Exhibit No.:
Issues: Revenue
Weather Normalization
Witness: Dennis L. Patterson
Sponsoring Party: MO PSC Staff
Type of Exhibit: Surrebuttal Testimony
Case No.: WR-2007-0216
Date Testimony Prepared: July 27, 2007

MISSOURI PUBLIC SERVICE COMMISSION

UTILITY OPERATIONS DIVISION

SURREBUTTAL TESTIMONY

OF

DENNIS L. PATTERSON

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2007-0216

Jefferson City, Missouri
July 2007

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water)
Company's request for Authority to)
Implement a General Rate Increase for)   Case No. WR-2007-0216
Water Service provided in Missouri)
Service Areas .)

AFFIDAVIT OF DENNIS L. PATTERSON

STATE OF MISSOURI   )
) ss
COUNTY OF COLE   )

Dennis L. Patterson, of lawful age, on his oath states: that he has participated in the preparation of the following Surrebuttal Testimony in question and answer form, consisting of __5__ pages of surrebuttal Testimony to be presented in the above case, that the answers in the following surrebuttal Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true to the best of his knowledge and belief.

Dennis L. Patterson

Subscribed and sworn to before me this 25th day of July, 2007.

SUSAN L. SUNDERMEYER
My Commission Expires
September 21, 2010
Callaway County
Commission #06942086

Notary Public

My commission expires __9-21-10__

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Q.   Are you the same Dennis Patterson who has submitted Direct, Supplemental Direct and Rebuttal testimony in this case?

A.   Yes, I am.

EXECUTIVE SUMMARY

Q.   What is the purpose of your Surrebuttal testimony?

A.   I will address the Rebuttal testimony of Company witness Edward L. Spitznagel, Jr., PhD. I will discuss Dr. Spitznagel's mistaken assumptions regarding my analysis. In addition, I will address his criticism and the strengths of my analysis of customer billing data. I will also address Dr. Spitznagel's allegation that I have omitted the explanation of a variable in my testimony.

MISTAKEN ASSUMPTIONS BY DR. SPITZNAGEL

Q.   Where has Dr. Spitznagel made mistaken assumptions in his rebuttal of Dennis Patterson's Direct and Supplemental Direct testimony?

A.   The most important mistaken assumption underlies the question and answer beginning at Page 5, Line 5 of Dr. Spitznagel's Rebuttal testimony in this case. The mistaken assumption is that the projected actual weather Gallons/Customer/Day (GCD) for Quarterly Residential St. Louis County Water customers from my Supplemental Direct testimony should be estimates of the Company's reported GCD values for 2002-2006.

1   Q.   Why is Dr. Spitznagel's assumption mistaken?

2   A.   The assumption is mistaken because the Company's reported customer

3 numbers, Mgallon sales and calculated GCD values for these years are unreliable. They are

4 unreliable because neither the customer numbers nor the Mgallon sales are consistent from

5 year to year, nor consistent within 2006, the test year. (Please see Patterson Direct in the

6 question and answer beginning at Page 2, Line 17, as corrected in Patterson Rebuttal in the

7 question and answer beginning at Page 1, Line 9). Therefore, my projections are meant as

8 alternatives to suspect information, and are not intended to provide estimates of the erroneous

9 values the projections were calculated to replace. The large differences discussed at length by

10 Dr. Spitznagel in text (supra) and his Rebuttal Schedule ELS-3 simply underscore the serious

11 deficiencies in the Company's reports. In fact, the projections would be unnecessary only if

12 they closely approximated the Company's reports.

13   Q.   Have you requested better billing information from the Company?

14   A.   I have. Unfortunately, the Company made no attempt to validate the billing

15 data for years 2002-2006, nor to explain its many inconsistencies. (Please see Patterson

16 Direct at Page 6, Line 14, and Schedule 1-2, Page 3.

17   Q.   How did you perform your analysis without validated, consistent billing

18 information for these years?

19   A.   With no other recourse, I relied on projections of customer numbers and

20 weather-dependent GCD for the test year and true-up period, based on the analysis of data

21 from prior years leading up to the troublesome ones. (Please see Patterson Supplemental

22 Direct, in the section entitled "Projection of Customer Counts" beginning at Page 4, Line 10.)

1   Q.   Has the Company proposed any alternatives to your projections that might be

2   preferable?

3   A.   No.

4   **ANALYSIS OF ACCOUNTING DATA**

5   Q.   Has Dr. Spitznagel criticized other aspects of your results?

6   A.   Yes. He is suspicious of the use of indicator variables in the analysis of

7   customer counts, weather-dependent GCD, and meters in use. He appears to fear

8   "overfitting" a regression model by including too many variables. (Please see Dr. Spitznagel

9   Rebuttal at Page 2, Line 22, and Page 4, Line 6.)

10   Q.   Is this a legitimate criticism?

11   A.   Of course it is a legitimate concern for any analyst. However, the Company's

12   reports are based on accounting data, which result from strenuous and continuous efforts to

13   account for every cent received and gallon sold, as a service to the customer and for the

14   Company's benefit. This often leads to large corrections that must be made in the current

15   period to make up for errors in a previous one. The penalty for not addressing such

16   corrections during analysis of the billing data would be bias in the estimates of weather

17   parameters in GCD, and bias in growth rate estimates for meters in use and for customer

18   counts. I have chosen to address these instances with the indicator variables pointed out by

19   Dr. Spitznagel. This method has the benefit of providing estimates of the magnitude of the

20   errors and their correction. The Company could possibly use these estimates in their

21   investigation of the inconsistencies.

22   Q.   Are the errors as likely to be positive as negative?

1   A.   No, they are somewhat more likely to be negative for customer counts and

2   Mgallons. With computers, an error in a data set query usually leads to the omission of

3   observations that do not meet some specification in the query.

4   Q.   Has the Company proposed another method for addressing the inevitable

5   consequences of analysis with accounting data?

6   A.   No.

7   **STRENGTHS**

8   Q.   Does Dr. Spitznagel point out what he asserts are "weaknesses" in your

9   analyses of SLCW billing data?

10   A.   Yes. First, at Page 3, Line 17, of his Rebuttal testimony, he criticizes my

11   choice to separately model the "new customers" from Webster Groves and Florissant that

12   came on line in 2002. Then, at Page 3, Line 20, he criticizes my choice of a functional form

13   for analyzing customer growth. His displeasure with my use of an indicator variable to

14   correct for undercounting of customers in four years and overcounting in a fifth at Page 4,

15   Line 6 is addressed above. Finally, at Page 4, Line 11, he states: "Another weakness is the

16   whole idea of estimating a smoothed number of customers, when later on Mr. Patterson

17   combines these smoothed estimated with the total (non-smoothed) amounts of water used."

18   Q.   Are these features of your analysis truly weaknesses?

19   A.   No. They represent an analyst's best efforts to deal with insufficient, deficient,

20   inconsistent, and unreliable billing information. First, Dr. Spitznagel himself provided the

21   information that was used to model the customers that came on line in 2002. Unfortunately,

22   this information has never been updated by the Company and I had no choice but to assume

23   that it still applied for a few more years.