak hour demand, it really does not tell us whether the cost of providing a gallon of water is higher in the summer than in the winter.  Without this type of information, it is not possible, for example, to devise a rate design that bills a customer whose usage peaks in July more than a customer whose usage peaks in January.

The cost of service study also tells us nothing specific about load factor, or characteristic patterns of usage.  A customer who used their entire bi-monthly consumption in a single day could not be distinguished from a customer who used the same total amount of water during the billing period but who spread his usage evenly throughout the billing cycle.

These limitations of the cost of service study, in turn, limit the linkage between rate design and cost of service.  Some features of the rate design can be based on cost of service, while other features must, by necessity, be determined in other ways.  Finally, rate design may not incorporate some features at all if no information relative to that feature is provided by the cost of service study.

Q.UWI is proposing a rate design in which block sizes are defined according to meter size, effectively eliminating any distinction based on whether the customer is residential, commercial, or public authority.  What is your opinion concerning the use of meter size to define customer classes?

A. I support using meter size to define customer classes for both customer charges and commodity charges.

Under UWI’s existing rate design, meter size is already being used to establish customer charges. Furthermore, residential, commercial, and public authority are classes in name only under the existing rate design.  There is no rate differential between them.

Using meter size to define block limits for the commodity portion of the rate, while uncommon, is not unreasonable.  Residential, commercial and public authority customers do share some of the same usage characteristics, but customers with the same size meters also have usage characteristics in common.  Neither method of distinguishing classes is perfect.  There will always be some customers in every class who are very different than other customers in the class in terms of quantity or pattern of use.

One of the reasons for using meter size classes instead of customer type classes (e.g., residential, commercial, public authority) is because customer type classes were not used in the cost of service study.  Furthermore, in order for a cost of service study using customer type classes to be meaningful, additional information on the usage patterns of customers in those classes would have to be gathered.  While this deficiency was pointed out in UWI’s last general rate case (BOI-W-93-3), subsequent investigation by UWI and the Commission Staff concluded that such class specific information would be costly and difficult to obtain.  Consequently, collection of this information was not pursued.  Any cost of service study completed now using residential, commercial, and public authority customer classes would suffer from the same limitations as the previous cost of service study.

Q.Do you believe meter size is an appropriate factor to consider in designing rates?

A.Yes.  Meter size has been used for some time in setting customer charges.  Meter size has not been used by UWI in setting commodity rates.  The analysis by UWI witness Gradilone seems to indicate that customers with the same meter size do have similar amounts of consumption, and therefore, should pay similar commodity rates.

Q.In the rate design proposed by UWI, witness Gradilone proposes grouping ⅝-inch and ¾-inch meter  customers into the same meter size class for billing purposes, and also treating 1¼-inch and 1½-inch meter size customers the same.  Do you believe this is appropriate?

A.Yes.  In response to Staff production requests, UWI states that the meters designated as ⅝-inch meters are actually ¾-inch meters that have ⅝-inch inlets and outlets.  The capacity available to a ⅝-inch meter customer is not substantially different than the capacity available to a ¾-inch customer.  Furthermore, it is not unreasonable to assume that the cost to serve each customer is the same.  From historical records provided by UWI, it does appear that ⅝-inch customers use less water than ¾-inch customers, but the difference is fairly minor and probably more a function of the type of residential customer served during the era when ⅝-inch meters were installed, and not any capacity restrictions of the meters.  UWI also states that ⅝-inch meters are no longer being installed.

Exhibit No. 101 shows consolidation factor curves (cumulative usage curves) for all meter sizes.  As shown by the curves, there is little difference between ⅝-inch and ¾-inch customers in terms of cumulative usage.

In the case of 1¼ and 1½-inch customers, there are too few 1¼-inch customers to warrant having a separate rate class.

Q.Do you agree with the increased customer charges as proposed by UWI witness Gradilone?

A.No, I do not.  As I discuss in more detail later in my testimony, I believe that increasing customer charges to full cost of service would cause an inequitable increase for customers who use small amounts of water, particularly those with small meter sizes.  Exhibit No. 102 shows graphically the percentage increase in customer charges for each meter size.  As shown in the exhibit, small meter size customers would see very high increases in customer charges compared to large meter size customers.

Q.Do you agree with the method used by UWI witness Gradilone in determining block sizes?

A.No, not completely.  I agree with Gradilone that the first block size should be set so as to recover costs associated with base use.  However, I disagree with Gradilone when he assigns two thirds of the shoulder period use to be base use.  He reasons that some consumption in the shoulder periods should be considered as base use so as to not penalize customers by charging higher rates for consumption which may be above average base usage for the meter size category, but which he believes is nondiscretionary for particular customers within the category.  Later in my testimony, I will discuss how I believe block sizes should be set.

Q.UWI is proposing to collect public fire costs through the commodity charge portion of the rates instead of through customer charges.  Do you believe this is appropriate?

A.Yes, primarily because I am not in favor of further increasing customer charges.  Public fire costs perhaps should be collected through a customer charge since all customers receive the same level of fire protection, regardless of the amount of water they consume for other purposes or the size of their meter.   Since all customers generally are protected by 6-inch hydrants, all customers generally receive equivalent benefits from public fire protection.

On the other hand, however, customers with larger meters generally have larger buildings, and are mostly responsible for dictating the fire flow capacity that must be provided by UWI.  Therefore, it is not unreasonable to expect larger customers to pay more for fire protection, since without them, UWI’s fire flow capacity requirements would be much less.  By collecting fire protection costs through commodity charges, larger customers will effectively pay a greater share of the costs.

Q.What would be the effect on ratepayers of UWI’s proposed rate design?

A.The effect on various customers of UWI’s proposed rate design is illustrated in Exhibit No. 103.  The percentage change in a customer’s annual bill above or below their annual bill under the existing rates is indicated for various levels of consumption and for various meter sizes.  Each meter size class from ¾-inch through 6-inch is indicated by a separate line on the graph.  Note that for each meter size, the same general “U” shaped pattern appears.  The left arm of the “U” happens because increased customer charges tend to dominate the annual bill when consumption is low.

As consumption increases, commodity charges represent an increasingly larger portion of the annual bill, thus, causing the right arm of the “U” to rise.  Higher percentage increases in bills occur at higher levels of consumption when usage falls in the higher blocks where rates are higher.  The average annual consumption and corresponding average annual billing for customers in each meter size class are indicated on the exhibit by diamonds.

As shown on the exhibit, there is a general trend that smaller customers would experience higher increases in their bills than larger customers.  Many customers, especially customers with large meter sizes, would experience decreases in their bills.  Decreases of more than 18 percent would occur for 6-inch meter customers with average levels of consumption in their respective meter size class.

Careful inspection of Exhibit No. 103 reveals that the majority of the increases would be felt by ¾-inch (and ⅝-inch) and 1-inch customers who either use less than average amounts of water or who use significantly more than average amounts of water.  Small meter customers using close to average amounts of water in their meter size class would see a small decrease in their annual bills.  Most customers in other meter classes would see decreases in their annual water costs of varying amounts depending on their water usage.

Q.What would be the effect of UWI’s proposed rate design on bill amounts throughout the year?

A.The effect of UWI’s proposed rate design on bills throughout the year is shown on Exhibit No. 104.  The exhibit shows six bills during the course of the year, beginning with the first bill which represents consumption in January and February.  Summer consumption is reflected in the third and fourth bills.  The graph assumes an average customer for each meter class.

The exhibit shows that winter bills would increase from about 7 percent to 20 percent for 2-inch and smaller customers.  Larger customers would realize a slight decrease in their winter bills.  Summer bills would decrease subtantially for all customers, ranging from 11 to 24 percent.

Exhibit No. 105 portrays similar information, but shows the change in bill amount in dollars rather than percent.  Note that a 14 percent increase in a ¾-inch customer’s winter bill equates to approximately $4, and that a 12 percent decrease in their summer bill is about $10.  For a 2-inch customer, their winter bill would increase about 7 percent, or $12, while their summer bill would decrease 21 percent, or $143.

IV.STAFF’S PROPOSED RATE DESIGNS

Q.You indicated previously that you support UWI’s proposal for inverted block rates, but that you  propose modifications to some of the details.  Were there other types of rate designs that you considered?

A.Yes, I considered summer/winter rates, uniform rates, and excess use rates.

Summer/winter rates are fairly simple and are effective in promoting conservation, but as we have seen, are not perceived as being fair to some customers.  Uniform rates, while the simplest, are not as effective in promoting conservation and do not account well for the higher costs of providing water during peak periods.

Excess use rates offer nearly all of the same benefits as inverted block rates, but are more difficult to administer.  Under excess use rates, customers are billed a low rate for their own individual base usage, and are billed a higher rate for usage above the base amount.  Base usage amounts are different for each customer, and must be set for each customer individually based on analysis of historical consumption.  Because base usage amounts are customer specific, excess use rates are more accurate and equitable than application of group averages which is necessary under other rate designs.  Determining a base usage amount for each customer and billing accordingly can be difficult for the utility.  Excess use rates were proposed by both the Company and Staff in UWI’s last general rate case (BOI-W-93-3) but were rejected by the Commission.

I rejected summer/winter rates, uniform rates, and excess use rates because I felt inverted block rates could better meet the objectives I felt were most important.

Q.Did you develop any alternative rate designs which you believe address the shortcomings of UWI’s proposed rate designs?

A.Yes.  I initially analyzed five different rate designs, each an inverted block design consisting of three blocks.  From the initial five rate designs considered, I then narrowed the list to three for final consideration.  Exhibit No. 106 shows the customer charges, commodity rates, and block limits for each of the three alternative rate designs.  Exhibit No. 107 compares the commodity rates under each alternative rate design in both graphical and tabular form.  UWI’s proposed commodity rates are also shown for reference.

Q.Please briefly describe the difference between each of Staff’s alternative rate designs.

A.Alternative A is similar to UWI’s proposed rate design in that customer charges are increased to cost of service and base costs are recovered from the first block.  The primary difference, however, is that Staff’s first block consumption limits are much lower because no shoulder month consumption was used in determining base consumption.  Staff’s rates are lower than UWI’s in every block because more bills will be rendered in the second and third blocks under Staff’s design.

Under Alternative B, customer charges are moved halfway to cost of service from the rates in effect prior to the revenue requirement phase of this case

(UWI-W-97-6).  The rate in the first block is higher than UWI’s proposed rate, but the rates in the second and third blocks do not increase as quickly.

Alternative C rates assume no increase in customer charges.  The rates in the first block are higher than under the other alternatives, but rates do not increase as quickly in the higher blocks, thus forcing heavy water users to pay less of a premium.

Q.Which of the three Staff alternatives do you recommend?

A.I recommend Staff Alternative B.  I believe it best meets the objectives of fairness, simplicity, and conservation which I discussed earlier in my testimony.  I also believe, however, that Alternatives A and C have advantages over UWI’s proposal, and offer good alternatives should the Commission’s objectives differ from my own.  For ease of comparison, I have prepared Exhibit No. 108 which summarizes UWI’s existing rates, UWI’s proposed rates, and Staff’s recommended rates (Alternative B).

Q.Why do you favor Alternative B over the other two you have examined?

A.I favor Alternative B because I believe it fairly balances the increases in rates between small meter customers and large meter customers, and fairly spreads rate decreases amongst all meter size classes.  It also recognizes the cost of service study’s conclusion that customer charges should be increased, but without unduly increasing annual bills for small meter customers who use small amounts of water.

Q.What would be the effect on customers of Alternative B, your recommended rate design?

A.The overall effect of Staff Alternative B is illustrated in Exhibit No. 109.  Customers with 1-inch and smaller meters who use small amounts of water would experience a small increase in their annual bill as a result of the increase in customer charges.  Average customers in every meter class would experience decreases in their annual bills, ranging from about three percent for ¾-inch customers to about 13 percent for 6-inch or larger meter sizes.

Increases would be seen by customers in all meter size classes who use substantially greater than average amounts of water compared to other customers in the same class.  Considerably more customers in the small meter size classes than in the larger meter size classes would see increases.  In fact, only a few of the heaviest users in the largest meter size classes would experience increases in their annual bills.  This is primarily because the increase in customer charges has a much greater effect on small meter size customers than on large meter size customers.  Bigger meter size customers, consequently, would have either greater decreases at low usage or smaller increases at high usage.

Q.It appears from Exhibit No. 109 that smaller meter size customers will bear more of the increase in rates, while larger meter size customers will realize more of the decrease.  Is this true, and if so, why?

A.Yes, it is generally true.  This happens primarily because increased customer charges have a more dominant influence on small meter size customers than on large customers.

Q.Why are you proposing moving only halfway to cost of service under Alternative B and not proposing any increase in customer charges under Alternative C?

A.I am proposing moving only halfway to cost of service under Alternative B and not proposing any  increase in customer charges under Alternative C because of the inequitable effect that would occur for customers in the small meter size classes.  UWI’s cost of service study indicates that customer charges should be increased above their current levels, with the greatest increases being applied to the smallest meter size customers.  The smallest meter size customers are generally residential customers and small commercial customers.  For these customers, customer charges already represent a significant fraction of their bill.  If customer charges are increased to cost of service, the highest annual percentage increases would fall on the smallest customers.  Furthermore, those customers in each meter class who use the least amount of water will be hit with the biggest percentage increases.  The result seems to most adversely affect many of the same customers who UWI states are now complaining about the inequity of summer/winter rates.

I am not completely opposed to increasing customer charges in small increments in an effort to move closer to cost of service, but I believe the increments must be small and gradual in order to minimize the impact.  I believe Alternative B does this.  If customer charges are eventually moved fully to cost of service, I think it may be necessary to implement lifeline rates so that low income customers are able to afford basic service.

Q.Why do you believe it is acceptable not to set customer charges at full cost of service?

A.Because the fixed costs of water systems are so high, it is very common not to set customer charges at cost of service.  Fixed costs associated with customer service are frequently collected through commodity charges.  High customer charges are not well accepted by customers.  The record of UWI’s customer complaints which I referred to earlier is good evidence of this.

Q.Please discuss the factors that go into determining the commodity rates.

A.Commodity rates are dependent on two factors: 1) the revenue to be generated in each block, and 2) the volume of water sold in each block.  The consumption limits set for each block determine the volume of water that will be sold in each block.  Each variable — the block rate, the block revenue, and the block consumption limits — is dependent on the other two.  When any two factors have been independently determined, the third factor becomes set since it is dependent on the other two.  Similarly, no one factor can be changed without requiring that one or both of the others also be changed.

Q.Explain how you determined the rate and block size for the first, or lowest priced, block.

A.Like UWI witness Gradilone, I believe it is appropriate to collect those costs associated with base consumption from the first block.  We differ however, in how we believe base consumption should be defined.  Gradilone considers base consumption to be average wintertime use, plus two-thirds of use during the shoulder periods.  I believe base use should be determined using only wintertime consumption.  Including shoulder month consumption as part of the base consumption seems contrary to the basic principle of the base excess capacity method of cost of service.  Considering only winter consumption, I determined that base consumption represented 47.31 percent of the total annual consumption.

After deciding that base costs should be collected from the first block, I then decided that the consumption in the first block should be roughly equal to the base consumption as determined by my own method.  With these two variables known, calculating the rate for this block was a simple matter of dividing the base costs by the base consumption.

The effect of this method of establishing the first block rate is that customers with low consumption, and customers whose consumption is modest and remains steady year round, would always be billed at the first block rate.  Although this is generally true, there are exceptions as I will discuss later in my testimony.

Q.How did you determine the rates and block sizes for the second and third blocks?

A.I contend that the revenue to be collected from consumption in the second and third blocks should specifically be associated with costs reflective of  higher levels of peak consumption as determined in the cost of service study.  Consequently, under my proposed rate designs, costs associated with meeting peak day requirements are collected from consumption occurring in the second block.  From third block consumption, peak hour costs would be recovered.  In the approach used by UWI, second and third block revenue will recover costs associated with peak consumption, but the revenue to be collected from each block respectively seems to have been determined rather arbitrarily.  I believe my approach is better because the revenue from each block is directly related to some reasonable measure of cost.

Next, I set the consumption limits for each block so that there would be a reasonable price increase from one block to the next.  In other words, the price per ccf in the second block ranges from 15-25 percent higher than the first block, depending on which rate design is chosen.  Similarly, rates in the third block are higher than second block rates by similar amounts.

Q.It appears that you could set the rate in the third block as high as you want, depending on how the consumption limits are set in each block.  Is this true?

A.Yes, once the revenue requirement for each block has been determined, the revenue can be generated in an infinite variety of ways.  For example, a small amount of consumption could generate a large amount of revenue if rates were set very high.  Conversely, a large block size, and thus large amount of consumption, could generate only a modest amount of revenue if rates are set low.  The combination of block size and rates determines the revenue that will be generated.  I have simply used good judgement to determine what I believe are good combinations of rates and block sizes.  Rates and block sizes have been set consistently for all meter sizes using exactly the same method.

Q.What would be the effect on summer bills of  Staff Alternative B, your recommended rate design?

A.The effect on summer bills of Staff Alternative B is shown in Exhibit No. 110.  As with UWI’s proposed rate design, summer bills would decrease, but not as much as under UWI’s proposal.  The decrease in summer bills is less under Alternative B because much less consumption will occur in the first block than under UWI’s proposal.  The results are very similar for Staff Alternatives A and C — summer bills would decrease, but not as much as under UWI’s proposal.

Winter bills will increase for most customers under each of Staff’s alternatives, but the increase in winter bills is always small compared to the magnitude of the decrease in summer bills.

Q.Under what circumstances would you recommend Staff Alternatives A and C?

A.If the Commission believes that customer charges should be increased to cost of service, then I would recommend Alternative A.  It is similar to UWI’s proposed rate design in many respects, but superior, I believe, because it places much more consumption in the second and third blocks.  This permits rates in the first block to be kept lower than under UWI’s proposal, thus benefitting customers whose usage is low.  The effect on customers of Alternative A is shown in Exhibit No. 111.

If the Commission believes that customer charges should not be increased, and that all of the increase in revenue requirement should be collected through commodity charges, then I recommend

Alternative C.  The effects of this alternative on annual customer bill amounts are shown in Exhibit No. 112.  Under this alternative, all customers in every meter size class who use the average in their respective meter class, or slightly more, would realize a small decrease in their annual bill amount.  The decrease would range from about 4 percent for small meter classes, to about 7 percent for large meter sizes.  Customers who use significantly more than the average amount of water relative to other customers in their respective meter class would see an overall increase in rates.  The higher a customer’s usage compared to the average for the class, the greater the overall increase in annual costs.  All meter size classes are affected similarly, in that low users would each see about the same percentage decrease, all average customers in each class would see about the same percentage decrease, and all heavy users would be faced with similar percentage increases.

Bills in the summer would be significantly less for all customers under Alternative C, while bills during the winter would be slightly higher.  In a nutshell, customers who use more than average would realize an increase in their bills, while customers who use less than average would see a small decrease.

Q.Under the rate designs proposed by Staff, will customers with low load factors pay more than customers with high load factors?

A.Under each of the rate designs proposed by Staff (and under UWI’s proposed rate design too), load factor is not directly linked to the rates a customer will pay.  In most cases, customers with low load factors would pay higher rates during those times of the year when their consumption greatly exceeds base consumption.  High load factor customers would tend to have nearly the same bill year round.  A high load factor customer who uses a modest amount of water annually compared to other customers in the same class would pay a low rate year round.  However, a high load factor customer who uses much more than the average annual amount relative to other customers in the class would pay a high rate for some of their consumption during all billing periods throughout the year.

I have prepared Exhibit No. 113 to illustrate the effect of Staff’s proposed rate designs on Darigold, a very high load factor customer and UWI’s third largest customer.

Q.Have you prepared rate proofs for each of Staff’s alternative rate designs?

A.Yes, they are included as Exhibit Nos. 114-116.

V.CONSERVATION

Q.One of the reasons for the existing rate design, in which rates in the summer are 25 percent higher than the rest of the year, is to promote conservation.  Do you believe the existing rate design has been successful in promoting conservation?

A.Yes, to some extent.  I believe nearly all customers are keenly aware of how much higher their summer bills are, and that most of those customers know that the higher bills are because of higher consumption and higher summer rates.  The effects of higher summer consumption and higher summer rates are compounded by bimonthly billing because customers see the result of two months of high usage on the same bill.  Although it is nearly impossible to quantify, I do believe many customers try to reduce their summer consumption in order to lower their bills.  Unfortunately, however, customers do not become aware of their highest level of usage until after the summer has passed, precluding them from taking some steps to conserve water.

Q.Do you believe the rate design proposed by UWI will continue to promote conservation?

A.No, not necessarily.  Under an inverted block rate design, it is generally assumed that increased summertime consumption will push most users into the second and third rate blocks.  Since the rates in these blocks are higher, customers will be encouraged to conserve.  This theory probably holds when customers are moved from flat or declining block rates to inverted block rates, or when customers have a long exposure to inverted block rates.

I do not believe the theory will hold, however, when customers are moved from summer/winter rates to inverted block rates.  Under the rates proposed by UWI, customers would see a very significant decrease in their summertime bills as shown in Exhibit No. 104.  I believe many customers would actually increase their consumption above previous levels once they realize they can pay the same amount or less while using substantially more water.  Many customers who now allow lawns to go without water during parts of the summer might be inclined to apply more water.  Once customers eventually become accustomed to the new rates, perhaps after one or two summer seasons, I do believe that inverted block rates will have the desired effect if block sizes are appropriately established.

Q.How do the rate design alternatives you have proposed compare to UWI’s proposed rate design in terms of promoting conservation?

A.First, I do not believe either UWI’s proposed rate design or my own are as aggressive in promoting conservation as the summer/winter rates now in place.  However, I believe my rate designs promote conservation more aggressively than UWI’s.  Because my rate designs do not cause such a significant decrease in summertime bills, I believe it sends a stronger signal to customers that meeting peak summer demand is expensive.  My rate designs also place more consumption in the second and third rate blocks, further strengthening the conservation signal.

VI.METER SIZING

Q.UWI has pointed out that it is important under an inverted block rate design where block sizes are based on meter size that customers’ meters be properly sized.  Please explain why this is so.

A.It is important because there will be a strong incentive for customers to request larger meter sizes.  It is possible that customers with different meter sizes will pay different amounts for the same levels of consumption.  Because the block size limits increase as meter size increases, more consumption will fall in the lower block in larger meter sizes.  For example, if a 1-inch customer has consumption that falls in the first and second blocks for the one-inch customer class, he may have all of his consumption fall in the first block if he were in the 1½-inch meter class.

Q.Is it also possible under Staff’s proposed rate designs that customers with equal amounts of consumption will have different total bill amounts simply because they have different meter sizes?

A.Yes, each of Staff’s rate designs also presents the same problem.

Q.Has the Company proposed any means of addressing this problem?

A.No, not specifically.  While recognizing that this is a concern, the Company dismisses it as a problem by stating that they believe they have done a good job of sizing meters so far, and that there will be no problems in the future if they continue to size meters carefully.

Q.Do you believe meter sizing will be a bigger problem in the future?

A.Yes, I believe it will be a much bigger problem in the future because there will now be incentive for customers to move to higher meter size classes.  Before, there was no incentive for larger meters.  In fact, there was some disincentive because of the higher customer charges associated with larger meters.

Q. Won’t higher customer charges for larger meter sizes under both your own and UWI’s rate designs discourage oversizing meters?

A.Yes, they might for the smaller meter sizes where customer charges represent a significant portion of a customer’s bills.  For larger meter sizes, however, customer charges are too small a portion of the total bill to make much difference.  The savings that could be achieved as a result of higher block limits far outweigh the higher customer charges.

Q.Do you have any suggestions as to how this problem might be addressed?

A.Yes, I do.  I propose that consumption thresholds be set so that customers whose usage exceeds the specified threshold be permitted to move up to a higher meter size class.  I have performed a bill analysis such as is shown in Exhibit No. 117 for Staff Alternative B to determine what the limits should be for various meter sizes.  As shown by Exhibit No. 117, a customer whose annual usage exceeds 400 ccf would pay less as a 1-inch customer than as a ¾-inch customer.  Similarly, at an annual consumption level of 1,500 ccf, the customer would pay less as a 2-inch customer than as a 1½-inch customer.

Using the same type of analysis, Exhibit

No. 118 is a table showing the recommended consumption thresholds for each of Staff’s alternative rate designs, as well as for the rate design proposed by UWI.

Q.Are you proposing that these consumption thresholds be mandatory limits that, if exceeded, require larger meters to be installed?

A.No. I am simply proposing that consumption thresholds be used to formalize UWI’s meter sizing practices, and to give those customers whose usage far exceeds the average for their meter size class the opportunity to move to a class where their usage is closer to the norm for the class.  I am not recommending that customers be forced to change to a different meter size class, but instead am recommending only that they be notified and given the opportunity to change.  Although I am uncertain how many customers might request to move to a different meter size class, realistically, I anticipate few will ask to do so.

VII.MICRON

Q.What would be the effect on rates if the test year revenue requirement is adjusted to reflect reduced consumption by Micron?

A.If the adjustment is accepted, commodity rates for all customers, including Micron, will be approximately 1.16 percent higher in order to make up for the reduced revenue.

Q.In the rate design proposed by UWI witness Gradilone, Micron was singled out by assigning them their own block size limits.  In addition, the method used to establish Micron’s block limits was different than for other customer classes.  Do you believe this is appropriate?

A.Yes, I do.  Micron’s usage so far exceeds that of any other customer that it would be unfair to group them together with other customers.  Micron’s usage is roughly four times that of UWI’s next largest customer.  Exhibit No. 101, the consolidation factor curves for each meter size, also confirms that Micron’s usage is much different than that of other customers. However, while I agree that Micron should have their own specific set of block limits, I do not agree with the method UWI used to set the block limits.

Q.How were the block sizes set for Micron in Staff’s proposed rate designs?

A.Because Staff witness Fink advocates that Micron’s alleged reduced level of consumption is not sufficiently known and measurable, I have used Micron’s test year consumption levels as a basis for setting block size limits for Micron, using the same method as was used for all other meter size classes.  Thus, if Micron continues to maintain the same level of consumption as they have in recent months, little of their consumption will fall within the second or third blocks.  If their consumption returns to test year levels, however, then some of Micron’s consumption will fall in each of the three blocks, just as it does for customers in other meter size classes.

Q.What about other large customers? Do you believe any of them should also have their rates or block sizes set individually?

A.Perhaps in limited cases, if it can be shown for any single large customer that either the quantity or pattern of use is radically different from the other customers in the meter class.  I would also recommend that individual customer rate design, if done at all, only be done for large industrial, commercial, or public authority customers.

Q.What would be the effect on Micron’s annual bills of the rate design alternatives proposed by Staff?

A.The effect on Micron of Staff’s proposed alternative rate designs is shown in Exhibit No. 119.  At Micron’s test year level of consumption (i.e. without Micron’s test year adjustment), their annual bill would almost be unaffected under Alternative B, Staff’s recommended alternative.  Micron’s annual bill would decrease about 7 percent under Staff Alternative A, and would increase about 4 percent under Staff Alternative C.

Q.It appears that under Staff’s proposed alternative rate designs, the effect on Micron’s annual bill is nearly the same whether the test year consumption is adjusted or not.  Why is that?

A.The effect is nearly the same because in addition to adjusting rates based on whether the  adjustment is accepted, I have also adjusted block size limits.  I believe that to be consistent, the same Micron consumption data used to calculate rates should also be used to set block size limits.  Consequently, should the Commission decide to accept the test year adjustment, then I propose lower block size limits for Micron than those shown in Exhibit No. 106 and Exhibit No. 108.  For the first block, I would propose a limit of 33,000 ccf, and for the second block, a limit of 58,000 ccf.

Q.What would be the effect on Micron of UWI’s proposed rate design?

A.If Micron’s consumption remains below test year levels, then UWI’s proposed rate design would result in a 1.21 percent increase in Micron’s annual bill.  However, if Micron’s consumption returns to test year levels, then its annual bill would increase nearly 16 percent.  It is for this reason that I strongly recommend that the block size limits proposed by UWI be revised if UWI’s rate design is accepted and if the Commission rejects the Micron test year adjustment.

VIII.OTHER ISSUES

Q.If the Commission decides to adopt an inverted block rate design, whether proposed by UWI or by Staff, or chooses an alternative rate design proposed by some other party, what steps do you believe need to be taken in order to insure that the rate design effectively accomplishes its goal?

A.I believe it is vital when changing to a completely new rate design that customers be thoroughly educated about the new design.  Customers should know what the objectives of the new design are, and they should have some idea of how their own bills will be affected before the design is implemented.  In the case of an inverted block rate design, customers need to know that prices per ccf are higher for higher levels of use. Once the new design is implemented, customers should know how much of their consumption was billed in each block. Without this knowledge, customers will not be as strongly motivated to conserve water.

Q.Does this conclude your direct testimony in this proceeding?

A.Yes, it does.