Exhibit No.:	
Issue(s):	*Normalized Usage; Revenues*
Witness:	*Jarrod J. Robertson*
Sponsoring Party:	*MoPSC Staff*
Type of Exhibit:	*Rebuttal Testimony*
Case No.:	*WR-2020-0344*
Date Testimony Prepared:	*January 15, 2021*

MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

WATER & SEWER DEPARTMENT

REBUTTAL TESTIMONY

OF

JARROD J. ROBERTSON

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2020-0344

Jefferson City, Missouri
January 2021

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Q. Please state your name and business address.

A. My name is Jarrod J. Robertson and my business address is P.O. Box 360, Jefferson City, Missouri 65102.

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

A. I am a Data/Research Analyst in the Water and sewer Department of the Commission Staff Division of the Missouri Public Service Commission ("Commission").

Q. Are you the same Jarrod J. Robertson that sponsored portions of Staff's Cost of Service Report filed on November 24, 2020 in this case?

A. Yes, I am.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to first address revisions to my Direct Testimony schedules, "Schedule JJR-d1 (CT)" and "Schedule JJR-d2 (PT)", second to address the submittal of schedules, "Schedule JJR-r1 (CT)" and "Schedule JJRr-2 (PT), as well as the corresponding workpapers, "WR-2020-0344 (Schedule - CT) JJR-r3", "Schedule WR-2020-0344 (Schedule - PT) JJR-r4" and "WR-2020-0344 (Declining Usage) JJR-r5." Lastly, I will address the testimonies of Missouri-American Water Company ("MAWC") witness Gregory Roach, the Office of Public Counsel ("OPC") witness, Lena Mantle, and

Missouri Industrial Energy Consumers ("MIEC") witness, Greg Meyer, regarding customer usage.

Q. What is the first revision you would like to address within "Schedule JJR-d1 (CT)" and "Schedule JJR-d2 (PT)"?

A. I have revised the usage per day calculations, for both schedules, via revisions made to workpapers "WR-2020-0344 (Schedule JJR – CT) JJR d1" and "WR-2020-0344 (Schedule – PT) JJR-d2". The revisions I would like to address first are the edits to the "Usage & Cust. Count" tab of both workpapers utilized to create schedules, "JJR-d1" and "JJR-d2", as the revisions were duplicated for each workpaper.

Q. What are the revisions you made to the "Usage & Cust. Count" tab?

A. First, I corrected two typographical errors, regarding usage for the month of December for the years 2016 and 2017, for the St. Louis County service area. Next, I corrected one typographical error, regarding usage for the month of August for the year 2016, for the Tri-States service area. Finally, I adjusted the usage from July 2014 – December 2016 for the Emerald Pointe service area.

Q. Does that conclude the revisions to the "Usage & Cust. Count" tab, pertaining to usage revisions?

A. Yes.

Q. Are there anymore revisions to the "Usage & Cust. Count" tab?

A. Yes, I also revised customer counts for several of the systems.

Q. What is the reasoning behind these revisions?

A. I had been utilizing a response to a Data Request, "mopsc 0026_attachment" for customer counts, when I should have been using "MO Average Use 2007-2019

(2020 Rate Case)." The document "mopsc 0026_attachment" contained meter counts, and offered various groupings via drop down menus, which resulted in some errors.

Q. What are the revisions you made to customer counts within the "Usage & Cust. Counts" tab?

A. While each system did not contain errors that required a complete overhaul from January 2018 – June 2020, it was much more efficient and exact to replicate the correct customer counts for the previously stated time frame for all systems.

Q. What was the impact of this revision?

A. Overall MAWC customer counts were corrected by approximately 400 customers, or approximately 0.104% of the total customers.

Q. Does this conclude the revisions to the "Usage & Cust, Count" tab?

A. Yes.

Q. Are there any other revisions you would like to address with either workpaper?

A. Yes.

Q. What are the revisions?

A. I made a total of five adjustments to the "Tariff District #2" tab, regarding "Tariff District #2 Overall Usage Per Year" formulas. I added usage for the years, 2016-2018 for the Brunswick system, 2017-2018 for both the Platte County and Woodland Manor systems, 2018-2019 for both the Brunswick and Woodland Manor systems and finally, I removed a multiple entry for the 2018-2019 for the St. Joseph system.

Q. Does this conclude all revisions?

A. Yes.

Q. What are the resulting daily use numbers following the revisions?

A. As outlined in "Schedule JJR-r1 (CT)" the new usage per day value for Tariff District 1 is 0.2156 gpcd ("gallons per customer per day") and the new usage per day value for Tariff District 2 is 0.1558 gpcd.

As outlined in "Schedule JJR-r2 (PT)" the new usage per day value for Tariff District 1 is 0.2109 gpcd; the new usage per day value for Tariff District 2 is 0.1490 gpcd and the new usage per day value for Tariff District 3 is 0.1357 gpcd.

Q. Does that conclude the update regarding the revisions to workpapers "WR-2020-0344 (Schedule JJR – CT) JJR d1" and "WR-2020-0344 (Schedule – PT) JJR-d2" and the corresponding daily use schedules "Schedule JJR-d1 (CT)" and "Schedule JJR-d2 (PT)"?

A. Yes.

Q. Will you be attaching the revised schedule with your rebuttal testimony?

A. Yes. I have attached the revised workpapers and labeled them as, "WR-2020-0344 (Schedule – CT) JJR-r3" and "WR-2020-0344 (Schedule – PT) JJR-r4" as well as the revised corresponding schedules, which are labeled "Schedule JJR-r1 (CT)" and "Schedule JJR-r2 (PT).

Q. To what degree do these adjustments affect Staff's recommendations in its Direct Testimony?

A. Regarding the impact of these revisions on Staff's recommendations in its Direct Testimony concerning overall revenues, please refer to Staff Witness, Ashley Sarver."

Q. Are there any other items related to your schedules you would like to address?

A. Yes. I have attached a third workpaper with this rebuttal testimony, "WR-2020-0344 (Declining Usage Workpaper) JJR-r5".

Q. What is the purpose of workpaper JJR-r5?

A. Workpaper JJR-r5, contains information related to Staff's five year average(s) vs actual usage for Tariff District 1, Tariff District 2, and a comparison vs MAWC company wide. This information is provided via graphs on JJR-r5, and I will go into further detail regarding this particular workpaper later in this testimony.

Response to MAWC Customer Usage Testimony

Q. Regarding the testimony of MAWC witness Gregory Roach, what customer usage issues will you be addressing?

A. I will be addressing the appropriate method Staff recommends the Commission use to determine residential customer usage for MAWC's residential customers in order to determine appropriate revenues. The method Staff will utilize in determining annual revenues will be explained in detail by Staff witness Ashley Sarver.

Q. Please generally explain how the Commission sets rates.

A. Generally, in a rate case, the Commission determines an annual amount of revenues, designated as the revenue requirement, which the utility needs to collect in order to cover the Company's cost of service. The annual revenue requirement is then used to calculate rates. Generally, there are two components in a water utility's rate structure; a monthly customer charge, which is a "fixed" rate, and a commodity/usage rate.

Q. How is the customer charge calculated?

A. The customer charge is calculated by dividing the portion of the water utility's Commission ordered revenue requirement that is not dependent on usage by the total number of customers. Generally, there is little issue taken with the appropriate amount of customers in this determination.

Q. How is the commodity/usage charge calculated?

A. The commodity charge is calculated by dividing the remaining portion of the Commission ordered revenue requirement by the normalized usage levels. If the normalized usage levels are not in line with actual usage, the Company may not collect its Commission authorized revenues. If normalized usage levels are too high, the commodity/usage rate will be lower, and if normalized usage levels are too low, the commodity/usage charge will be higher. While there are many factors that determine if the water utility collects more or less than its Commission approved revenues, it is important to establish a fair commodity/usage charge to lessen the effect this aspect has to alter revenues.

Q. Why is it necessary to normalize customer usage?

A. There are two reasons that normalizing customer usage is important. First, customer usage needs to be normalized in order to determine normalized levels of revenues for the utility. Rate revenue is determined by multiplying the Commission-approved commodity/usage rates by total usage, in addition to the customer/fixed rates. Usage fluctuates in any given year, based on many different factors. Due to this fact, a normalized level of usage must be determined in order to calculate normalized revenues. It is this normalized amount of revenues that is compared to the utility's cost of service to determine if an increase or decrease in rates is necessary.

The second reason is that normalized usage is one of the main billing determinants used by the Commission to establish commodity rates on a going forward basis. If normalized usage levels are not in line with actual usage, the Company may not collect its Commission authorized revenues. If normalized usage levels are too high, the commodity/usage rate will be lower, and the Company may under-earn, meaning the Company may earn less than its Commission authorized rate. If normalized usage levels are too low, the commodity/usage charge will be

higher, and the Company may over-earn, meaning the Company may earn more than its Commission authorized revenues. While there are many factors that determine if the water utility collects more or less than its Commission approved revenues, it is important to establish a fair commodity/usage charge to lessen the effect this aspect has to alter revenues.

Q. What method did MAWC use to calculate residential usage?

A. According to page 9 of the direct testimony of MAWC witness Roach, MAWC examined annual average Residential customer consumption, on a monthly basis over the last ten years, separated into two districts; one comprising St. Louis area residential customers and a second district comprised of all other MAWC Residential customers. MAWC then applied standardized statistically linear regression analysis, in order to estimate the Residential customer usage over time and to normalize the Residential customer usage data for the impact of weather. MAWC also analyzed the impact of other variables. These other variables include: cooling degree-days ("CCD"), days with 90 degree maximums, average temperature, maximum temperature and precipitation ("precip") to be utilized as independent explanatory variables, over the time series analyzed.

Q. In Staff's opinion, is MAWC's method appropriate to estimate customer usage in the future?

A. No. It is Staff's position that due to the excessive margin of error associated with MAWC's method of estimated usage vs observed actual usage, that a more accurate method should be used. These margins of error are discussed in detail below.

Q. How did Staff calculate the appropriate level of customer usage?

A. In this particular rate case, Staff gathered information related to residential customer usage on a per day basis, within specific MAWC systems, and/or an entire District, where MAWC provides metered water service, in order to normalize customer usage.

The Rankin Acres and White Branch service areas were excluded from this analysis as they do not have metered rates.

For its review, Staff analyzed historical usage data and residential customer counts provided by MAWC. Staff determined that the most reasonable method to determine annual customer usage was to use a five-year average of usage for the period July 2015 – June 2020. In certain service territories MAWC did not have five years of data, so Staff used an average of the available data provided. Based on Staff's determination of customer usage per day, Staff witness Ashley Sarver calculated an annual amount of revenues and the appropriate commodity rates.

Q. Why, in Staff's opinion, is using a five-year average to normalize residential customer usage more reasonable?

A. The method employed by Staff is a reasonable approach that uses actual data to support an annualized level of usage. Averaging the data over the most recent five-year period represents reliable data and provides evidence of recent trends in customer usage. Many factors, such as more efficient appliances, conservation, and lawn sprinkling/irrigation impact water usage. These factors change over time; therefore, using the most recent five years of data provides for a reasonable determination of customers' usage habits while avoiding using data that is so stale that it doesn't reflect the current situation. Furthermore, Staff's utilization of each service area's unique data is reasonable because the usage characteristics of each service territory are different from other service territories.

Q. Why is focusing on recent usage patterns important?

A. It is important to focus on recent usage behavior as rates for MAWC are generally set for a two to four-year period. MAWC controls when it chooses to file a rate case;

however, if MAWC wishes to maintain its Infrastructure System Replacement Surcharge ("ISRS"), MAWC is bound to no more than three years between rate increases. If a company files a rate case every two-four years, the five-year average would better encapsulate current usage trends (two-four years), plus "historical" data (one-three years) from previous usage data from the last rate case. Thus, the five-year average will lead to a reasonable normalized usage level as it focuses on recent usage patterns.

Q. Has Staff performed any analysis to support the premise that Staff's five-year average appropriately encapsulates current customer behavior and usage patterns?

A. Yes. Staff has developed company-wide, Tariff District, and system-specific line charts tracking customer usage, which can be found in workpaper JJR-r5.

Q. Does Staff's five-year average reveal any apparent usage patterns?

A. Staff is aware that consumer usage patterns have changed over the years due to many different factors. Consumers are displaying more discretionary use patterns as a result of efficiency education, more water-efficient appliances, low-flow toilets, and other efficient fixtures. On the opposite end of the spectrum, there are subdivisions that require individual residential water use via lawn watering/sprinkler operation during the summer months. Even with these changes in usage patterns, and a multitude of other variables, it does appear that residential customer usage on a per day basis is less today than it was in the past.

Staff's analysis displays that Staff's five-year average is a reasonable proxy for current patterns, and shows the five-year averages appear to become more accurate as the trend line approaches present time. Staff's five-year average margin of error (the difference between data points that represent Staff's five-year average versus actual usage), appears to be decreasing, thus becoming more accurate. This information is provided in Schedule JJR-r5.

Q. What is meant by the term, "declining usage"?

A. The term "declining usage" refers to either a reduction in the volume of water per customer used on a daily, weekly and/or annual basis, and/or a reduction in the total volume of water used.

Q. What impact does declining usage have on calculating appropriate revenues?

A. The impact declining usage has on determining appropriate revenues is in properly accounting for the alleged decline in volumetric water consumption, while allowing MAWC to meet its Commission approved revenue requirement, and at the same time, affording the customers a just and reasonable rate.

Q. Does Staff agree MAWC's method of normalizing usage for weather achieves appropriate billing determinants in establishing commodity rates?

A. No. When MAWC's weather normalized usage data is extrapolated over the last eight years, it results in normalized usage levels that are vastly less than the actual usage documented for each year. Utilization of lower normalized usage "number(s)" than actual would result in a commodity/usage rate being set to high, and the Company would essentially "over-earn".

Q. Can you explain the decrease in Staff's margin of error over time in more detail?

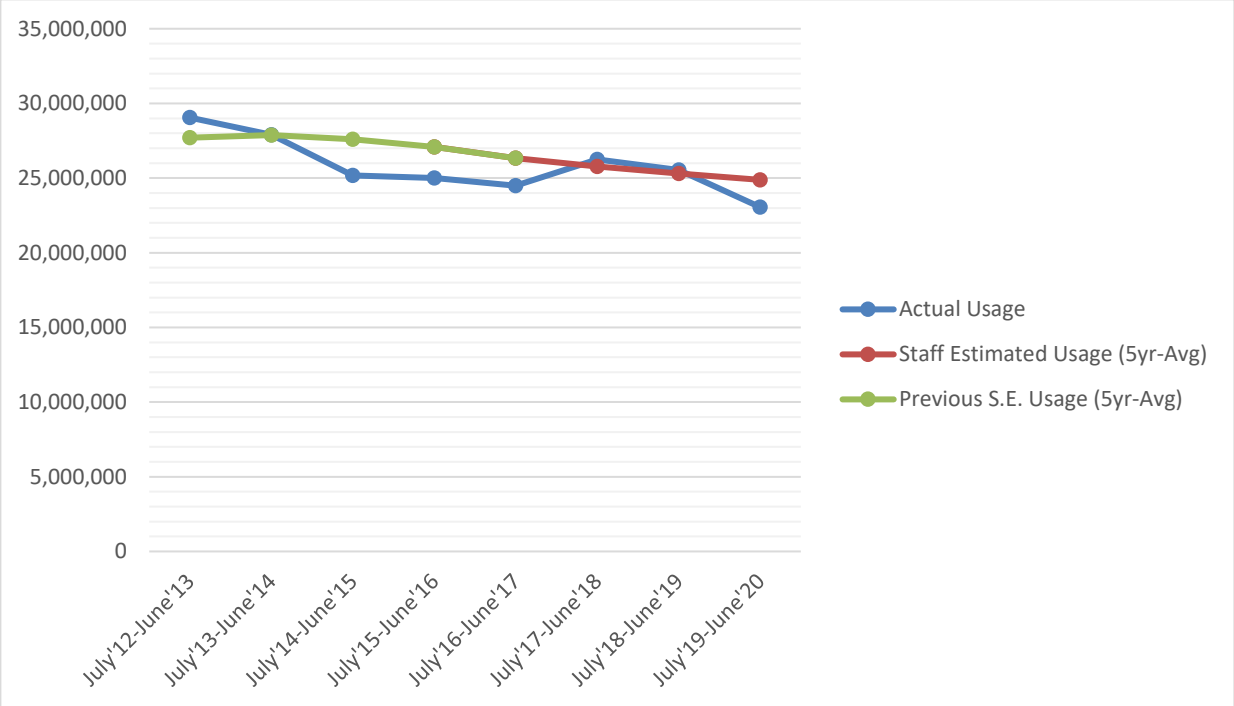
A. Yes. Again, Staff analyzed data for the entire company, each individual system, and subsequent Tariff District(s). Line charts have been attached to this testimony as Schedule JJR-r5, detailing this analysis for MAWC, Tariff District 1, Tariff District 2 and each individual system therein. These charts represent actual usage within each Tariff District, compared to Staff's five-year average. As the data is analyzed on a going forward basis, starting from the 2012-2013 usage through the 2019-2020 usage, Staff's five-year average mirrors

actual usage and appears to more closely align with actual usage despite the increase in usage for the 2017-2019 usage periods

Q. Is there a specific data set worth noting?

A. Yes. Please reference the line charts for Tariff District 1 and Tariff District 2, below, comparing data generated for this current rate case vs Staff's Estimated 5yr-Avg from the previous rate case, as well as Actual Usage (please note, differences in data between the previous case for the years 2015-2017 vs the same data set for this current case may be attributed to updated customer count and usage data):

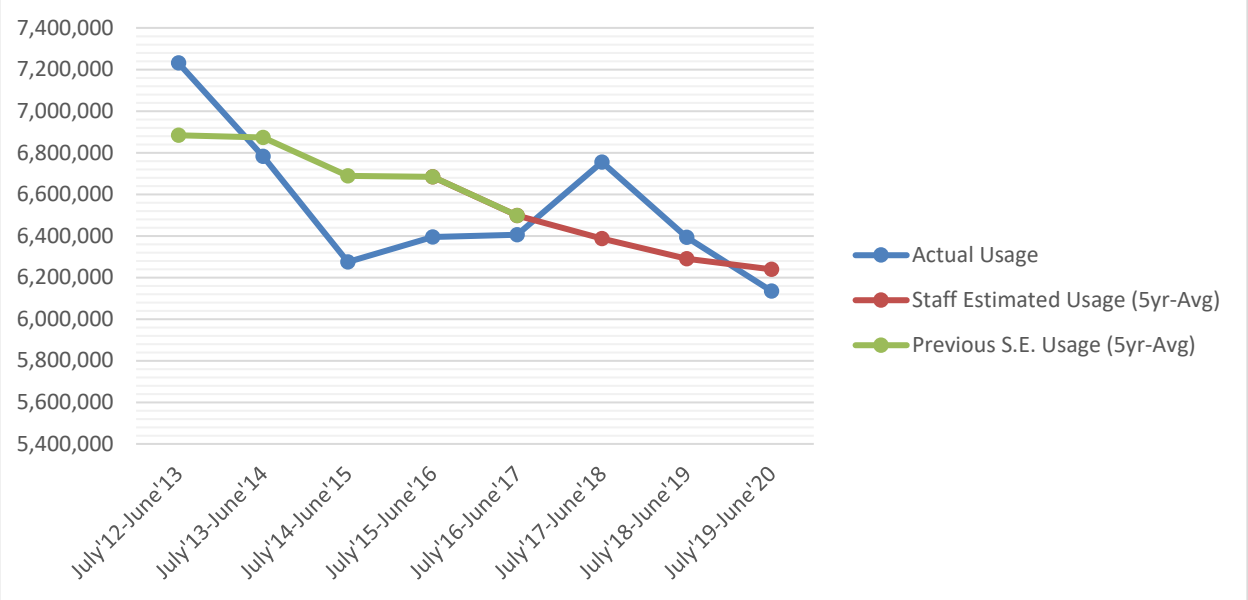
District #1	July'12-June'13	July'13-June'14	July'14-June'15	July'15-June'16	July'16-June'17	July'17-June'18	July'18-June'19	July'19-June'20
Actual Usage	29,046,887	27,896,168	25,187,276	25,014,994	24,497,228	26,240,314	25,550,262	23,055,271
Staff Estimated Usage (5yr-Avg)				27,089,031	26,328,510	25,767,196	25,311,864	24,881,694
Previous S.E. Usage (5yr-Avg)	27,707,649	27,879,428	27,606,342	27,089,031	26,328,510			



Regarding District 1: the difference between Staff's Previously Estimated five-year average and actual usage in 2012-2013, was approximately 4.61%. In 2013-2014 that difference was approximately 0.06%, and in 2014-2015, that difference was approximately -9.6%.

In 2015- 2016, the difference between Staff's Estimated five-year average and actual usage was approximately -8.29%. In 2016-2017 that difference was approximately -7.48%; 2017-2018 the difference was approximately 1.8%; in 2018-2019 the difference was approximately 0.93%, and finally in 2019-2020 that difference was approximately -7.92%;

District #2	July'12-June'13	July'13-June'14	July'14-June'15	July'15-June'16	July'16-June'17	July'17-June'18	July'18-June'19	July'19-June'20
Actual Usage	7,231,009	6,782,421	6,275,180	6,394,649	6,405,863	6,754,570	6,393,614	6,134,987
Staff Estimated Usage (5yr-Avg)				6,683,870	6,497,922	6,387,596	6,289,855	6,239,263
Previous S.E. Usage (5yr-Avg)	6,883,732	6,873,038	6,688,651	6,683,870	6,497,922			



Regarding District 2: the difference between Staff's Previously Estimated five-year average and actual usage in 2012-2013, was approximately 4.8%. In 2013-2014, that difference was approximately -1.34%, and in 2014-2015, that difference was approximately -6.59%. In 2015- 2016, the difference between Staff's Estimated five-year average and actual usage was approximately -4.52%. In 2016-2017 that difference was approximately –144%; 2017- 2018 the difference was approximately 5.43%; in 2018-2019 the difference was approximately 1.62%, and finally; in 2019-2020 that difference was approximately -1.7%.

Q. Between 2017 and 2019, there was a spike in customer usage of 5.43% and 1.62%. What impact does this spike in usage for Tariff District 2 from 2017-2019 have on Staff's five-year average?

A. While a trend, no matter the level, may exist, it does not mean the trend will be without any fluctuations. The five-year average encapsulates current usage trends (two-four years), plus "historical" data (one-three years) from previous usage data from the last rate case. Thus, the five-year average will lead to a more reasonable normalized usage level, as it focuses on recent usage patterns, thus accounting for any possible impact by declining usage. Note, immediately following the increases in usage from 2017-2019, Staff's Estimated five-year average was nearly identical to Actual Usage in 2019-2020, with a 1.7% margin of error.

Q. Is Staff claiming that the five-year average will always be exactly accurate analysis to determine actual use?

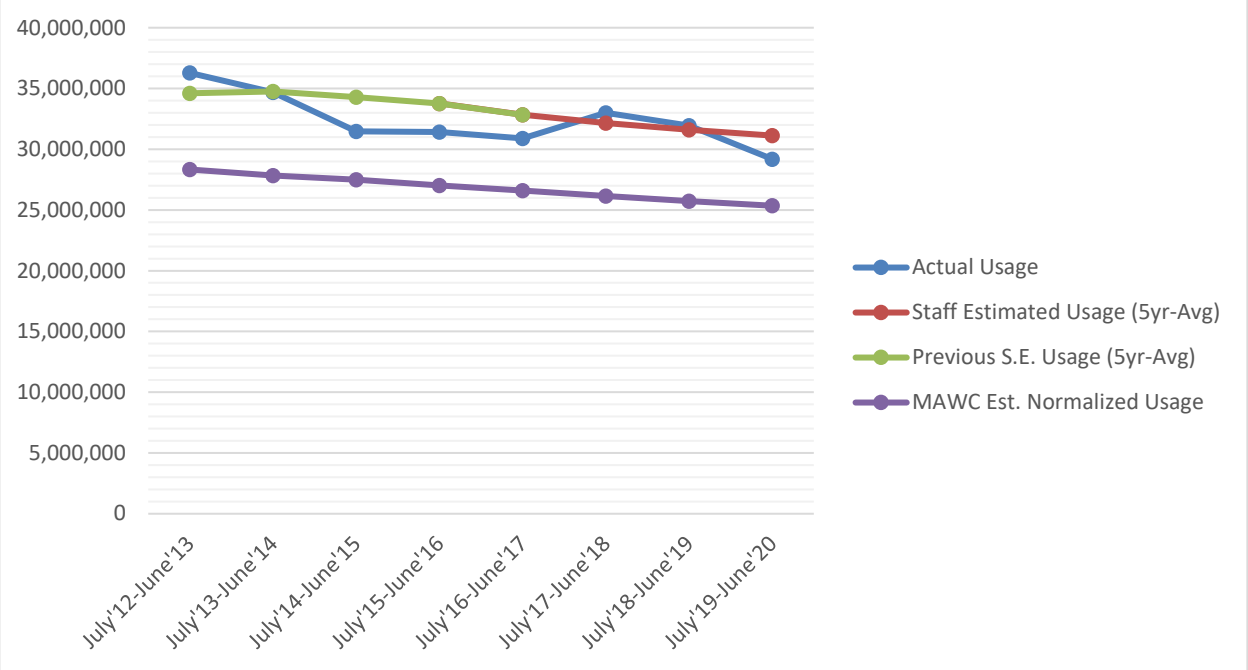
A. No. Averages, like regression analyses, are only as good as the consistency of the data they interpret. But starting with a more accurate predictive method is more likely to provide good results in the future. If there is a significant change in actual usage, it can alter the accuracy of the prediction; note the dramatic change in usage for Tariff District 1 and Tariff District 2 in 2014-2015. Directly following those dramatic shifts in usage, Staff's five-year average continued to align with actual usage over the next two-three years. Staff argues that because the five-year average has more closely aligned to actual customer usage, this suggests that change in customer usage is decreasing, and customer usage is stabilizing.

Q. Are there any other analyses performed by Staff worth noting?

A. Yes. Please reference the line chart below, compares data generated for this current rate case vs Staff's Estimated 5yr-Avg from the previous rate case vs MAWC's Weather Normalized Usage, as well as Actual Usage (please note, differences in data between the

previous case for the years 2015-2017, versus the same data set for this current case, may be attributed to updated customer count and usage data):

MAWC Total	July'12-June'13	July'13-June'14	July'14-June'15	July'15-June'16	July'16-June'17	July'17-June'18	July'18-June'19	July'19-June'20
Actual Usage	36,277,895	34,678,589	31,462,456	31,409,643	30,903,091	32,994,883	31,943,876	29,190,258
Staff Estimated Usage (5yr-Avg)				33,772,901	32,826,433	32,154,791	31,601,719	31,120,957
Previous S.E. Usage (5yr-Avg)	34,591,381	34,752,466	34,294,993	33,772,901	32,826,433			
MAWC Est. Normalized Usage	28,330,143	27,828,252	27,483,443	27,014,811	26,594,649	26,161,994	25,723,939	25,349,780



Regarding MAWC Total: the difference between Staff's Previously Estimated five-year average and actual usage in 2012-2013, was approximately 4.65%. In 2013-2014, that difference was approximately -0.21%, and in 2014-2015, that difference was approximately -9.0%. In 2015- 2016, the difference between Staff's Estimated five-year average and actual usage was approximately -7.52%. In 2016-2017, that difference was approximately –6.22%; in 2017-2018 the difference was approximately 2.55%; in 2018-2019 the difference was approximately 1.07%, and finally; in 2019-2020 that difference was approximately -6.61%. These percentages equate to a -3.35% margin of error between Staff's Estimated five-year average and Actual Usage for a five-year average.

Q. What did MAWC's Estimated Usage reveal?

A. Regarding MAWC Estimated Usage: the difference between MAWC Estimated Usage and actual usage in 2012-2013, was approximately 21.91%. In 2013-2014, that difference was approximately 19.75%, and in 2014-2015, that difference was approximately 12.65%. In 2015- 2016, the difference between MAWC Estimated Usage and actual usage was approximately 13.99%. In 2016-2017 that difference was approximately 13.94%; 2017-2018 the difference was approximately 20.71%; in 2018-2019 the difference was approximately 19.47%, and finally; in 2019-2020 that difference was approximately 13.16%. These percentages equate to a 16.25% in margin of error between MAWC's Estimated Usage and Actual Usage for a five-year average.

Q. Was the 'MAWC's Estimated Usage' data set provided by MAWC?

A. No. MAWC witness, Gregory Roach, submitted workpapers, "MO Res St. Louis Usage Analysis – 2020RC" and "MO Res Non St. Louis County Usage Analysis – 2020RC" which provided MAWC's Weather Normalized Usage for each Tariff District, but for the calendar year. I created the MAWC Estimated Usage data set by simply reconfiguring the weather normalized usage data set to designate each year run from July to June for comparison purposes.

Response to OPC and MIEC Customer Usage Testimony

Q. OPC witness, Lena Mantle and MIEC witness, Greg Meyer, both propose utilizing a three-year average to normalize usage, unlike Staff's proposed utilization of a five-year average. Does Staff concur with this approach?

A. No. The utilization of only three years of data restricts the data set/timeframe, by excessively reducing historical data. Any anomaly that may occur, whether a major increase in actual usage or a large decrease, would have a greater impact on the average than what is

seen with the five-year average. Normalizing usage to account for these anomalies would result in the basic deletion of an entire year's worth of data, relying upon only a two-year data set to account for trends. Also, if a company files a rate case every two-four years, as has been the trend for MAWC, the five-year average would better encapsulate current usage trends (two-four years), plus "historical" data (one-three years) from previous usage data from the last rate case. Thus, the five-year average will lead to a more reasonable normalized usage level as it focuses on recent usage patterns, while the five-year average also affords a larger data set would overlap the filing of rate cases every two – four years.

Q. What does Staff recommend?

A. Because of the pronounced difference in accuracy between Staff's method and MAWC's method, coinciding with the lack of data utilized by OPC and MIEC's proposed three-year average, Staff recommends the Commission use Staff's level of normalized residential customer usage based on a five-year average of usage.

Q. Does this conclude your rebuttal testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company's Request for Authority to Implement General Rate Increase for Water and Sewer Service Provided in Missouri Service Areas	)))))	Case No. WR-2020-0344

AFFIDAVIT OF JARROD J. ROBERTSON

STATE OF MISSOURI	)	
	)	ss.
COUNTY OF COLE	)	

COME NOW JARROD J. ROBERTSON and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Rebuttal Testimony of Jarrod J. Robertson*; and that the same is true and correct according to his best knowledge and belief, under penalty of perjury.

Further the Affiants sayeth not.

/s/ Jarrod J. Robertson
JARROD J. ROBERTSON