

**Exhibit No.:**

**Issue(s):**

**Witness/Type of Exhibit:**

**Sponsoring Party:**

**Case No.:**

\_\_\_\_\_  
Residential Base Usage

Mantle/Direct

Public Counsel

WR-2017-0285

**DIRECT TESTIMONY**

**OF**

**LENA M. MANTLE**

Submitted on Behalf of the Office of the Public Counsel

**MISSOURI-AMERICAN WATER COMPANY**

CASE NO. WR-2017-0285

November 30, 2017



**DIRECT TESTIMONY**

**OF**

**LENA M. MANTLE**

**MISSOURI AMERICAN WATER COMPANY  
CASE NO. WR-2017-0285**

1 **Q. Please state your name and business address.**

2 A. My name is Lena M. Mantle and my business address is P.O. Box 2230, Jefferson  
3 City, Missouri 65102. I am a Senior Analyst for the Office of the Public Counsel  
4 (“OPC”).

5 **Q. Please briefly describe your experience and your qualifications.**

6 A. I have been employed by the OPC in my current position since August 2014. In  
7 this position, I have provided testimony and support in electric, natural gas, and  
8 water cases for the Public Counsel. Prior to my employment for the OPC, I  
9 worked for the Staff of the Missouri Public Service Commission (“Staff”) from  
10 August 1983 until I retired in December 2012. During the time that I was  
11 employed at the Missouri Public Service Commission (“Commission”), I worked  
12 as an Economist, Engineer, Engineering Supervisor, and Manager of the Energy  
13 Department.

14 Attached as Schedule LMM-D-1 is a brief summary of my experience with  
15 OPC and Staff along with a list of the Commission cases in which I filed  
16 testimony, Commission rulemakings in which I participated, and Commission  
17 reports to which I contributed. I am a Registered Professional Engineer in the  
18 State of Missouri.

19 **Q. What is the purpose of your testimony?**

20 A. The purpose of this testimony is to recommend the Commission approve the use  
21 of the following monthly base usage per customer as the normalized base usage  
22 for determining the residential class normalized revenues and billing determinants  
23 in this case.

District	Base Usage per Customer
D1 – East Central	5,512
D2 – Northwest	4,002
D3 – Southwest	3,493

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2 **Q. How did you calculate these normalized base usages per customer?**

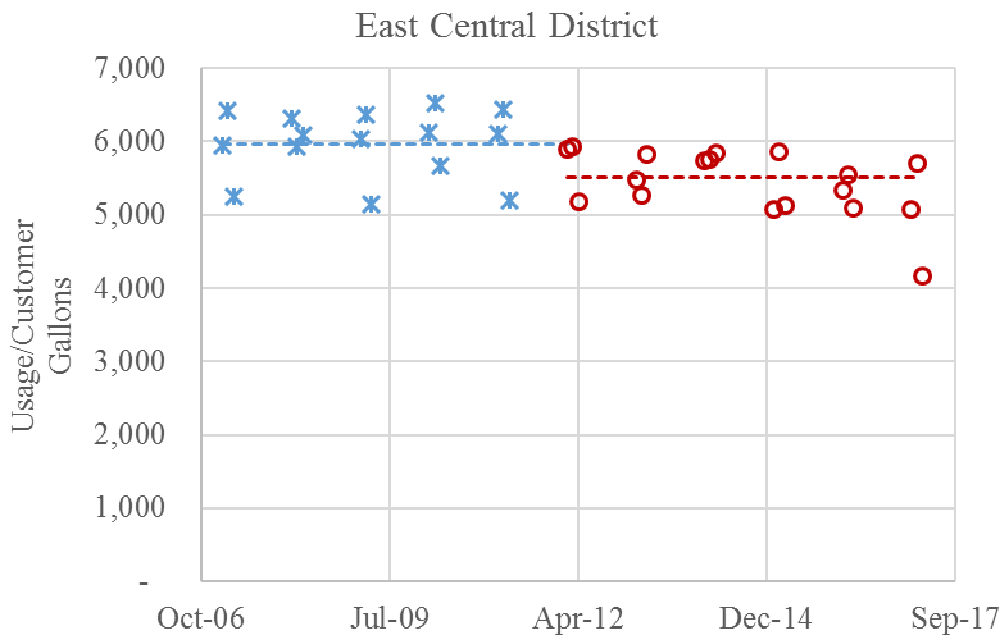
3 A. These base usage per customer were calculated as a simple average of the monthly  
4 usage per customer in the months of February, March and April (“base usage  
5 months”) for the years 2012 through 2017 for Districts 2 and 3. The calculation  
6 for District 1 was similar except I did not include the monthly usage per customer  
7 for April 2017.

8 **Q. Why did you use a simple average to calculate the base monthly usage?**

9 A. I determined a simple average was appropriate to determine normalized  
10 residential base usage after I reviewed historical residential usage per customer in  
11 the base usage months from 2007 through 2017.

12 **Q. What did your review of historical usage show?**

13 A. My review of ten years of historical usage showed a distinct drop in use per  
14 customer in the base usage months from 2011 to 2012. Beginning in 2012, the  
15 usage remained fairly constant. This can be seen in the graph for the East Central  
16 District below except for April 2017.



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As can be seen in this graph, there is a distinct difference in the usage per customer between the base usage months of 2011 and 2012 and that the use per customer for April 2017 was considerably below the usage per customers of the other base usage months. Because of this distinct change beginning in 2012 and the relatively flat usage after 2012, I choose to calculate the normalized base usage per customer as a simple average of the base use months from 2012 through March 2017.

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**Q. Why did you not include the monthly usage per customer for April 2017 for this district?**

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A. As shown in the graph above, the April 2017 usage per customer was significantly below the usage per customer in any other base usage month. A review of the month usage per customer for April 2017 showed that the usage provided by Missouri American Water Company (“MAWC”) is dramatically lower than any other usage per month making this number suspect. Further examination of the data shows a consistent number of customers, but a very low total usage amount.

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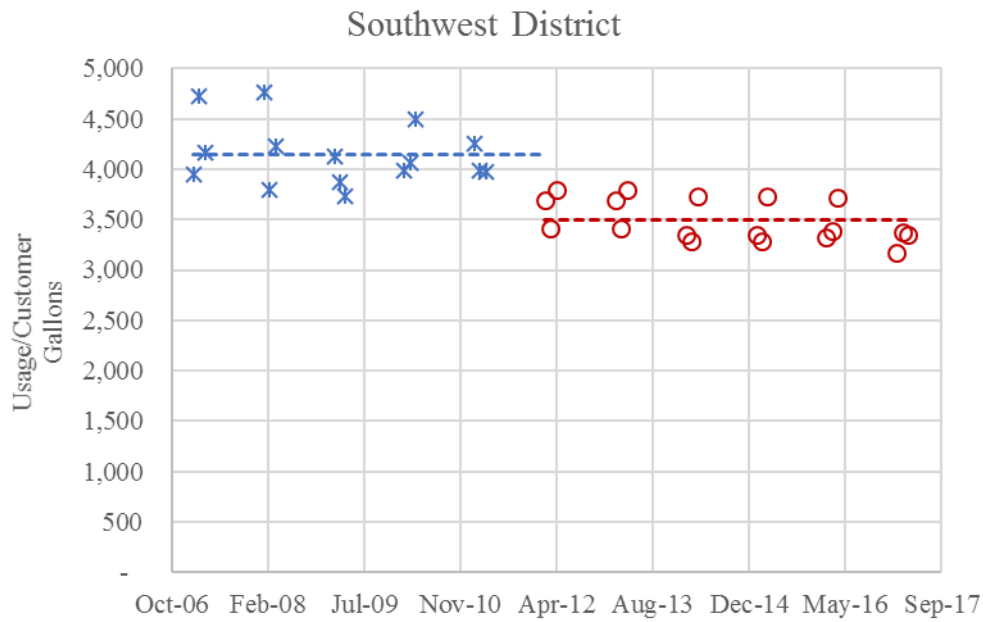
1 **Q. Could this be an accurate usage per customer for April 2017?**

2 A. It may be. However, the usage for this month is different than the base month  
3 usage of all the other years and also significantly different from February and  
4 March of 2017. It is so low that it skews the average. My examination of the  
5 monthly total usage data and customer numbers from January 2007 through April  
6 2017 reveals an occasional outlier or jump in the numbers. Sometimes the data  
7 shows a jump in the opposite direction in the next month which leads me to  
8 believe there was a “correction” to the jump in the data for the previous month.

9 If the data is aggregated on an annual basis, these jumps are  
10 inconsequential because the corrections of the following months. However, with  
11 so few data points as used in this analysis, a drop of the magnitude seen in April  
12 2017 is not inconsequential to the average. Given the existence of other outliers  
13 in the data, I concluded this was likely to be an outlier and I did not include April  
14 2017 in the calculation of base usage per customer.

15 **Q. Did you see a similar distinct difference between the base usage months in**  
16 **2011 and 2012 for the Southwest District?**

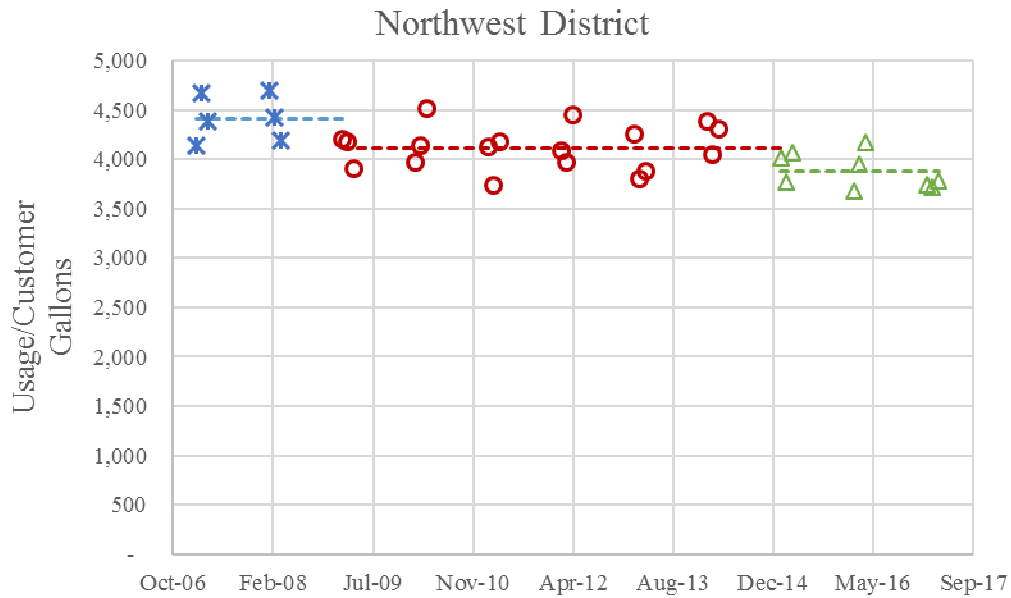
17 A. Yes. As shown in the graph below there is a distinct disconnect between the base  
18 usage months of 2011 and 2012.



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**Q. Was there a similar difference for the Northwest District?**

A. No. There seems to be three different levels of base usage months for the Northwest District as shown in the graph below.



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1           The first shift seems to occur between 2008 and 2009. The second occurs  
2           between 2014 and 2015. Since there are only three years of data available for this  
3           third shift in usage, I chose to use the same methodology that I used for the other  
4           two districts.

5   **Q. Does this conclude your direct testimony?**

6   A. Yes, it does.



## **Education and Work Experience Background of**

### **Lena M. Mantle, P.E.**

In my position as Senior Analyst for the Office of the Public Counsel (“OPC”) I provide analytic and engineering support for the OPC in electric, gas, and water cases before the Commission. I have worked for the OPC since August, 2014.

I retired on December 31, 2012 from the Public Service Commission Staff as the Manager of the Energy Unit. As the Manager of the Energy Unit, I oversaw and coordinated the activities of five sections: Engineering Analysis, Electric and Gas Tariffs, Natural Gas Safety, Economic Analysis, and Energy Analysis sections. These sections were responsible for providing Staff positions before the Commission on all of the electric and gas cases filed at the Commission. This included reviews of fuel adjustment clause filings, resource planning compliance, gas safety reports, customer complaint reviews, territorial agreement reviews, electric safety incidents and the class cost-of-service and rate design for natural gas and electric utilities.

Prior to being the Manager of the Energy Unit, I was the Supervisor of the Engineering Analysis Section of the Energy Department from August, 2001 through June, 2005. In this position, I supervised engineers in a wide variety of engineering analysis including electric utility fuel and purchased power expense estimation for rate cases, generation plant construction audits, review of territorial agreements, and resolution of customer complaints all the while remaining the lead Staff conducting weather normalization in electric cases.

From the beginning of my employment with the Commission in the Research and Planning Department in August, 1983 through August, 2001, I worked in many areas of electric utility regulation. Initially I worked on electric utility class cost-of-service analysis, fuel modeling and what has since become known as demand-side management. As a member of the Research and Planning Department under the direct supervision of Dr. Michael Proctor, I participated in the development of a leading-edge methodology for weather normalizing hourly class energy for rate design cases. I took the lead in developing personal computer programming of this methodology and applying this methodology to weather-normalize electric usage in numerous electric rate cases. I was also a member of the team that assisted in the development of the Missouri Public Service Commission electronic filing and information system (“EFIS”).

I received a Bachelor of Science Degree in Industrial Engineering from the University of Missouri, at Columbia, in May, 1983. I am a registered Professional Engineer in the State of Missouri.

Lists of the cases I have filed testimony as an OPC, the Missouri Public Service Commission rules in which I participated in the development of or revision to, the Missouri Public Service Commission Testimony Staff reports that I contributed to and the cases that I provided testimony in follow.

**Office of Public Counsel Case Listing**

<b>Case</b>	<b>Filing Type</b>	<b>Issue</b>
GR-2017-2015 & GR-2017-2016	Direct, Rebuttal, Surrebuttal	Energy Efficiency and Low-Income Programs
EO-2017-0065	Direct, Rebuttal, Surrebuttal	Fuel Adjustment Clause Prudence Review
ER-2016-0285	Direct, Rebuttal, Surrebuttal	Fuel Adjustment Clause
ER-2016-0156	Direct, Rebuttal, Surrebuttal	Fuel Adjustment Clause, Resource Planning
ER-2016-0023	Direct, Rebuttal, Surrebuttal	Fuel Adjustment Clause
WR-2015-0301	Direct, Rebuttal, Surrebuttal	Revenues, Environmental Cost Recovery Mechanism
ER-2014-0370	Direct, Rebuttal, Surrebuttal	Fuel Adjustment Clause
ER-2014-0351	Direct, Rebuttal, Surrebuttal	Fuel Adjustment Clause
ER-2014-0258	Direct, Rebuttal, Surrebuttal	Fuel Adjustment Clause
EC-2014-0224	Surrebuttal	Policy, Rate Design

**Missouri Public Service Commission Rules**

- 4 CSR 240-3.130 Filing Requirements and Schedule of Fees for Applications for Approval of Electric Service Territorial Agreements and Petitions for Designation of Electric Service Areas
- 4 CSR 240-3.135 Filing Requirements and Schedule of Fees Applicable to Applications for Post-Annexation Assignment of Exclusive Service Territories and Determination of Compensation
- 4 CSR 240-3.161 Electric Utility Fuel and Purchased Power Cost Recovery Mechanisms Filing and Submission Requirements
- 4 CSR 240-3.162 Electric Utility Environmental Cost Recovery Mechanisms Filing and Submission Requirements
- 4 CSR 240-3.190 Reporting Requirements for Electric Utilities and Rural Electric Cooperatives
- 4 CSR 240-14 Utility Promotional Practices
- 4 CSR 240-18 Safety Standards
- 4 CSR 240-20.015 Affiliate Transactions
- 4 CSR 240-20.017 HVAC Services Affiliate Transactions
- 4 CSR 240-20.090 Electric Utility Fuel and Purchased Power Cost Recovery Mechanisms
- 4 CSR 240-20.091 Electric Utility Environmental Cost Recovery Mechanisms
- 4 CSR 240-22 Electric Utility Resource Planning
- 4 CSR 240-80.015 Affiliate Transactions
- 4 CSR 240-80.017 HVAC Services Affiliate Transactions

**Staff Direct Testimony Reports**

ER-2012-0175	Capacity Allocation, Capacity Planning
ER-2012-0166	Fuel Adjustment Clause
ER-2011-0028	Fuel Adjustment Clause
ER-2010-0356	Resource Planning Issues
ER-2010-0036	Environmental Cost Recovery Mechanism
HR-2009-0092	Fuel Adjustment Rider
ER-2009-0090	Fuel Adjustment Clause, Capacity Requirements
ER-2008-0318	Fuel Adjustment Clause
ER-2008-0093	Fuel Adjustment Clause, Experimental Low-Income Program
ER-2007-0291	DSM Cost Recovery

**Missouri Public Service Commission Staff Testimony**

<b>Case No.</b>	<b>Filing Type</b>	<b>Issue</b>
ER-2012-0175	Rebuttal, Surrebuttal	Resource Planning Capacity Allocation
ER-2012-0166	Rebuttal, Surrebuttal	Fuel Adjustment Clause
EO-2012-0074	Direct/Rebuttal	Fuel Adjustment Clause Prudence
EO-2011-0390	Rebuttal	Resource Planning Fuel Adjustment Clause
ER-2011-0028	Rebuttal, Surrebuttal	Fuel Adjustment Clause
EU-2012-0027	Rebuttal, Surrebuttal	Fuel Adjustment Clause
ER-2010-0356	Rebuttal, Surrebuttal	Resource Planning Allocation of Iatan 2
EO-2010-0255	Direct/Rebuttal	
ER-2010-0036	Supplemental Direct, Surrebuttal	Fuel Adjustment Clause
ER-2009-0090	Surrebuttal	Capacity Requirements
ER-2008-0318	Surrebuttal	Fuel Adjustment Clause
ER-2008-0093	Rebuttal, Surrebuttal	Fuel Adjustment Clause Low-Income Program
ER-2007-0004	Direct, Surrebuttal	Resource Planning
GR-2007-0003	Direct	Energy Efficiency Program Cost Recovery
ER-2007-0002	Direct	Demand-Side Program Cost Recovery
ER-2006-0315	Supplemental Direct, Rebuttal	Energy Forecast Demand-Side Programs Low-Income Programs
ER-2006-0314	Rebuttal	Jurisdictional Allocation Factor
EA-2006-0309	Rebuttal, Surrebuttal	Resource Planning
ER-2005-0436	Direct, Rebuttal, Surrebuttal	Low-Income Programs Energy Efficiency Programs Resource Planning
EO-2005-0329	Spontaneous	Demand-Side Programs Resource Planning

**Missouri Public Service Commission Staff Case Listing (cont.)**

EO-2005-0293	Spontaneous	Demand-Side Programs Resource Planning
ER-2004-0570	Direct, Rebuttal, Surrebuttal	Reliability Indices Energy Efficiency Programs Wind Research Program
EF-2003-0465	Rebuttal	Resource Planning
ER-2002-425	Direct	Derivation of Normal Weather
EC-2002-1	Direct, Rebuttal	Weather Normalization of Class Sales Weather Normalization of Net System
ER-2001-672	Direct, Rebuttal	Weather Normalization of Class Sales Weather Normalization of Net System
ER-2001-299	Direct	Weather Normalization of Class Sales Weather Normalization of Net System
EM-2000-369	Direct	Load Research
EM-2000-292	Direct	Load Research
EM-97-515	Direct	Normalization of Net System
ER-97-394, et. al.	Direct, Rebuttal, Surrebuttal	Weather Normalization of Class Sales Weather Normalization of Net System Energy Audit Tariff
EO-94-174	Direct	Weather Normalization of Class Sales Weather Normalization of Net System
ER-97-81	Direct	Weather Normalization of Class Sales Weather Normalization of Net System TES Tariff
ER-95-279	Direct	Normalization of Net System
ET-95-209	Rebuttal, Surrebuttal	New Construction Pilot Program
EO-94-199	Direct	Normalization of Net System
ER-94-163	Direct	Normalization of Net System
ER-93-37	Direct	Weather Normalization of Class Sales Weather Normalization of Net System
EO-91-74, et. al.	Direct	Weather Normalization of Class Sales Weather Normalization of Net System
EO-90-251	Rebuttal	Promotional Practices Variance
ER-90-138	Direct	Weather Normalization of Net System
ER-90-101	Direct, Rebuttal, Surrebuttal	Weather Normalization of Class Sales Weather Normalization of Net System
ER-85-128, et. al.	Direct	Demand-Side Update
ER-84-105	Direct	Demand-Side Update