**REBUTTAL TESTIMONY OF JOHN WHITCOMB**

**BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**

**ON BEHALF OF**

**SOUTHERN STATES UTILITIES, INC.**

**DOCKET NO. 950495-WS**

**Q. ARE YOU THE SAME JOHN B. WHITCOMB WHO SUBMITTED PRE-FILED DIRECT TESTIMONY IN THIS PROCEEDING?**

A. Yes, I am.

**Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

A. I will rebut portions of the testimony of Public Counsel witness David E. Dismukes, Ph.D. Generally, through this rebuttal, I intend to establish that (1) the 40/60 split of base facility to gallonage charge structure proposed by SSU is the appropriate structure given real world facts and circumstances; (2) the elasticity adjustments I propose are reasonable and required to recognize real world facts and circumstances; and (3) the weather normalization clause proposed by SSU is a win-win-win for SSU, its customers and Florida's water supply.

**Q. HOW WOULD YOU SUMMARIZE DR. DISMUKES' DIRECT TESTIMONY CONCERNING THE USE OF THE SWFWMD STUDY IN THIS RATE PROCEEDING?**

A. Dr. Dismukes' assertions show a lack of knowledge of water demand modeling, of the water demand research literature, of statistical inference, and of general statistical hypothesis testing. In short, he casts stones without doing his homework. He attempted to discredit the SWFWMD study by

making a number of unfounded and faulty assertions. In this rebuttal testimony I will respond to each point in turn. I hope those reading my rebuttal to his testimony can clearly see that Dr. Dismukes' assertions do not hold water. Some of the points are technical in nature and require some statistical background to fully understand. I have tried to explain the points in laymen's terms. The reader should know this is not simply two experts with two differences of opinion. Dr. Dismukes has made gross misstatements and errors which I will elaborate upon further.

**Q. DR. DISMUKES BELIEVES THAT THE SWFWMD WATER PRICE ELASTICITY MODEL IS "NOT AN ACCURATE REPRESENTATION OF SSU'S SERVICE TERRITORY" (PAGE 5, LINE 17). COULD YOU DESCRIBE THE EVIDENCE HE PROVIDES AS SUPPORT FOR THIS BELIEF?**

A. Dr. Dismukes mistakenly argues at page 6, lines 3 through 4 that SSU's rate structure is different than the increasing and declining rate structures mostly used in the SWFWMD study. He states that SSU has a non-block ("uniform per unit") quantity charge. He overlooks, however, the fact that sewer price is also an integral part of the total price signal sent to customers. When sewer price is

considered, SSU has a combined water and sewer declining block rate structure as the sewer quantity charge is capped at 6 TG/month in most service areas. Dr. Dismukes' assertion that SSU's rate structure is not similar to the utilities in the SWFWMD study is false.

Dr. Dismukes then goes on to quote Exhibit _____ (JBW-3), from his prefiled direct testimony page 27, and notes that relative changes in disposable income can result from different rate structures, even though marginal prices are the same. He concludes from this that "This is the particular reason why I do not believe the price elasticities generated in the SWFWMD residential water demand study should be applied in this proceeding". If Dr. Dismukes had read on to page 28 of Exhibit _____ (JBW-3), he would have found that differences in income from different rate structures have been specifically accounted for. The differences have been subtracted from the wealth (property value) variable as described in further detail on page 57 of Exhibit _____ (JBW-3). Not only did Dr. Dismukes miss the point, but researchers with experience in water demand estimation would also know that this disposable

income effect resulting from alternative rate structures is negligible. Even in the most extreme SWFWMD case, the change in disposable income from alternative rate structures is less than one percent of disposable income and is trivial.

**Q. DOES DR. DISMUKES PROVIDE ANOTHER REASON WHY THE SWFWMD RESULTS ARE NOT APPLICABLE TO SSU?**

A. Yes. Dr. Dismukes questions the use of a "ramped" price. Dr. Dismukes states "there is no theoretic justification to support the notion that customers react to both average and marginal prices" (page 8, line 5 through 6) and that "most of the literature in this area focuses on either set of prices (marginal or average)--not some version of both." This is not true. If Dr. Dismukes reads some of the most recent water price elasticity work, he would find the growing dissatisfaction among researchers with average and marginal price specifications in the context of block rates. For example, see Shin, The Review of Economics and Statistics, pages 67, 591 through 598, published in 1985 and Nieswiadomy and Molina, Land Economics, pages 67(3), 352 through 359, published in 1991.

The ramped price specification used in the SWFWMD study recognizes that customers' perceptions

of block rates do not follow discrete steps. Admittedly, the study is innovative, new and not yet tried by other researchers. In Dr. Dismukes opinion, "regulatory proceedings are no place to experiment with untried and questionable methods" (page 8, lines 19 through 20). So be it. I also estimated the updated residential demand model using the widely used marginal price specification as well as three other types of averaged prices. The results from all specifications led to price elasticity curves that are almost identical. The results are robust in that they do not vary significantly with price specification assumption. The ramped price specification has more theoretic than practical implications in the SWFWMD study. Given this, Dr. Dismukes' conclusion that "Thus, price elasticities used from such a model are inapplicable for use in this proceeding" (page 8, line 14 through 15) are groundless.

**Q. DR. DISMUKES ACCUSES THE WATER DEMAND MODEL OF BEING OVERLY SENSITIVE TO CHANGES SUCH AS RELAXING A PARTICULAR CONSTRAINT. HE CITES THE DIFFERENCE IN THE MODEL ESTIMATES SHOWN IN EXHIBIT _____ (JBW-3) TO THE UPDATED DEMAND SPECIFICATION PROVIDED IN SSU'S RESPONSE TO PUBLIC COUNSEL'S REQUEST FOR**

**PRODUCTION NO. 230. DR. DISMUKES CONCLUDES THAT THESE DIFFERENCES PRESENT "SOME RATHER DISTURBING RESULTS." PLEASE EXPLAIN WHAT DR. DISMUKES IS DOING IN THESE PORTIONS OF HIS TESTIMONY.**

A. Dr. Dismukes is comparing apples to oranges. He fails to realize that in these nonlinear models, coefficients are not additive but multiplicative. In the residential model presented in Exhibit _____ (JBW-3), the base water use coefficients are set to relate to a price of $7.05/TG. In the updated demand specification, base water use coefficients are set to relate to a price of $0.00/TG. That is why he finds the base coefficients related to the intercept term, number of occupants, and NIR to be much higher. At a $0.00/TG price water use is much higher. They are completely different stories. The model specifications also differ in the number of variables considered and in how property value is treated. In no circumstance would anyone expect the model coefficients to be the same in both models. Yet Dr. Dismukes seems to believe it is a prerequisite for consistency that two entirely different model specifications have the same coefficient estimates. This is clearly false.

**Q. AT PAGE 10, LINES 15 THROUGH 16, DR. DISMUKES**

**CRITICIZES THE UPDATED WATER DEMAND SPECIFICATION IN THAT IT "CREATES AN UPWARDS' SLOPING DEMAND CURVE AT PRICES GREATER THAN $8.34/TG." IS THIS REASON TO DISMISS THE MODEL AS IMPLAUSIBLE?**

A. No. The range of prices in the SWFWMD study is from $0.40/TG to $7.05/TG. I estimated a flexible demand curve that best fit the 42,257 data points with prices in this range. The resulting demand curve is negatively sloped over this range of prices, a finding consistent with the first law of demand theory. For prices greater than $7.05/TG, the shape of the demand curve is unknown. It is beyond the range of "experience" and no inferences are made. The WATERATE software application measuring the water price elasticity change (repression) makes use of the SWFWMD price elasticity estimates up to $7.05. For prices above $7.05, WATERATE is programmed not to use the SWFWMD elasticity algorithm. That would be an improper use of the results of the study. Prices considered in this proceeding are below the $7.05/TG level.

That Dr. Dismukes extrapolates prices beyond the range of experience and finds an upward sloped demand curve for prices higher than $8.34/TG is of no consequence. It is quite likely that an unusual

shape may result outside the sample range of prices as no data observations are present to make the nonlinear curve behave in this outer region.

This is an important point to understand. Hence, I will illustrate the point further using a more conventional example commonly used in introductory statistical courses. On page 20 of Exhibit _____ (JBW-3), there is a linear demand curve fitted to 10 water utility observations of water use and price. This type of linear curve is common and has been used in about half of the water demand studies reported in the literature of this field. Anyone reading this testimony likely has fitted a linear curve to data at some point. If one extrapolated a price higher than about $8.00/TG on this graph, it is clear that the demand curve would intersect the vertical price axis. Prices over $8.00/TG in this case would be associated with negative water use as the demand curve would go off to the left of the vertical axis. Is the model faulty for this fact? Of course not. The model provides an understanding of the data within its range of experience. Is it proper to use the model to extrapolate the water use associated at a price of say $9.00/TG? No, this would obviously be an

improper inference. The problem is not with the model, but the inference made by Dr. Dismukes. One does not discredit a linear curve just because if you extrapolate the linear curve beyond the range of data points it goes into an infeasible range. If this were the case, no one could ever use a linear demand curve, or just about any curve for that matter.

And yet that standard is being applied by Dr. Dismukes to the demand curves in this case. On page 11, lines 4 through 5, Dr. Dismukes states that "this is a significant error and any empirical model which produces such a result should be unquestionably dismissed." Dr. Dismukes has just dismissed over 90 percent of all research of any kind of any discipline.

I believe Dr. Dismukes picked up this faulty point by parroting a peer review comment from a paper I submitted to a journal called Water Resources Research concerning the SWFWMD study. This was stated by one of the reviewers as the "fatal flaw" in our analysis and caused a rejection of the paper for publication. I and my colleagues found this unjust and unreasonable, but without recourse. The senior economist at SWFWMD, Jay

Yingling, is satisfied that the price elasticity results passed peer review -- noting that the second peer reviewer thought the paper was good. SWFWMD was unconcerned about the behavior of the demand curve above $7.05/TG. As a consequence, SWFWMD entered into an agreement with me to distribute an updated version of the WATERATE (2.2) software with full confidence in its results.

**Q. THE THIRD STANDARD DR. DISMUKES USES TO EVALUATE A STATISTICAL MODEL IS ITS EXPLANATORY POWER. HE STATES THAT "THE RESIDENTIAL WATER USE MODEL PRESENTED IN THIS PROCEEDING HAS A RATHER LOW $R^2$ OF ONLY 0.59" (PAGE 12, LINES 13 THROUGH 14). DO YOU AGREE THAT YOUR $R^2$ IS LOW FOR THIS TYPE OF STUDY?**

A. Again Dr. Dismukes shows a lack of knowledge of the literature on water demand estimation. An $R^2$ value for a cross-sectional water use model of individual customers of 0.59 is typical if not relatively high compared to other similar studies. Below is a list of comparable studies with their reported $R^2$ values:

| Price Elasticity Study | Model $R^2$ |
|---|---|
| Chicoine et al. Water Resources | 0.49 |
| Research 22 (6), 1986. | 0.69 |
| Chicoine and Ramamurthy, Land | 0.56 |
| Economics, 62(1), 1986. | |
| Hanke and de Mare, Water Resources | 0.26 |
| Bulletin, 18(4), 1982. | |
| Gibbs, Water Resources Research, | 0.46 |
| 14(1), 1978. | 0.62 |
| Jones and Morris, Water Resources | 0.23 |
| Research, 20(2), 1984. | 0.23 |
| | 0.25 |
| | 0.26 |
| | 0.26 |
| | 0.28 |
| Nieswiadomy and Molina, Land | 0.34 |
| Economics, 65(3), 1989. | 0.46 |
| | 0.26 |
| | 0.11 |

When using individual customer data on a monthly time resolution, there are many small factors that can affect water consumption. For example, your aunt and uncle decide to come visit in the winter. Kids go off to college or come back after college to live. Your toilet gets a leak. You go on vacation. The sprinkler system is left on overnight. These types of events can cause unexplainable "noise" in the water use model. Adding explanatory variables does little to reduce this type of noise. Cross-sectional models of this type have inherently lower $R^2$ values than models of aggregate water consumption or time-series models.

Q. **DR. DISMUKES ALSO STATES THAT THE PARAMETER ESTIMATES FOR THE LOW AND MEDIUM PROPERTY VALUE CURVES ARE NOT HIGHLY STATISTICALLY SIGNIFICANT IN THE RESIDENTIAL MODEL SHOWN IN EXHIBIT _____ (JBW-3). IS HE CORRECT?**

A. No. Dr. Dismukes is making faulty hypotheses tests. The low, medium and high property value demand curves reflected in Exhibit _____ (JBW-3) are each comprised of two nonlinear coefficients. For the low property value curve, Dr. Dismukes looks at the T-test of one of the coefficients in isolation (c9 on page 55 of JBW-3) and concludes

that the coefficient is not significant at the 95 percent confidence level, although he finds that it is at the 90 percent level. He arrives at the same conclusion for one of the coefficients of the medium demand curve.

Because each demand curve is made up of two coefficients, however, they must be looked at as a group. Dr. Dismukes needs to conduct a F-test, not a T-test, of the joint hypothesis that the coefficients are insignificant. If he did so, he would find the demand curves are highly significant. His conclusion that "the Commission not accept the price elasticity estimates proposed by SSU in this proceeding" (page 13, lines 3 through 4) is invalid because his premise of "marginally significant parameter estimates" (page 13, line 2) is false.

Furthermore, I would like to add that in the updated residential demand specification listed in SSU's response to Public Counsel's Seventh Set of Request for Production of Documents No. 234, the demand curve coefficients also are highly significant.

**Q. DR. DISMUKES STATES THAT THE SWFWMD COMMERCIAL MODELS LACK STATISTICALLY POWERFUL RESULTS. DOES**

**THAT MEAN THAT THE RESULTS HAVE NO VALUE?**

A. Most of the resources and focus of the SWFWMD price elasticity study were aimed at single family homes. The study developed a detailed and large database containing water use characteristics of 1,200 homes from 10 utilities. This is by far the best set of data collected for any price elasticity study. The commercial database was smaller and given less priority. As a consequence, the SWFWMD elasticity results for commercial users were mixed. For some commercial classes, the modeling process worked well. For hotels/motels, as an example, the water demand model had a relatively high $R^2$ value (0.43), a statistically significant price coefficient, and a -0.48 price elasticity. In other classes, such as hospitals, the modeling process did not work well. Smaller sample sizes were part of the reason for the mixed results in comparison to the extensive database created for the single family residential users. While the commercial elasticity results may not be conclusive, they do show strong evidence that commercial customers are modestly sensitive to price. In this rate case, non-residential users are assumed to have a long-run price elasticity of -0.20. I believe this is a

conservative assumption given the much higher price elasticities quoted in the literature on the subject. Dr. Dismukes offers no evidence to counter this claim.

**Q. DR. DISMUKES' PRIMARY RECOMMENDATION IS THAT "THE COMMISSION NOT ACCEPT THE REPRESSION ADJUSTMENT PROPOSED BY SSU BECAUSE IT IS BASED UPON A STATISTICAL MODEL WHICH DOES NOT MEET ADEQUATE STANDARDS FOR REGULATORY USE. THUS, HE PROPOSES THAT NO REPRESSION ADJUSTMENT BE ALLOWED IN THIS RATE CASE. DO YOU BELIEVE THIS IS JUSTIFIED?**

A. The recommendation that no price elasticity adjustment be allowed ignores all theory, evidence, and logic. The first law of demand in economic theory, as Dr. Dismukes even recites on page 10, lines 22 through 23, states that as price goes up, quantity demanded goes down. There are well over 100 empirical studies supporting this relationship with water. The SWFWMD study shows conclusive evidence of this fact in Florida. Dr. Dismukes' wife, Kimberly Dismukes, at page 11, line 20 of her direct testimony even recommends increasing the percentage of revenue collected by SSU in the quantity charge to a 75% level in order to produce greater levels of conservation. Perhaps more men

ought to listen to their wives. The conclusion that the price elastic adjustment is zero is ludicrous, especially when taking into consideration the large price signal increase which arises in this proceeding.

The SWFWMD price elasticity study provides a solid foundation for making an estimate of the price elasticity adjustment. The study was financed by the SWFWMD for the specific purpose of assisting water agencies in forecasting price elastic water use changes. Dr. Dismukes was hired to discredit this study. He attempted to find arguments and technicalities which would result in the study being "unquestionably dismissed" (page 11, line 5). I have responded to each criticism in turn. Each of Dr. Dismukes' assertions are faulty. Some assertions showed a lack of knowledge of water demand estimation and the research literature on the subject. Dr. Dismukes failed to recognize that the sewer price is part of the price signal sent to customers. He failed to recognize that the SWFWMD residential model accounted for disposable income effects resulting from alternative rate structures. He failed to recognize that this was a negligible point anyway. He failed to throw out the study

based on price specification, because the results are robust to price specification assumption. He failed to understand the nonlinear nature of the model and wrongly interpreted a change in model specification as coefficient instability. He failed to understand the statistical inferences made in this study by extrapolating price past the range of experience and past the range of prices under consideration in this proceeding. He failed to make valid hypothesis tests regarding the statistical significance of the residential demand curves. Finally, he failed to find evidence refuting the conservative assumption that the non-residential long-run price elasticity is -0.20.

In the face of all evidence to the contrary, Dr. Dismukes concludes that the price elasticity adjustment should be zero. I disagree. The price elasticity adjustment is not trivial and should not be ignored.

**Q. DR. DISMUKES' ALTERNATIVE RECOMMENDATION IS THAT IF THE COMMISSION ACCEPTS THE WNC, SSU SHOULD GET 50% OF THE SHORT-RUN PRICE ELASTICITY ADJUSTMENT. HE STATES "THESE PERCENTAGES MERELY SHARE THE RISK ASSOCIATED WITH REPRESSION EQUALLY BETWEEN COMPANY AND RATEPAYERS." IS THIS A VALID USE OF THE**

**EVIDENCE?**

A. No. The best estimate of the price elastic water use adjustment is 100% of the short-run response. From a statistical viewpoint, this is the middle ground. The real price elastic response is equally likely to be over or under this 100% value. Dr. Dismukes implicitly assumes that the real price elasticity adjustment is between 0 and the WATERATE result. His recommendation of a 50% adjustment is arbitrary. No evidence is offered to support such a recommendation.

**Q. DR. DISMUKES RECOMMENDS A SHORT-RUN ELASTICITY ADJUSTMENT OF 50% INSTEAD OF 75%. PLEASE EXPLAIN WHY YOU USED 75%.**

A. I believe that the short-run half life for the long-run price elasticity of demand is one year. In other words, 50%, 75%, 87.5%, and 93.75% of the long-run price impact will take effect over the first, second, third, and fourth years after a price change. I used a 75% estimate for this rate case for two reasons. First, I knew interim rates were possible. Interim rates significantly increase the price signal sent to customers and begin to set in motion the long-run price elastic effect. Hence, a greater part of a year will

already go by with the higher rates in place before final rates are implemented. This leads me to reason that the 75% adjustment is more appropriate. In addition, I see the price elastic adjustment in this rate case to occur over a multiyear period. I believe it will be more than 12 months after final rates are adopted in this case before SSU will file another rate case and a subsequent set of rates are adopted. Hence, over a longer period a higher short-run adjustment factor is warranted.

**Q. DR. DISMUKES ADJUSTS YOUR PROPERTY VALUE DISTRIBUTIONS FROM 33/34/33 TO 40/36/24 PERCENT FOR LOW, MEDIUM, AND HIGH PROPERTY VALUES RESPECTIVELY. IS THIS A CORRECT USE OF THE MODEL?**

A. Yes. The SWFWMD study found that price elasticity can vary with property value. Dr. Dismukes states that he used the 1990 Census data to calculate the percentage of homes in the $0 to 55,000, $55,000 to 81,300, and $81,300 and above ranges. He finds these "percentages are 40, 36, and 24 percent for low, medium, and high income property values, respectively (page 17, lines 18 through 19).

I found it difficult to calculate the property value percentages from the 1990 U.S. Census data because SSU's service areas do not generally follow

Census boundaries. If Dr. Dismukes has done the calculations, I would be eager to see the results.

**Q. DR. DISMUKES' SECOND ALTERNATIVE RECOMMENDATION IS THAT IF THE COMMISSION REJECTS THE PROPOSED WNC, SSU SHOULD BE ALLOWED 50% OF THE LONG-RUN PRICE ELASTIC RESPONSE. IS THIS REASONABLE?**

A. No. Again he has selected an arbitrary number without any justification or evidence.

**Rebuttal to Kimberly H. Dismukes**

**Weather Normalization Clause**

**Q. MS. DISMUKES STATES AT PAGE 4, LINES 11 THROUGH 12, THAT THE WEATHER NORMALIZATION CLAUSE WILL "PASS THE RISK ONTO CUSTOMERS". IS SHE CORRECT IN HER ASSESSMENT?**

A. No. Just the opposite. With the proposed weather normalization clause, which I will refer to as the WNC, total revenues collected from customers would be nearly constant over time. In high water using years, the WNC will rebate money to customers. In low water using years, it will collect more money. The result is that revenues collected per customer will be fairly constant year to year. It would add stability to the amount customers pay for water, not instability. Under the current system, without the WNC, year to year fluctuations in revenues

collected from customers can be large. The WNC decreases risk for both customers and SSU.

Perhaps it is a knee-jerk reaction to believe that whatever is good for SSU must be bad for customers. It is possible to have win-win situations for all parties. The WNC is such a case.

**Q. MS. DISMUKES DOES NOT BELIEVE THAT THE WNC WILL REDUCE LITIGATION COSTS ASSOCIATED WITH ESTABLISHING THE APPROPRIATE TEST YEAR CONSUMPTION LEVEL (PAGE 5). IF THE WNC IS ADOPTED, WOULD AN ADVERSARIAL CLIMATE STILL EXIST?**

A. No. With the proposed WNC, SSU likely would accept any consumption level recommended by the OPC and/or Commission. With the WNC, it is in everyone's interest that the consumption level be properly set so as to minimize the magnitude of fluctuation in the WNC. Under the current adversarial process, SSU must expend significant SSU staff time and hire outside consultants in order to precisely and accurately measure price elasticity adjustments to water use and quantify water conservation savings. Significant resources are also spent in defending these results. With the successful adoption of the WNC, SSU likely would agree to use OPC's inflated

base water consumption levels, follow Dr. Dismukes' unfounded recommendation that the price elasticity repression is zero, and throw out the water savings from SSU's conservation programs. SSU would eventually collect the lost revenues from large increases in the WNC adjustment. From the Commission's viewpoint, however, it would be best to adopt realistic water consumption levels so as to minimize the magnitude of the WNC.

**Q. MS. DISMUKES OBSERVES THAT CHANGES IN WATER CONSUMPTION CAN CHANGE VARIABLE COSTS SUCH AS PURCHASED WATER, POWER, AND CHEMICALS (PAGE 6 THROUGH 7). SHE RECOMMENDS THAT THESE COSTS BE ADJUSTED FOR IN THE WNC. IS THIS POSSIBLE?**

A. Yes. A variable cost adjustment could be factored into the WNC. The reason it was not included in our proposed WNC is that it adds another level of complexity to the WNC. As the WNC stands, some such as Sugarmill Woods witness Buddy Hansen at page 24, lines 1 through 3 of his testimony, believe the WNC is already too complicated. SSU does not agree that the variable cost adjustment should be included in the WNC because it would add complexity with no significant purpose.

**Q. MS. DISMUKES WANTS TO KNOW ABOUT HOW THE WNC WILL**

**BE TREATED ON THE CUSTOMER BILL AND RECOMMENDS THAT IT BE A SEPARATE LINE ITEM (PAGE 7). WHAT ARE YOUR COMMENTS?**

A. The water bill should be designed to be clear and readily understandable by the customer. Ms. Dismukes recommendation for a separate line item would seem appropriate.

**Q. MS. DISMUKES STATES THAT THE WNC MAY CREATE CUSTOMER CONFUSION AS THE WNC WILL INCREASE WHEN AGGREGATE WATER USE FALLS AND VICE VERSA (PAGE 7-8). WHAT ARE YOUR COMMENTS?**

A. It is important to minimize fluctuations in the WNC. As the WNC becomes large (either positive or negative), it will play a larger role in the outcome of customers' bills. The best way of minimizing fluctuations in the WNC would be to project 1996 water consumption at an unbiased level. Also, it is no secret to anyone that in the absence of a WNC, if customer consumption falls, a rate increase will follow because the utility will be unable to collect its revenue requirements. So the short answer is that the WNC rate fluctuation is no different than what occurs now -- except that the WNC would create a more gradual fluctuation of rates, up and down, and cost customers less in rate

case expense.

**Q. MS. DISMUKES' ALTERNATIVE RECOMMENDATION IS THAT THE WNC ONLY ACCOUNT FOR 50% OF THE CHANGES IN CONSUMPTION. WHAT ARE THE DISADVANTAGES OF THIS?**

A. It will increase litigation and bureaucracy. The process of setting water consumption levels will still be adversarial and no litigation costs will be saved. In addition, the new administration of the WNC will need to be undertaken. The net affect is that the costs of both approaches will continue, but only partial benefits of the WNC will be realized. It would be more prudent to drive on one side of the road or the other, not down the middle.

**Q. MS. DISMUKES' ALTERNATIVE RECOMMENDATION STATES THAT IF THE SSU RATE STRUCTURE IS ALTERED TO COLLECT 75% OF REVENUES VIA THE GALLONAGE CHARGE, THE WNC SHOULD BE ALLOWED TO ACCOUNT FOR 75% OF THE VARIATION IN WATER USE. WHAT ARE YOUR COMMENTS?**

A. It is logical to reason that if the percentage of revenues collected via the gallonage charge increases, already volatile revenues will vary to an even larger degree. Hence, having more of the variation in water use accounted for by the WNC is appropriate. However, as stated above, it only makes prudent sense to have 100% of variation in

water use accounted for by the WNC. Otherwise, the disadvantages of both systems (non WNC and WNC) occur while only partial benefits are realized.

**Q. DOES SSU'S PROPOSED RATE DESIGN OF A 40/60 SPLIT SHIFT MORE RISK TO THE CUSTOMERS AS SUGGESTED BY MR. DISMUKES?**

A. No. Ms. Dismukes suggests at page 8 lines 21 through 22 and page 9 lines 1 through 8 that SSU's proposed rate design of 40%/60% (BFC/gallonage) from the current level of 33%/67% shifts risk to the customers from the stockholders of SSU. She proposes instead a 25%/75% split to mitigate the risk to customers.

The 40%/60% split proposed by SSU actually decreases risk to the customers from the current split of 33%/67%. As the percentage of revenues collected from the BFC increases, the customers assume less risk of overpaying the Company during high water use years. Ms. Dismukes' proposed 25%/75% split adds more risk to the customers of overpaying SSU during high water use years.

Ms. Dismukes' assertion that SSU's proposed rate structure does not send an adequate conservation signal to customers is solely her unsubstantiated opinion. Ms. Dismukes focuses on

the reallocation of costs between fixed and variable. She, however, fails to consider that the conservation signal sent to customers via the gallonage charge is being substantially increased in this rate case. I have testified that the level of rates proposed by SSU in this case are sufficient to create an approximate 11% decrease in overall consumption. It is my opinion that an 11% reduction in consumption is a substantial conservation savings.

Also, Ms. Dismukes' proposal does not take into consideration the fact that revenue stability is an appropriate goal for a utility. In my report to SSU titled Financial Risk and Water Conserving Rate Structures I looked at alternative rate structures the Company could propose. In my opinion, without the Weather Normalization Clause, the 40%/60% split proposed by SSU is certainly the appropriate rate structure given the competing objectives of conservation signals and revenue stability.

Of course SSU has provided a means for mitigating risk to both the Company and the customers. The Company has proposed a Weather Normalization Clause. With adoption of this

clause, the proportion of revenues collected from the gallonage charge could increase without increasing the financial risk to customers and the Company. The Weather Normalization Clause is therefore a win-win situation for the customers and Company. The risk to both parties decreases at the expense of neither. The Weather Normalization Clause is not, as Ms. Dismukes characterizes it, a zero-sum game where one party wins at the expense of another.

**Q. DO YOU AGREE WITH MS. DISMUKES' ASSERTION THAT 1996 PROJECTED WATER CONSUMPTION SHOULD BE INCREASED?**

A. No. Ms. Dismukes suggests that rainfall during the period 1991 through 1994 was above normal. From this fact, Ms. Dismukes concludes that water consumption during that period must have been below normal. Thus, Ms. Dismukes proposes that 1996 water consumption must be adjusted. If all other factors affecting water use were held constant, her argument would be valid. This, however, is far from the case. There are at least two other major determinants that affect water use over this time period which she has ignored.

One factor is evapotranspiration (ET). ET is a measure of the water evaporated and transpired

from a vegetated surface such as turfgrass. ET is mainly a function of air temperature and incoming solar radiation. As ET increases, the amount of water needed by residents to irrigate tends to increase. ET is an important component in identifying the effects of weather on water use. It is at least as important as rainfall.

Ms. Dismukes ignores ET in her weather normalization critique. Hence, she has an incomplete view of how weather affects water use. The year 1994 provides a good example of how looking at rainfall alone can be quite misleading. In 1994, rainfall was above normal, especially in the latter half of the year. ET on the other hand, was above normal. The net affect from weather can be calculated using a net irrigation requirement (NIR) variable. NIR is defined as ET minus effective rainfall. As reported in Financial Risk and Water Conserving Rate Structures , the NIR for 1994 was only 3% below normal. In fact, 1994 experienced the closest to normal weather out of all the years spanning 1991 to 1994. It is the most "normal" year in the group.

The second major determinant ignored by Ms. Dismukes is the water price elasticity repression

caused by the 1991 rate case in Docket No. 920199-WS. This case led to significant increases in gallonage charges (partly from a shift in the gallonage charge from 45% to 67% of total revenues), and hence significant increases in the price signal sent to customers. I have documented the expected percent change in 1994 water use to be 10.8 percent in my direct testimony, pages 6 through 7. I believe it is clear that the reduction in 1994 water use levels is more directly related to a downwards trend from the price elastic repression and not weather. This is particularly evident when focusing on residential water use.

**Q. MS. DISMUKES USES THE FIGURE 9,476 GALLONS PER RESIDENTIAL BILL FROM YOUR REPORT "FINANCIAL RISK AND WATER CONSERVING RATE STRUCTURES" AS A WEATHER NORMALIZED CONSUMPTION LEVEL. IS THIS A PROPER USE OF YOUR RESULTS?**

A. No. The purpose of that analysis was to quantify the **relative** change in water use resulting from deviations in weather for all SSU plants. The study was designed to calculate the percentage change in water use resulting from a given percentage change in NIR. This relative relationship was needed in order to characterize

SSU's financial risk with respect to weather. The study was not designed to calculate some base "weather normalized" water consumption for 1996. Such a study would entail a number of additional tasks, such as quantifying the price elastic repression occurring from Docket No. 920199-WS, as well as the elasticity response from the increase requested by SSU in this proceeding. Ms. Dismukes has taken the 9,476 estimate out of context and used it for an inappropriate purpose.

I would also add that the 9,476 estimate includes SSU plants not included in this rate case. The most significant is Spring Hill. Spring Hill is the largest residential SSU water system (26.35% of 1994 water use). It also has above average water consumption. Hence, the 9,476 gallons per bill estimate is not only being used for an inappropriate purpose, but it is based on an inappropriate set of water use data.

**Q. DOES THAT CONCLUDE YOUR REBUTTAL TESTIMONY?**

A. Yes, it does.