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Efficiency
Witness: Martin Hyman
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Case Nos.: WR-2015-0301 and SR-2015-0302

MISSOURI PUBLIC SERVICE COMMISSION

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2015-0301

CASE NO. SR-2015-0302

DIRECT TESTIMONY

OF

MARTIN R. HYMAN

ON

BEHALF OF

MISSOURI DEPARTMENT OF ECONOMIC DEVELOPMENT

DVISION OF ENERGY

Jefferson City, Missouri

December 23, 2015

(Revenue Requirement)

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1 **I. INTRODUCTION**

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

3 A. My name is Martin R. Hyman. My business address is 301 West High Street, Suite 720,
4 PO Box 1766, Jefferson City, Missouri 65102.

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

6 A. I am employed by the Missouri Department of Economic Development – Division of
7 Energy (“DE”) as a Planner II.

8 **Q. Please describe your educational background and employment experience.**

9 A. In 2011, I graduated from the School of Public and Environmental Affairs at Indiana
10 University in Bloomington with a Master of Public Affairs and a Master of Science in
11 Environmental Science. There, I worked as a graduate assistant, primarily investigating
12 issues surrounding energy-related funding under the American Recovery and
13 Reinvestment Act of 2009. I also worked as a teaching assistant in graduate school and
14 interned at the White House Council on Environmental Quality in the summer of 2011. I
15 began employment with DE in September, 2014. Prior to that, I worked as a contractor
16 for the U.S. Environmental Protection Agency to coordinate intra-agency modeling
17 discussions.

18 **Q. Have you previously filed testimony before the Missouri Public Service Commission**
19 **(“Commission”) on behalf of DE or any other party?**

20 A. Yes. I submitted testimony in EO-2015-0055 on behalf of DE regarding Union Electric
21 Company d/b/a Ameren Missouri’s proposed Cycle II portfolio under the Missouri
22 Energy Efficiency Investment Act. I also submitted testimony on behalf of DE in ER-
23 2014-0370 regarding Kansas City Power & Light Company’s proposed changes to its

1 customer charges and time-differentiated rates, as well as testimony regarding that
2 company's proposals for the Clean Charge Network.

3 **II. PURPOSE AND SUMMARY OF TESTIMONY**

4 **Q. What is the purpose of your Direct Testimony (Revenue Requirement) in this**
5 **proceeding?**

6 A. The purpose of my Direct Revenue Requirement Testimony is to: (a) summarize DE's
7 interest in demand-side water efficiency; (b) describe how further demand-side efficiency
8 could be promoted by the Missouri-American Water Company ("Company" or
9 "MAWC"); and, (c) suggest how the Commission should require MAWC to encourage
10 greater demand-side efficiency with expenditures targeting 0.5 percent (0.5%) of the
11 Company's annual average total revenue, funded through a regulatory asset account.

12 **III. DIVISION OF ENERGY'S INTEREST IN DEMAND-SIDE WATER**
13 **EFFICIENCY**

14 **Q. Why is the Division of Energy interested in demand-side water efficiency?**

15 A. Energy is required to acquire, treat, and distribute potable water, as well as to collect,
16 treat, and dispose of wastewater. Estimates of the "embedded energy" of water vary, but
17 it is clear that a "water-energy" nexus exists. One compilation of these estimates indicates
18 a range spanning over ten thousand kilowatt-hours per million gallons of water per year
19 involved in water sourcing, conveyance, and treatment, based on factors such as utility
20 size, geography, and treatment requirements.¹ A survey of the National Association of
21 Water Companies' members found that the average energy intensity of water processes,

¹ Young, Rachel. 2014. "Watts in a Drop of Water: Savings at the Water-Energy Nexus." American Council for an Energy-Efficient Economy. <http://aceee.org/sites/default/files/watts-in-drops.pdf>. Accessed December 18, 2015. Pages 5-6.

1 from water source or conveyance to distribution, was 2,300 kilowatt-hours per million
2 gallons.² A Congressional Research Service summary states that an estimated four to
3 thirteen percent (4-13%) of national electricity generation may be used in such
4 processes.³ Regardless of the actual numbers, the efficient use of water results in the
5 efficient use of energy.

6 **Q. Was the water-energy nexus discussed during the Missouri Comprehensive State**
7 **Energy Plan (“CSEP”) process?**

8 A. Yes. The public meeting in Maryville partly focused on this topic, and one of the Steering
9 Committee members for the CSEP process was Company witness Frank L. Kartmann.⁴
10 Chapter 3, part 2, section 2.4 of the CSEP document focuses on the water-energy nexus.⁵

11 **Q. Does the Company acknowledge the existence of a water-energy nexus in its**
12 **testimony for this case?**

13 A. Yes. In his Direct Testimony, Mr. Kartmann specifically discusses “the nexus between
14 the electric and water sectors,” although his treatment of efficiency measures is more
15 focused on efforts on the utility’s side of the meter.⁶ DE witness Jane Epperson will
16 address this “supply-side efficiency” in her testimony.

² Young, Rachel. 2015. “A Survey of Energy Use in Water Companies.” American Council for an Energy-Efficient Economy. <http://aceee.org/sites/default/files/water-company-energy-use.pdf>. Accessed December 22, 2015. Pages 1 and 4.

³ Copeland, Claudia. 2014. “Energy-Water Nexus: The Water Sector’s Energy Use.” Congressional Research Service. CRS Report R43200. <https://www.fas.org/sgp/crs/misc/R43200.pdf>. Accessed December 18, 2015. Summary.

⁴ Division of Energy. 2014. “Public Meeting Report #5: Fuels and Resource Extraction and Energy/Water Nexus.” <https://energy.mo.gov/energy/docs/Maryville%20Meeting%20Summary%20Report.pdf>. Accessed December 22, 2015. Pages 1 and 2.

⁵ Division of Energy. 2015. Missouri Comprehensive State Energy Plan. Pages 91-92.

⁶ Missouri Public Service Commission Case Nos. WR-2015-0301 and SR-2015-0302, *In the Matter of Missouri-American Water Company’s Request for Authority to Implement a General Rate Increase for Water and Sewer Service Provided in Missouri Service Areas*, Corrected Direct Testimony of Frank L. Kartmann on Behalf of Missouri-American Water Company, August 6, 2015, pages 32-33, lines 6-19, 1-4.

1 **Q. Can demand-side efficiency measures and programs in the water utility industry**
2 **benefit water utilities?**

3 A. Yes. As with electric utilities, water utility efficiency initiatives – including those on the
4 demand side – can reduce the need to invest in future plant and reduce operations and
5 maintenance expenses. Company witness Philip C. Wood primarily addresses this issue
6 on the supply side:

7 **Q. CAN PRUDENT CAPITAL SPENDING ENHANCE OPERATIONAL**
8 **SUSTAINABILITY AS WELL AS REDUCE OPERATING EXPENSES IN**
9 **THE SHORT RUN AND LONG RUN?**

10 A. Yes, it can.⁷

11 Demand-side efficiency efforts could lead to a decrease in the need for future capital
12 investments as customers place decreased strains on existing water infrastructure.
13 Demand-side efficiency programs could also decrease operations and maintenance
14 expenses in the short-run, such as fuel and purchased power expenses.

15 **Q. What are the Company's *pro forma* fuel and purchased power expenses?**

16 A. MAWC estimates a total company *pro forma* fuel and purchased power expense of
17 \$12,724,694, third in the category of operations and maintenance expenses only to labor
18 and support services expenses. This represents 10.4 percent (10.4%) of all *pro forma*
19 operations and maintenance expenses.⁸

⁷ Missouri Public Service Commission Case Nos. WR-2015-0301 and SR-2015-0302, *In the Matter of Missouri-American Water Company's Request for Authority to Implement a General Rate Increase for Water and Sewer Service Provided in Missouri Service Areas*, Direct Testimony of Philip C. Wood on Behalf of Missouri-American Water Company, July 31, 2015, page 14, lines 14-17.

⁸ Missouri Public Service Commission Case Nos. WR-2015-0301 and SR-2015-0302, *In the Matter of Missouri-American Water Company's Request for Authority to Implement a General Rate Increase for Water and Sewer Service Provided in Missouri Service Areas*, Summary of Operating and Maintenance Expenses, Depreciation,

1 **Q. How can demand-side efficiency programs also benefit customers?**

2 A. In the near term, customers participating in demand-side efficiency programs will
3 experience bill reductions from direct water and wastewater savings. Longer term, all
4 customers might expect bill reductions due to decreased rate requests by the Company,
5 since its operations and maintenance expenses and capital investments could decrease.

6 **Q. What are the potential savings from a demand-side efficiency measure?**

7 A. An example of the potential for customer savings is the efficiency kits distributed through
8 Bridging The Gap's "WaterWorks!" program. The kits included an efficient showerhead,
9 faucet aerators, and a toilet tank bank.⁹ According to Bridging The Gap's final report on
10 the program, potential savings per kit amount to 20,000 gallons per year based on the
11 manufacturer's estimate.¹⁰

12 **IV. POTENTIAL FOR ADDITIONAL DEMAND-SIDE EFFICIENCY**

13 **Q. Does the Company currently promote demand-side water efficiency?**

14 A. Yes, to some extent. Mr. Kartmann mentions a web link to information on water savings,
15 social media information, promotions at community events, bill inserts, brochures, and
16 media outreach, along with collaborations with the U.S. Environmental Protection
17 Agency and local organizations.¹¹ He also describes a volunteer school outreach program
18 and annual funding for projects such as rain gardens and rain barrels.¹² Additionally, the

Amortization and General Taxes For the Test Year Ended December 31, 2014, July 31, 2015, Schedule CAS-9, page 1, lines 2-17.

⁹ Bridging The Gap. 2013. "WaterWorks! Final Report." Contract No. EECBG-ARRA-OEQ-6. Page 1.

¹⁰ *Ibid*, page 18.

¹¹ Kartmann Corrected Direct, pages 34-35, lines 2-22, 1-3.

¹² *Ibid*, page 35, lines 5-10.

1 Community Action Agencies which implement the Company's billing assistance
2 program provide water conservation education to the customers that they serve.¹³

3 **Q. Has the Company quantified the water or energy savings from any of its educational**
4 **programs?**

5 A. No.¹⁴

6 **Q. Are there demand-side efficiency programs which other subsidiaries of the**
7 **American Water Company, Inc. have implemented?**

8 A. Yes. Pennsylvania American Water provides efficiency kits and a booklet on
9 conservation to some of its customers who receive low-income billing assistance.¹⁵

10 California American Water distributes WaterSense fixtures in partnership with Niagara
11 Conservation and others; it also offers rebates, conducts surveys, training, and other
12 activities, and has districts with inclining block rates.¹⁶

13 **Q. Have other water utilities implemented demand-side efficiency programs?**

14 A. Yes. Utilities in multiple cities and localities across the nation have implemented
15 demand-side efficiency programs offering a range of measures, including efficiency kits,
16 rebates for efficient toilets and rain barrels, and free water audits. For example, Atlanta
17 offers kits which have a showerhead, faucet aerator, and toilet leak-detection tablets, in
18 addition to offering high-efficiency toilet rebates; Austin Water provides free
19 showerheads, rebates for rainwater harvesting, and other offers.¹⁷

¹³ Company response to Data Request DED-DE 1-215.

¹⁴ Company response to Data Request DED-DE 1-206.

¹⁵ Pennsylvania American Water Company. 2015. "Low Income Program."
<http://www.amwater.com/paaw/customer-service/low-income-program.html>. Accessed December 15, 2015.

¹⁶ Company response to Data Request DED-DE 1-207.

¹⁷ American Council for an Energy-Efficient Economy. 2015. "Water Services."
<http://database.aceee.org/city/water-services>. Accessed December 15, 2015.

1 The 2015 survey noted previously found that five out of 11 responding utilities offered
2 conservation programs. These programs included incentives (one utility), direct
3 installations (three utilities), irrigation management (two utilities), and audits (four
4 utilities).¹⁸ It should be noted that the survey included California American Water, which
5 is mentioned above.¹⁹

6 **V. RECOMMENDED REQUIREMENT FOR DEMAND-SIDE EFFICIENCY**
7 **PROGRAMS**

8 **Q. Should the Company be required to implement demand-side efficiency programs?**

9 A. Yes. Mr. Kartmann discussed an aspect of the water-energy nexus in his Direct
10 Testimony, and there are benefits to customers, the utility, and the State of Missouri from
11 encouraging demand-side efficiency.

12 **Q. Should the Company be required to implement demand-side measures and**
13 **programs above and beyond those which it already implements?**

14 A. Yes. Many, though not all, of the Company's demand-side measures are educational in
15 nature, and the Company apparently has not quantified any of the resulting energy or
16 water savings from its educational measures. While DE recognizes the importance of
17 educational programs, programs with measures that produce measurable and substantive
18 savings ultimately matter for producing known energy savings and complying with state
19 and federal environmental regulations.

¹⁸ Young, 2015, pages 11-12.

¹⁹ *Ibid*, page 13.

1 **Q. At what level should the Company fund demand-side efficiency programs and**
2 **measures?**

3 A. The Commission should authorize an amount of up to 0.5 percent (0.5%) of MAWC's
4 average annual total revenue – as determined in this rate case – to fund demand-side
5 efficiency programs. Based on the Company's stated total revenue of \$310,949,405,²⁰
6 this would amount to approximately \$1,554,747.03 at most. The funding authorization
7 could be divided between water and wastewater demand-side efficiency measures based
8 on the relative proportions of total water and wastewater revenue determined in this case.
9 Program costs would potentially be recoverable in the next rate case, subject to auditing.
10 The quantification of actual water and energy savings from the programs and measures
11 implemented by the Company should be determined by a collaborative, as explained
12 below.

13 **Q. How much of this funding should be reserved for administration, outreach, and**
14 **evaluation?**

15 A. The Commission should allow no more than 20 percent (20%) of the funding
16 authorization to be used for administration, outreach, and evaluation purposes each year.

17 **Q. Should the funding level be required to reach 0.5% in each year?**

18 A. While the funding level might initially be below 0.5%, additional programs might bring
19 the funding up to an annual average level of 0.5%. Consequently, the target for this
20 funding should be based on an average of the Company's annual spending.

²⁰ Missouri Public Service Commission Case Nos. WR-2015-0301 and SR-2015-0302, *In the Matter of Missouri-American Water Company's Request for Authority to Implement a General Rate Increase for Water and Sewer Service Provided in Missouri Service Areas*, Overall Revenue Requirement Summary For the Test Year Ended December 31, 2014, July 31, 2015, Schedule CAS-1, page 1, line 20.

1 **Q. How does the proposed level of funding compare to funding levels in other**
2 **jurisdictions?**

3 A. This year, California American Water was authorized to spend \$5,950,302 on
4 conservation programs and rebates over three years, compared to total annual revenues of
5 \$206,415,000.²¹ Annually, this represents 0.961 percent (0.961%) of total annual
6 revenues. Austin Water Utility's total approved fiscal year 2015-2016 budget of
7 \$518,308,964 includes \$4,332,589 for water conservation, which funds the administration
8 and enforcement of conservation ordinances, incentive program administration, outreach,
9 and drought response; conservation funding represents 0.836 percent (0.836%) of Austin
10 Water's total budget.²² In the City of Atlanta's fiscal year 2016 adopted budget, the
11 Water & Wastewater Renewal & Extension Fund includes \$156,045 out of \$558,617,211,
12 or 0.0279 percent (0.0279%) of the Fund's total, for an Atlanta Water Customer Rebate
13 Program under the Department Of Watershed Management.²³ The demand-side
14 efficiency proposal for MAWC is within this range of observations.

15 **Q. Should the Company be required to consult with a collaborative on its demand-side**
16 **efficiency programs and measures?**

17 A. Yes. Collaboratives have been implemented for the demand-side efficiency programs of
18 all of the investor-owned electric and natural gas utilities in Missouri. These
19 collaboratives receive information from the utilities on program progress and

²¹ Business Wire. 2015. "California American Water to Invest \$126 Million in Local Infrastructure in 2015, 2016, and 2017." <http://www.businesswire.com/news/home/20150410005848/en/California-American-Water-Invest-126-Million-Local>. Accessed December 15, 2015.

²² City of Austin, Texas Budget Office. 2015. "2015-16 Approved Budget." Vol. I. https://assets.austintexas.gov/budget/15-16/downloads/VolIApproved_Final.pdf. Accessed December 16, 2015. Pages 603 and 685.

²³ City of Atlanta, Office of Budget & Fiscal Policy. 2015. "Fiscal Year 2016 Adopted Budget." <http://www.atlantaga.gov/modules/showdocument.aspx?documentid=19706>. Accessed December 16, 2015. Pages 503-504.

1 implementation and provide input on program changes, along with any needed technical
2 assistance. In addition to tracking program progress and providing for transparency, the
3 collaboratives serve as valuable forums for previewing large-scale changes in program
4 portfolios. Membership reflects a diverse group of stakeholder interests, providing
5 utilities with a broader perspective on the programs and measures which are offered.
6 Collaboratives can also assist with suggesting how utilities can collaborate with each
7 other on demand-side efficiency initiatives, a particularly important consideration for the
8 water-energy nexus.

9 **Q. How would MAWC's demand-side efficiency programs and measures be**
10 **determined and evaluated?**

11 A. The Company should consult with a collaborative of interested stakeholders, similar to
12 those groups described above. The Company should also work with the collaborative to
13 determine how the savings from its programs and measures will be evaluated. Although
14 collaboratives typically involve parties which participate in the originating cases, DE
15 would encourage the Commission to allow a broader set of participants.

16 **Q. What example measures or programs could the Company implement?**

17 A. The most immediate examples include the demand-side efficiency programs mentioned
18 above from the California and Pennsylvania American Water Companies. The latter
19 company's program in particular has the attraction of being a part of its billing assistance
20 program, reducing the end-use demand of those customers least able to afford their bills.
21 MAWC should implement demand-side efficiency programs as part of its own billing
22 assistance program; the Company could similarly sponsor the distribution – or even direct
23 installation – of efficiency kits, such as those provided through Bridging The Gap's

1 “WaterWorks!” program.²⁴ Under that program, the unit cost for self-installed efficiency
2 kits was \$11.42.²⁵ If, as recommended, 20 percent (20%) of the proposed funding for
3 demand-side efficiency is reserved for administration, outreach, and evaluation purposes,
4 the 0.5% maximum funding amount proposed above could fund up to 108,914 self-
5 installed kits. Currently, the Company does not distribute any efficiency kits.²⁶

6 The multifamily sector could offer excellent opportunities for the Company to implement
7 demand-side efficiency measures. These measures could be delivered in bulk at a lower
8 cost to tenants by multifamily property owners. For instance, Bridging The Gap
9 recommended distributing the type of kit cited above to multifamily property owners and
10 allowing their maintenance workers to install the kits; this would reduce the unit cost of
11 each kit to \$7.00 and improve the ability to collect data.²⁷

12 **Q. If the Company were to undertake demand-side efficiency efforts in conjunction**
13 **with its billing assistance program, would the collaborative that you mentioned need**
14 **to be involved in the billing assistance program?**

15 A. Yes, to an extent. At the least, the collaborative would need to engage with the Company
16 to determine which demand-side measures are appropriate for the billing assistance
17 program and how such measures should be implemented.

²⁴ Bridging The Gap, 2013, page 1.

²⁵ *Ibid*, page 2.

²⁶ Company response to Data Request DED-DE 1-216.

²⁷ Bridging The Gap, 2013, page 25.

1 **Q. If the Commission accepts your proposal regarding demand-side efficiency, how**
2 **could it be funded?**

3 A. Demand-side efficiency measures and programs could be funded through a regulatory
4 asset account, to be eligible for recovery in the next general rate proceeding. The amounts
5 in this account could be amortized over six years, effective as of the dates in this case.

6 **Q. Is such a mechanism currently in use for demand-side efficiency programs in**
7 **Missouri?**

8 A. Yes. Missouri Gas Energy uses this type of mechanism in conjunction with its efficiency
9 programs, which are funded by an annual budget approved by a collaborative; the
10 efficiency programs are funded annually, "... toward the goal of 0.5% of the Company's
11 gross operating revenues." The expenses incurred by Missouri Gas Energy for these
12 programs are subject to a prudence review.²⁸

13 **VI. CONCLUSIONS**

14 **Q. Please summarize your conclusions and the positions of DE.**

15 A. DE is interested in promoting demand-side water efficiency, since energy is required to
16 acquire, process, and distribute water. While MAWC has taken some steps to promote
17 demand-side efficiency, it could do more. DE proposes that the Commission authorize
18 expenditures of up to 0.5 percent (0.5%) of the Company's average annual total revenue
19 for the purposes of promoting quantifiable demand-side water and wastewater savings, in
20 consultation with a collaborative.

²⁸ Missouri Public Service Commission, JG-2015-0294, Missouri Gas Energy, Schedule of Rates and Charges and General Terms and Conditions for Gas Service, Promotional Practices (Schedule PP), Effective May 1, 2015, Sheet No. 99.

1 **Q. Does this conclude your Direct Testimony (Revenue Requirement) in this case?**

2 A. Yes.