

**MISSOURI PUBLIC SERVICE COMMISSION**

**STAFF REPORT**

**COST OF SERVICE**

**APPENDIX 2**

**Support for Staff  
Cost of  
Capital Recommendations**

**MISSOURI-AMERICAN WATER COMPANY**

**CASE NO. WR-2020-0344**

*Jefferson City, Missouri  
November 2020*

\*\* Denotes Confidential Information \*\*

**AN ANALYSIS OF THE COST OF CAPITAL**

**FOR**

**MISSOURI-AMERICAN WATER COMPANY**

**CASE NOS. WR-2020-0344 & SR-2020-0345**

**APPENDIX 2**

**SCHEDULES**

**BY**

**Seung Joun Won, PhD**

**Financial Analysis**

**MISSOURI PUBLIC SERVICE COMMISSION**

**November 24, 2020**

**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

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**Missouri-American Water Company  
Case Nos. WR-2020-0344 & SR-2020-0345**

**Federal Reserve Discount Rates Changes and Federal Reserve Funds Rates Changes**

Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate	Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate
01/01/83	8.50%		01/03/01	5.75%	6.00%
12/31/83	8.50%		01/04/01	5.50%	6.00%
04/09/84	9.00%		01/31/01	5.00%	5.50%
11/21/84	8.50%		03/20/01	4.50%	5.00%
12/24/84	8.00%		04/18/01	4.00%	4.50%
05/20/85	7.50%		05/15/01	3.50%	4.00%
03/07/86	7.00%		06/27/01	3.25%	3.75%
04/21/86	6.50%		08/21/01	3.00%	3.50%
07/11/86	6.00%		09/17/01	2.50%	3.00%
08/21/86	5.50%		10/02/01	2.00%	2.50%
09/04/87	6.00%		11/06/01	1.50%	2.00%
08/09/88	6.50%		12/11/01	1.25%	1.75%
02/24/89	7.00%		11/06/02	0.75%	1.25%
07/13/90		8.00% *	01/09/03	2.25%	** 1.25%
10/29/90		7.75%	06/25/03	2.00%	1.00%
11/13/90		7.50%	06/30/04	2.25%	1.25%
12/07/90		7.25%	08/10/04	2.50%	1.50%
12/18/90		7.00%	09/21/04	2.75%	1.75%
12/19/90	6.50%		11/10/04	3.00%	2.00%
01/09/91		6.75%	12/14/04	3.25%	2.25%
02/01/91	6.00%	6.25%	02/02/05	3.50%	2.50%
03/08/91		6.00%	03/22/05	3.75%	2.75%
04/30/91	5.50%	5.75%	05/03/05	4.00%	3.00%
08/06/91		5.50%	06/30/05	4.25%	3.25%
09/13/91	5.00%	5.25%	08/09/05	4.50%	3.50%
10/31/91		5.00%	09/20/05	4.75%	3.75%
11/06/91	4.50%	4.75%	11/01/05	5.00%	4.00%
12/06/91		4.50%	12/13/05	5.25%	4.25%
12/20/91	3.50%	4.00%	01/31/06	5.50%	4.50%
04/09/92		3.75%	03/28/06	5.75%	4.75%
07/02/92	3.00%	3.25%	05/10/06	6.00%	5.00%
09/04/92		3.00%	06/29/06	6.25%	5.25%
01/01/93			08/17/07	5.75%	5.25%
12/31/93	No Changes	No Changes	09/18/07	5.25%	4.75%
02/04/94		3.25%	10/31/07	5.00%	4.50%
03/22/94		3.50%	12/11/07	4.75%	4.25%
04/18/94		3.75%	01/22/08	4.00%	3.50%
05/17/94	3.50%	4.25%	01/30/08	3.50%	3.00%
08/16/94	4.00%	4.75%	03/16/08	3.25%	2.25%
11/15/94	4.75%	5.50%	03/18/08	2.50%	2.25%
02/01/95	5.25%	6.00%	04/30/08	2.25%	2.00%
07/06/95		5.75%	10/08/08	1.75%	1.50%
12/19/95		5.50%	10/28/08	1.25%	1.00%
01/31/96	5.00%	5.25%	12/30/08	0.50%	0% - .25%
03/25/97		5.50%	02/19/10	0.75%	0% - .25%
12/12/97	5.00%		12/17/15	1.00%	0.38%
01/09/98	5.00%		12/15/16	1.25%	0.54%
03/06/98	5.00%		03/16/17	1.50%	0.79%
09/29/98		5.25%	06/15/17	1.75%	1.04%
10/15/98	4.75%	5.00%	12/14/17	2.00%	1.30%
11/17/98	4.50%	4.75%	03/22/18	2.25%	1.51%
06/30/99	4.50%	5.00%	06/14/18	2.50%	1.82%
08/24/99	4.75%	5.25%	09/27/18	2.75%	1.95%
11/16/99	5.00%	5.50%	12/20/18	3.00%	2.27%
02/02/00	5.25%	5.75%	08/01/19	2.75%	2.13%
03/21/00	5.50%	6.00%	09/19/19	2.50%	2.04%
05/19/00	6.00%	6.50%	10/31/19	2.25%	1.83%
			03/04/20	1.75%	0.65%

\* Staff began tracking the Federal Funds Rate.

\*\*Revised discount window program begins. Reflects rate on primary credit. This revised discount window policy results in incomparability of the discount rates after January 9, 2003 to discount rates before January 9, 2003.

Source:

Federal Reserve Discount rate

<https://fred.stlouisfed.org/series/INTDSRUM193N>

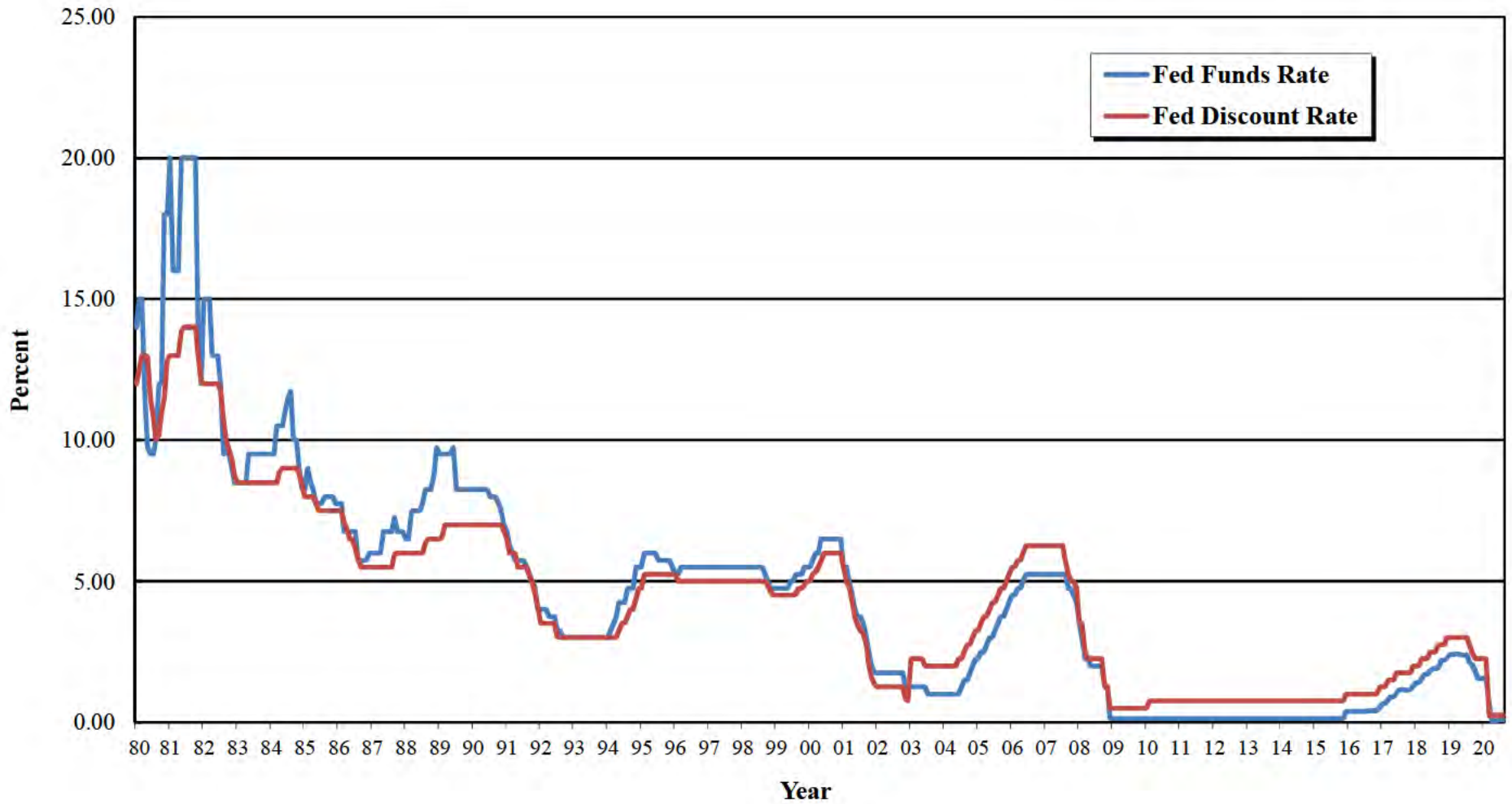
Federal Reserve Funds rate

<https://fred.stlouisfed.org/series/FEDFUNDS>

Note: Interest rates as of December 31 for each year are underlined.

Missouri-American Water Company  
Case Nos. WR-2020-0344 & SR-2020-0345

Federal Reserve Discount Rates and Federal Funds Rates  
1980 - 2020



**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

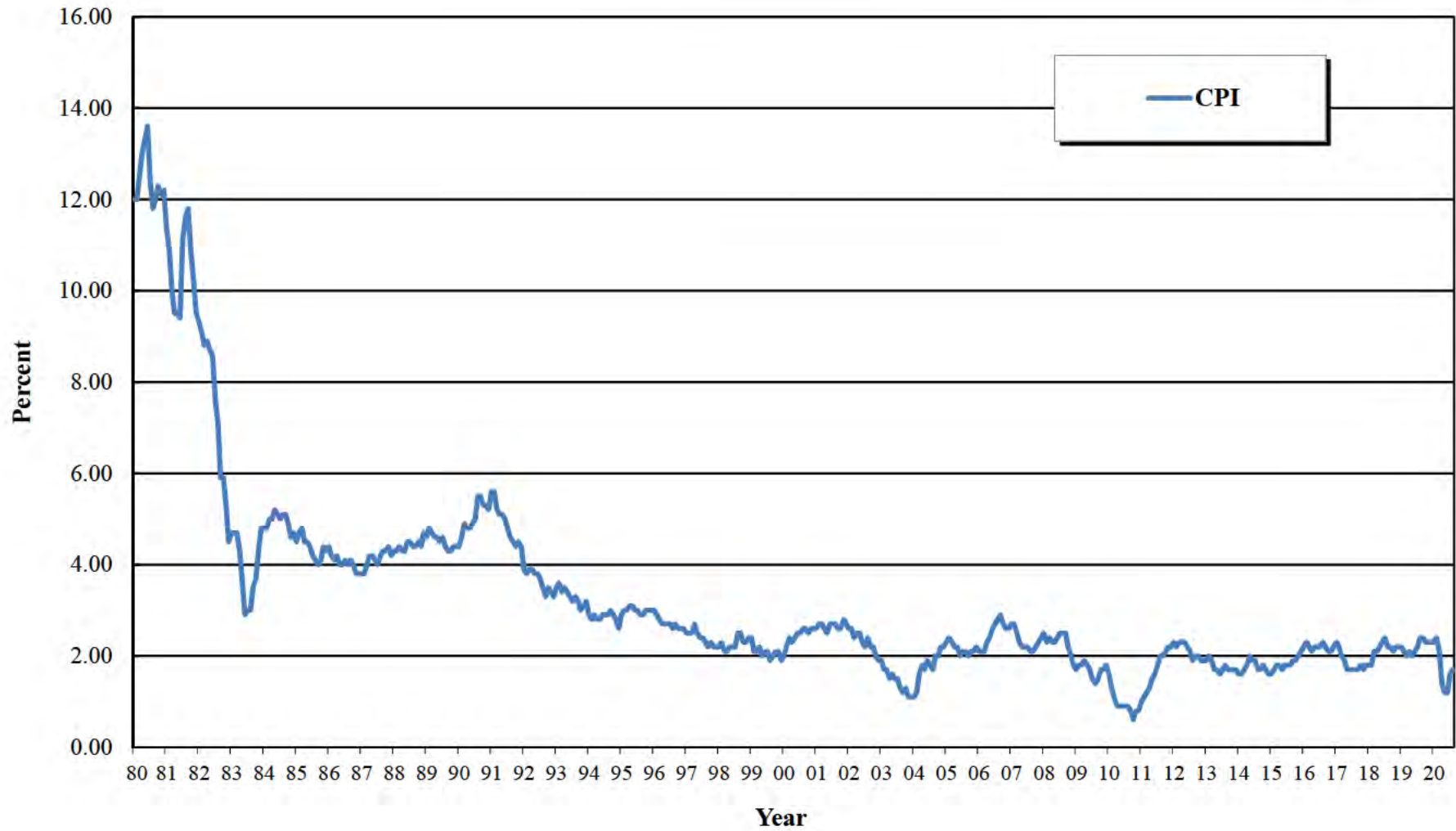
Rate of Inflation

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	12.00	Jan 1986	4.40	Jan 1992	3.90	Jan 1998	2.20	Jan 2004	1.10	Jan 2010	1.60	Jan 2016	2.20
Feb	12.00	Feb	4.20	Feb	3.80	Feb	2.30	Feb	1.20	Feb	1.30	Feb	2.30
Mar	12.50	Mar	4.10	Mar	3.90	Mar	2.10	Mar	1.60	Mar	1.10	Mar	2.20
Apr	13.00	Apr	4.20	Apr	3.90	Apr	2.10	Apr	1.80	Apr	0.90	Apr	2.10
May	13.30	May	4.00	May	3.80	May	2.20	May	1.70	May	0.90	May	2.20
Jun	13.60	Jun	4.00	Jun	3.80	Jun	2.20	Jun	1.90	Jun	0.90	Jun	2.20
Jul	12.40	Jul	4.10	Jul	3.70	Jul	2.20	Jul	1.80	Jul	0.90	Jul	2.20
Aug	11.80	Aug	4.00	Aug	3.50	Aug	2.50	Aug	1.70	Aug	0.90	Aug	2.30
Sep	12.00	Sep	4.10	Sep	3.30	Sep	2.50	Sep	2.00	Sep	0.80	Sep	2.20
Oct	12.30	Oct	4.00	Oct	3.50	Oct	2.30	Oct	2.00	Oct	0.60	Oct	2.10
Nov	12.10	Nov	3.80	Nov	3.40	Nov	2.30	Nov	2.20	Nov	0.80	Nov	2.10
Dec	12.20	Dec	3.80	Dec	3.30	Dec	2.40	Dec	2.20	Dec	0.80	Dec	2.20
Jan 1981	11.40	Jan 1987	3.80	Jan 1993	3.50	Jan 1999	2.40	Jan 2005	2.30	Jan 2011	1.00	Jan 2017	2.30
Feb	10.90	Feb	3.80	Feb	3.60	Feb	2.10	Feb	2.40	Feb	1.10	Feb	2.20
Mar	10.00	Mar	4.00	Mar	3.40	Mar	2.10	Mar	2.30	Mar	1.20	Mar	2.00
Apr	9.50	Apr	4.20	Apr	3.50	Apr	2.20	Apr	2.20	Apr	1.30	Apr	1.90
May	9.50	May	4.20	May	3.40	May	2.00	May	2.20	May	1.50	May	1.70
Jun	9.40	Jun	4.10	Jun	3.30	Jun	2.10	Jun	2.00	Jun	1.60	Jun	1.70
Jul	11.10	Jul	4.00	Jul	3.20	Jul	2.10	Jul	2.10	Jul	1.80	Jul	1.70
Aug	11.60	Aug	4.20	Aug	3.30	Aug	1.90	Aug	2.10	Aug	2.00	Aug	1.70
Sep	11.80	Sep	4.30	Sep	3.20	Sep	2.00	Sep	2.00	Sep	2.00	Sep	1.70
Oct	10.90	Oct	4.30	Oct	3.00	Oct	2.10	Oct	2.10	Oct	2.10	Oct	1.80
Nov	10.20	Nov	4.40	Nov	3.10	Nov	2.10	Nov	2.10	Nov	2.20	Nov	1.70
Dec	9.50	Dec	4.20	Dec	3.20	Dec	1.90	Dec	2.20	Dec	2.20	Dec	1.80
Jan 1982	9.30	Jan 1988	4.30	Jan 1994	2.90	Jan 2000	2.00	Jan 2006	2.10	Jan 2012	2.30	Jan 2018	1.80
Feb	9.10	Feb	4.30	Feb	2.80	Feb	2.20	Feb	2.10	Feb	2.20	Feb	1.80
Mar	8.80	Mar	4.40	Mar	2.90	Mar	2.40	Mar	2.10	Mar	2.30	Mar	2.10
Apr	8.90	Apr	4.30	Apr	2.80	Apr	2.30	Apr	2.30	Apr	2.30	Apr	2.10
May	8.70	May	4.30	May	2.80	May	2.40	May	2.40	May	2.30	May	2.20
Jun	8.60	Jun	4.50	Jun	2.90	Jun	2.50	Jun	2.60	Jun	2.20	Jun	2.30
Jul	7.60	Jul	4.50	Jul	2.90	Jul	2.50	Jul	2.70	Jul	2.10	Jul	2.40
Aug	7.10	Aug	4.40	Aug	2.90	Aug	2.60	Aug	2.80	Aug	1.90	Aug	2.20
Sep	5.90	Sep	4.40	Sep	3.00	Sep	2.60	Sep	2.90	Sep	2.00	Sep	2.20
Oct	5.90	Oct	4.50	Oct	2.90	Oct	2.50	Oct	2.70	Oct	2.00	Oct	2.10
Nov	5.30	Nov	4.40	Nov	2.80	Nov	2.60	Nov	2.60	Nov	1.90	Nov	2.20
Dec	4.50	Dec	4.70	Dec	2.60	Dec	2.60	Dec	2.60	Dec	1.90	Dec	2.20
Jan 1983	4.70	Jan 1989	4.60	Jan 1995	2.90	Jan 2001	2.60	Jan 2007	2.70	Jan 2013	1.90	Jan 2019	2.20
Feb	4.70	Feb	4.80	Feb	3.00	Feb	2.70	Feb	2.70	Feb	2.00	Feb	2.10
Mar	4.70	Mar	4.70	Mar	3.00	Mar	2.70	Mar	2.50	Mar	1.90	Mar	2.00
Apr	4.30	Apr	4.60	Apr	3.10	Apr	2.60	Apr	2.30	Apr	1.70	Apr	2.10
May	3.60	May	4.60	May	3.10	May	2.50	May	2.20	May	1.70	May	2.00
Jun	2.90	Jun	4.50	Jun	3.00	Jun	2.70	Jun	2.20	Jun	1.60	Jun	2.10
Jul	3.00	Jul	4.60	Jul	3.00	Jul	2.70	Jul	2.20	Jul	1.70	Jul	2.20
Aug	3.00	Aug	4.40	Aug	2.90	Aug	2.70	Aug	2.10	Aug	1.80	Aug	2.40
Sep	3.50	Sep	4.30	Sep	2.90	Sep	2.60	Sep	2.10	Sept	1.70	Sept	2.40
Oct	3.70	Oct	4.30	Oct	3.00	Oct	2.60	Oct	2.20	Oct	1.70	Oct	2.30
Nov	4.30	Nov	4.40	Nov	3.00	Nov	2.80	Nov	2.30	Nov	1.70	Nov	2.30
Dec	4.80	Dec	4.40	Dec	3.00	Dec	2.70	Dec	2.40	Dec	1.70	Dec	2.30
Jan 1984	4.80	Jan 1990	4.40	Jan 1996	3.00	Jan 2002	2.60	Jan 2008	2.50	Jan 2014	1.60	Jan 2020	2.30
Feb	4.80	Feb	4.60	Feb	2.90	Feb	2.60	Feb	2.30	Feb	1.60	Feb	2.40
Mar	5.00	Mar	4.90	Mar	2.80	Mar	2.40	Mar	2.40	Mar	1.70	Mar	2.10
Apr	5.00	Apr	4.80	Apr	2.70	Apr	2.50	Apr	2.30	Apr	1.80	Apr	1.40
May	5.20	May	4.80	May	2.70	May	2.50	May	2.30	May	2.00	May	1.20
Jun	5.10	Jun	4.90	Jun	2.70	Jun	2.30	Jun	2.40	Jun	1.90	Jun	1.20
Jul	5.00	Jul	5.00	Jul	2.70	Jul	2.20	Jul	2.50	Jul	1.90	Jul	1.60
Aug	5.10	Aug	5.50	Aug	2.60	Aug	2.40	Aug	2.50	Aug	1.70	Aug	1.70
Sep	5.10	Sep	5.50	Sep	2.70	Sep	2.20	Sep	2.50	Sep	1.70	Sep	0.00
Oct	4.90	Oct	5.30	Oct	2.60	Oct	2.20	Oct	2.20	Oct	1.80	Oct	0.00
Nov	4.60	Nov	5.30	Nov	2.60	Nov	2.00	Nov	2.00	Nov	1.70	Nov	0.00
Dec	4.70	Dec	5.20	Dec	2.60	Dec	1.90	Dec	1.80	Dec	1.60	Dec	0.00
Jan 1985	4.50	Jan 1991	5.60	Jan 1997	2.50	Jan 2003	1.90	Jan 2009	1.70	Jan 2015	1.60		
Feb	4.70	Feb	5.60	Feb	2.50	Feb	1.70	Feb	1.80	Feb	1.70		
Mar	4.80	Mar	5.20	Mar	2.50	Mar	1.70	Mar	1.80	Mar	1.80		
Apr	4.50	Apr	5.10	Apr	2.70	Apr	1.50	Apr	1.90	Apr	1.80		
May	4.50	May	5.10	May	2.50	May	1.60	May	1.80	May	1.70		
Jun	4.40	Jun	5.00	Jun	2.40	Jun	1.50	Jun	1.70	Jun	1.80		
Jul	4.20	Jul	4.80	Jul	2.40	Jul	1.50	Jul	1.50	Jul	1.80		
Aug	4.10	Aug	4.60	Aug	2.30	Aug	1.30	Aug	1.40	Aug	1.80		
Sep	4.00	Sep	4.50	Sep	2.20	Sep	1.20	Sep	1.50	Sep	1.90		
Oct	4.10	Oct	4.40	Oct	2.30	Oct	1.30	Oct	1.70	Oct	1.90		
Nov	4.40	Nov	4.50	Nov	2.20	Nov	1.10	Nov	1.70	Nov	2.00		
Dec	4.30	Dec	4.40	Dec	2.20	Dec	1.10	Dec	1.80	Dec	2.10		

Source: U.S. Dept. of Labor, Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers less food and energy, Change for 12-Month Period, Bureau of Labor Statistics, <https://data.bls.gov/pdq/SurveyOutputServlet>.

Missouri-American Water Company  
Case Nos. WR-2020-0344 & SR-2020-0345

**Rate of Inflation**  
**1980 - 2020**



**Missouri-American Water Company**  
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Average Yields on Moody's Public Utility Bonds

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	12.12	Jan 1986	10.66	Jan 1992	8.67	Jan 1998	7.03	Jan 2004	6.23	Jan 2010	5.83	Jan 2016	4.62
Feb	13.48	Feb	10.16	Feb	8.77	Feb	7.09	Feb	6.17	Feb	5.94	Feb	4.44
Mar	14.33	Mar	9.33	Mar	8.84	Mar	7.13	Mar	6.01	Mar	5.90	Mar	4.40
Apr	13.50	Apr	9.02	Apr	8.79	Apr	7.12	Apr	6.38	April	5.87	Apr	4.16
May	12.17	May	9.52	May	8.72	May	7.11	May	6.68	May	5.59	May	4.06
Jun	11.87	Jun	9.51	Jun	8.64	Jun	6.99	Jun	6.53	Jun	5.62	Jun	3.93
Jul	12.12	Jul	9.19	Jul	8.46	Jul	6.99	Jul	6.34	Jul	5.41	Jul	3.70
Aug	12.82	Aug	9.15	Aug	8.34	Aug	6.96	Aug	6.18	Aug	5.10	Aug	3.73
Sep	13.29	Sep	9.42	Sep	8.32	Sep	6.88	Sep	6.01	Sep	5.10	Sep	3.80
Oct	13.53	Oct	9.39	Oct	8.44	Oct	6.88	Oct	5.95	Oct	5.20	Oct	3.90
Nov	14.07	Nov	9.15	Nov	8.53	Nov	6.96	Nov	5.97	Nov	5.45	Nov	4.21
Dec	14.48	Dec	8.96	Dec	8.36	Dec	6.84	Dec	5.93	Dec	5.64	Dec	4.39
Jan 1981	14.22	Jan 1987	8.77	Jan 1993	8.23	Jan 1999	6.87	Jan 2005	5.80	Jan 2011	5.64	Jan 2017	4.24
Feb	14.84	Feb	8.81	Feb	8.00	Feb	7.00	Feb	5.64	Feb	5.73	Feb	4.25
Mar	14.86	Mar	8.75	Mar	7.85	Mar	7.18	Mar	5.86	Mar	5.62	Mar	4.30
Apr	15.32	Apr	9.30	Apr	7.76	Apr	7.16	Apr	5.72	Apr	5.62	Apr	4.19
May	15.84	May	9.82	May	7.78	May	7.42	May	5.60	May	5.38	May	4.19
Jun	15.27	Jun	9.87	Jun	7.68	Jun	7.70	Jun	5.39	Jun	5.32	Jun	4.01
Jul	15.87	Jul	10.01	Jul	7.53	Jul	7.66	Jul	5.50	Jul	5.34	July	4.06
Aug	16.33	Aug	10.33	Aug	7.21	Aug	7.86	Aug	5.51	Aug	4.78	Aug	3.92
Sep	16.89	Sep	11.00	Sep	7.01	Sep	7.87	Sep	5.54	Sep	4.61	Sep	3.93
Oct	16.76	Oct	11.32	Oct	6.99	Oct	8.02	Oct	5.79	Oct	4.66	Oct	3.97
Nov	15.50	Nov	10.82	Nov	7.30	Nov	7.86	Nov	5.88	Nov	4.37	Nov	3.88
Dec	15.77	Dec	10.99	Dec	7.33	Dec	8.04	Dec	5.83	Dec	4.47	Dec	3.85
Jan 1982	16.73	Jan 1988	10.75	Jan 1994	7.31	Jan 2000	8.22	Jan 2006	5.77	Jan 2012	4.48	Jan 2018	3.91
Feb	16.72	Feb	10.11	Feb	7.44	Feb	8.10	Feb	5.83	Feb	4.47	Feb	4.15
Mar	16.07	Mar	10.11	Mar	7.83	Mar	8.14	Mar	5.98	Mar	4.59	Mar	4.21
Apr	15.82	Apr	10.53	Apr	8.20	Apr	8.14	Apr	6.28	Apr	4.54	Apr	4.24
May	15.60	May	10.75	May	8.32	May	8.56	May	6.39	May	4.36	May	4.36
Jun	16.18	Jun	10.71	Jun	8.31	Jun	8.22	June	6.39	Jun	4.26	Jun	4.37
Jul	16.04	Jul	10.96	Jul	8.47	Jul	8.17	July	6.37	Jul	4.12	Jul	4.35
Aug	15.22	Aug	11.09	Aug	8.41	Aug	8.06	Aug	6.20	Aug	4.18	Aug	4.33
Sep	14.56	Sep	10.56	Sep	8.65	Sep	8.15	Sep	6.03	Sep	4.17	Sep	4.41
Oct	13.88	Oct	9.92	Oct	8.88	Oct	8.08	Oct	6.01	Oct	4.04	Oct	4.56
Nov	13.58	Nov	9.89	Nov	9.00	Nov	8.03	Nov	5.82	Nov	3.95	Nov	4.65
Dec	13.55	Dec	10.02	Dec	8.79	Dec	7.79	Dec	5.83	Dec	4.10	Dec	4.51
Jan 1983	13.46	Jan 1989	10.02	Jan 1995	8.77	Jan 2001	7.76	Jan 2007	5.96	Jan 2013	4.24	Jan 2019	4.48
Feb	13.60	Feb	10.02	Feb	8.56	Feb	7.69	Feb	5.91	Feb	4.29	Feb	4.35
Mar	13.28	Mar	10.16	Mar	8.41	Mar	7.59	Mar	5.87	Mar	4.29	Mar	4.26
Apr	13.03	Apr	10.14	Apr	8.30	Apr	7.81	Apr	6.01	Apr	4.08	Apr	4.18
May	13.00	May	9.92	May	7.93	May	7.88	May	6.03	May	4.24	May	4.10
Jun	13.17	Jun	9.49	Jun	7.62	Jun	7.75	Jun	6.34	Jun	4.63	Jun	3.93
Jul	13.28	Jul	9.34	Jul	7.73	Jul	7.71	Jul	6.28	Jul	4.78	Jul	3.79
Aug	13.50	Aug	9.37	Aug	7.86	Aug	7.57	Aug	6.28	Aug	4.85	Aug	3.96
Sep	13.35	Sep	9.43	Sep	7.62	Sep	7.73	Sep	6.24	Sept	4.90	Sept	3.44
Oct	13.19	Oct	9.37	Oct	7.46	Oct	7.64	Oct	6.17	Oct	4.78	Oct	3.45
Nov	13.33	Nov	9.33	Nov	7.40	Nov	7.61	Nov	6.04	Nov	4.86	Nov	3.48
Dec	13.48	Dec	9.31	Dec	7.21	Dec	7.86	Dec	6.23	Dec	4.88	Dec	3.45
Jan 1984	13.40	Jan 1990	9.44	Jan 1996	7.20	Jan 2002	7.69	Jan 2008	6.08	Jan 2014	4.72	Jan 2020	3.34
Feb	13.50	Feb	9.66	Feb	7.37	Feb	7.62	Feb	6.28	Feb	4.64	Feb	3.16
Mar	14.03	Mar	9.75	Mar	7.72	Mar	7.83	Mar	6.29	Mar	4.64	Mar	3.59
Apr	14.30	Apr	9.87	Apr	7.88	Apr	7.74	Apr	6.36	Apr	4.52	Apr	3.31
May	14.95	May	9.89	May	7.99	May	7.76	May	6.38	May	4.37	May	3.22
Jun	15.16	Jun	9.69	Jun	8.07	Jun	7.67	Jun	6.50	Jun	4.42	Jun	3.10
Jul	14.92	Jul	9.66	Jul	8.02	Jul	7.54	Jul	6.50	Jul	4.35	Jul	2.77
Aug	14.29	Aug	9.84	Aug	7.84	Aug	7.34	Aug	6.48	Aug	4.28	Aug	2.76
Sep	14.04	Sep	10.01	Sep	8.01	Sep	7.23	Sep	6.59	Sep	4.40	Sep	0.00
Oct	13.68	Oct	9.94	Oct	7.76	Oct	7.43	Oct	7.70	Oct	4.24	Oct	0.00
Nov	13.15	Nov	9.76	Nov	7.48	Nov	7.31	Nov	7.80	Nov	4.29	Nov	0.00
Dec	12.96	Dec	9.57	Dec	7.58	Dec	7.20	Dec	6.87	Dec	4.18	Dec	0.00
Jan 1985	12.88	Jan 1991	9.56	Jan 1997	7.79	Jan 2003	7.13	Jan 2009	6.77	Jan 2015	3.83		
Feb	13.00	Feb	9.31	Feb	7.68	Feb	6.92	Feb	6.72	Feb	3.91		
Mar	13.66	Mar	9.39	Mar	7.92	Mar	6.80	Mar	6.85	Mar	3.97		
Apr	13.42	Apr	9.30	Apr	8.08	Apr	6.68	Apr	6.90	Apr	3.96		
May	12.89	May	9.29	May	7.94	May	6.35	May	6.83	May	4.38		
Jun	11.91	Jun	9.44	Jun	7.77	Jun	6.21	Jun	6.54	Jun	4.60		
Jul	11.88	Jul	9.40	Jul	7.52	Jul	6.54	Jul	6.15	Jul	4.63		
Aug	11.93	Aug	9.16	Aug	7.57	Aug	6.78	Aug	5.80	Aug	4.54		
Sep	11.95	Sep	9.03	Sep	7.50	Sep	6.58	Sep	5.60	Sep	4.68		
Oct	11.84	Oct	8.99	Oct	7.37	Oct	6.50	Oct	5.64	Oct	4.63		
Nov	11.33	Nov	8.93	Nov	7.24	Nov	6.44	Nov	5.71	Nov	4.73		
Dec	10.82	Dec	8.76	Dec	7.16	Dec	6.35	Dec	5.86	Dec	4.69		

Source:  
<https://fred.stlouisfed.org/series/DBAA>



**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

Average Yields on Thirty-Year U.S. Treasury Bonds

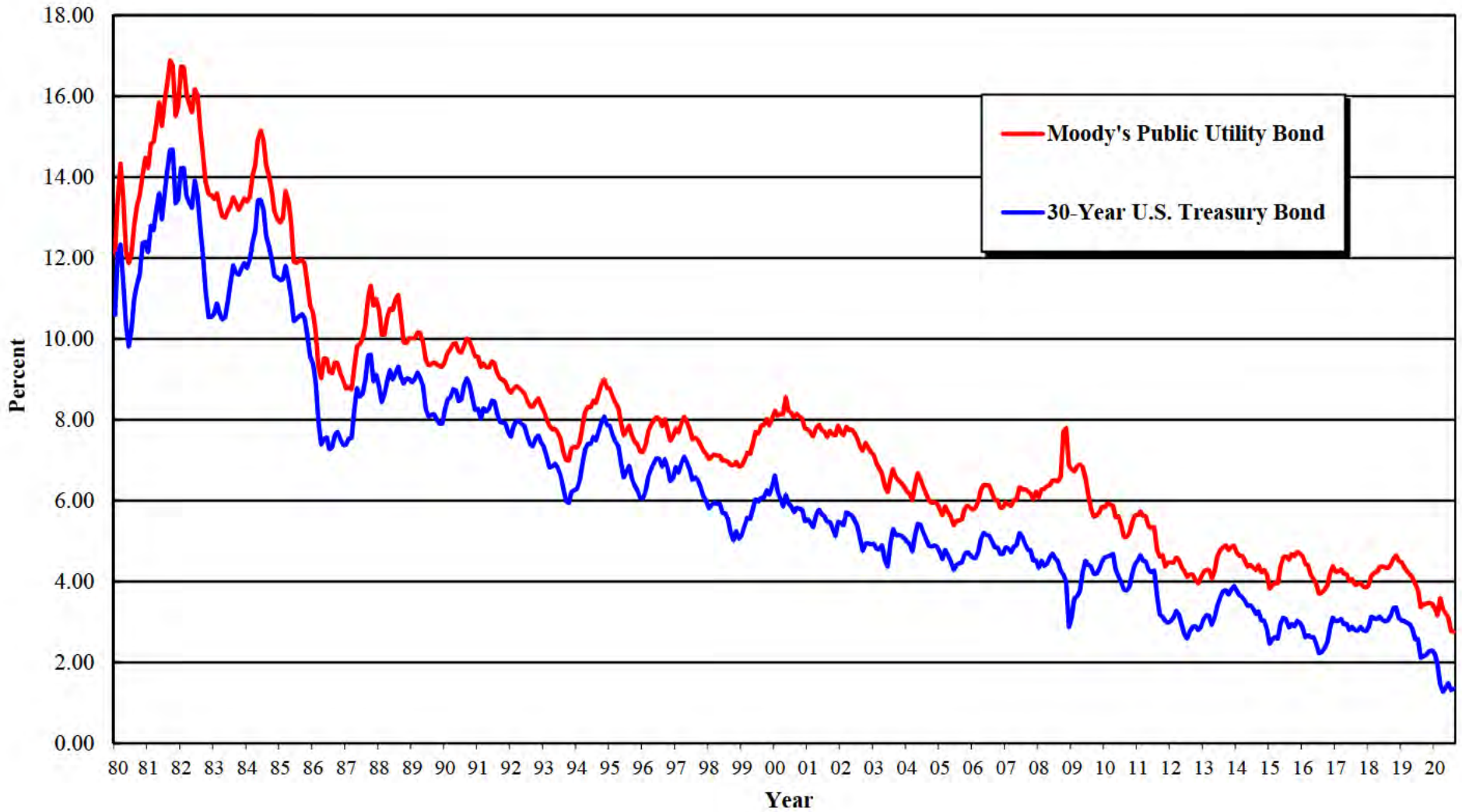
Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	10.60	Jan 1986	9.40	Jan 1992	7.58	Jan 1998	5.81	Jan 2004	4.99	Jan 2010	4.60	Jan 2016	2.86
Feb	12.13	Feb	8.93	Feb	7.85	Feb	5.89	Feb	4.93	Feb	4.62	Feb	2.62
Mar	12.34	Mar	7.96	Mar	7.97	Mar	5.95	Mar	4.74	Mar	4.64	Mar	2.68
Apr	11.40	Apr	7.39	Apr	7.96	Apr	5.92	Apr	5.14	April	4.69	Apr	2.62
May	10.36	May	7.52	May	7.89	May	5.93	May	5.42	May	4.29	May	2.63
Jun	9.81	Jun	7.57	Jun	7.84	Jun	5.70	Jun	5.41	Jun	4.13	Jun	2.45
Jul	10.24	Jul	7.27	Jul	7.60	Jul	5.68	Jul	5.22	Jul	3.99	Jul	2.23
Aug	11.00	Aug	7.33	Aug	7.39	Aug	5.54	Aug	5.06	Aug	3.80	Aug	2.26
Sep	11.34	Sep	7.62	Sep	7.34	Sep	5.20	Sep	4.90	Sep	3.77	Sep	2.35
Oct	11.59	Oct	7.70	Oct	7.53	Oct	5.01	Oct	4.86	Oct	3.87	Oct	2.50
Nov	12.37	Nov	7.52	Nov	7.61	Nov	5.25	Nov	4.89	Nov	4.19	Nov	2.86
Dec	12.40	Dec	7.37	Dec	7.44	Dec	5.06	Dec	4.86	Dec	4.42	Dec	3.11
Jan 1981	12.14	Jan 1987	7.39	Jan 1993	7.34	Jan 1999	5.16	Jan 2005	4.73	Jan 2011	4.52	Jan 2017	3.02
Feb	12.80	Feb	7.54	Feb	7.09	Feb	5.37	Feb	4.55	Feb	4.65	Feb	3.03
Mar	12.69	Mar	7.55	Mar	6.82	Mar	5.58	Mar	4.78	Mar	4.51	Mar	3.08
Apr	13.20	Apr	8.25	Apr	6.85	Apr	5.55	Apr	4.65	Apr	4.50	Apr	2.94
May	13.60	May	8.78	May	6.92	May	5.81	May	4.49	May	4.29	May	2.96
Jun	12.96	Jun	8.57	Jun	6.81	Jun	6.04	Jun	4.29	Jun	4.23	Jun	2.80
Jul	13.59	Jul	8.64	Jul	6.63	Jul	5.98	Jul	4.41	Jul	4.27	July	2.88
Aug	14.17	Aug	8.97	Aug	6.32	Aug	6.07	Aug	4.46	Aug	3.65	Aug	2.80
Sep	14.67	Sep	9.59	Sep	6.00	Sep	6.07	Sep	4.47	Sep	3.18	Sep	2.78
Oct	14.68	Oct	9.61	Oct	5.94	Oct	6.26	Oct	4.67	Oct	3.13	Oct	2.88
Nov	13.35	Nov	8.95	Nov	6.21	Nov	6.15	Nov	4.73	Nov	3.02	Nov	2.80
Dec	13.45	Dec	9.12	Dec	6.25	Dec	6.35	Dec	4.66	Dec	2.98	Dec	2.77
Jan 1982	14.22	Jan 1988	8.83	Jan 1994	6.29	Jan 2000	6.63	Jan 2006	4.59	Jan 2012	3.03	Jan 2018	2.88
Feb	14.22	Feb	8.43	Feb	6.49	Feb	6.23	Feb	4.58	Feb	3.11	Feb	3.13
Mar	13.53	Mar	8.63	Mar	6.91	Mar	6.05	Mar	4.73	Mar	3.28	Mar	3.09
Apr	13.37	Apr	8.95	Apr	7.27	Apr	5.85	Apr	5.06	Apr	3.18	Apr	3.07
May	13.24	May	9.23	May	7.41	May	6.15	May	5.20	May	2.93	May	3.13
Jun	13.92	Jun	9.00	Jun	7.40	Jun	5.93	June	5.16	Jun	2.70	Jun	3.05
Jul	13.55	Jul	9.14	Jul	7.58	Jul	5.85	July	5.13	Jul	2.59	Jul	3.01
Aug	12.77	Aug	9.32	Aug	7.49	Aug	5.72	Aug	5.00	Aug	2.77	Aug	3.04
Sep	12.07	Sep	9.06	Sep	7.71	Sep	5.83	Sep	4.85	Sep	2.88	Sep	3.15
Oct	11.17	Oct	8.89	Oct	7.94	Oct	5.80	Oct	4.85	Oct	2.90	Oct	3.34
Nov	10.54	Nov	9.02	Nov	8.08	Nov	5.78	Nov	4.69	Nov	2.80	Nov	3.36
Dec	10.54	Dec	9.01	Dec	7.87	Dec	5.49	Dec	4.68	Dec	2.88	Dec	3.10
Jan 1983	10.63	Jan 1989	8.93	Jan 1995	7.85	Jan 2001	5.54	Jan 2007	4.85	Jan 2013	3.08	Jan 2019	3.04
Feb	10.88	Feb	9.01	Feb	7.61	Feb	5.45	Feb	4.82	Feb	3.17	Feb	3.02
Mar	10.63	Mar	9.17	Mar	7.45	Mar	5.34	Mar	4.72	Mar	3.16	Mar	2.98
Apr	10.48	Apr	9.03	Apr	7.36	Apr	5.65	Apr	4.86	Apr	2.93	Apr	2.94
May	10.53	May	8.83	May	6.95	May	5.78	May	4.90	May	3.11	May	2.82
Jun	10.93	Jun	8.27	Jun	6.57	Jun	5.67	Jun	5.20	Jun	3.40	Jun	2.57
Jul	11.40	Jul	8.08	Jul	6.72	Jul	5.61	Jul	5.11	Jul	3.61	Jul	2.57
Aug	11.82	Aug	8.12	Aug	6.86	Aug	5.48	Aug	4.93	Aug	3.76	Aug	2.12
Sep	11.63	Sep	8.15	Sep	6.55	Sep	5.48	Sep	4.79	Sept	3.79	Sept	2.16
Oct	11.58	Oct	8.00	Oct	6.37	Oct	5.32	Oct	4.77	Oct	3.68	Oct	2.19
Nov	11.75	Nov	7.90	Nov	6.26	Nov	5.12	Nov	4.52	Nov	3.80	Nov	2.28
Dec	11.88	Dec	7.90	Dec	6.06	Dec	5.48	Dec	4.53	Dec	3.89	Dec	2.30
Jan 1984	11.75	Jan 1990	8.26	Jan 1996	6.05	Jan 2002	5.45	Jan 2008	4.33	Jan 2014	3.77	Jan 2020	2.22
Feb	11.95	Feb	8.50	Feb	6.24	Feb	5.39	Feb	4.52	Feb	3.66	Feb	1.97
Mar	12.38	Mar	8.56	Mar	6.60	Mar	5.71	Mar	4.39	Mar	3.62	Mar	1.46
Apr	12.65	Apr	8.76	Apr	6.79	Apr	5.67	Apr	4.44	Apr	3.52	Apr	1.27
May	13.43	May	8.73	May	6.93	May	5.64	May	4.60	May	3.39	May	1.38
Jun	13.44	Jun	8.46	Jun	7.06	Jun	5.52	Jun	4.69	Jun	3.42	Jun	1.49
Jul	13.21	Jul	8.50	Jul	7.03	Jul	5.38	Jul	4.57	Jul	3.33	Jul	1.31
Aug	12.54	Aug	8.86	Aug	6.84	Aug	5.08	Aug	4.50	Aug	3.20	Aug	1.36
Sep	12.29	Sep	9.03	Sep	7.03	Sep	4.76	Sep	4.27	Sep	3.26	Sep	0.00
Oct	11.98	Oct	8.86	Oct	6.81	Oct	4.93	Oct	4.17	Oct	3.04	Oct	0.00
Nov	11.56	Nov	8.54	Nov	6.48	Nov	4.95	Nov	4.00	Nov	3.04	Nov	0.00
Dec	11.52	Dec	8.24	Dec	6.55	Dec	4.92	Dec	2.87	Dec	2.83	Dec	0.00
Jan 1985	11.45	Jan 1991	8.27	Jan 1997	6.83	Jan 2003	4.94	Jan 2009	3.13	Jan 2015	2.46		
Feb	11.47	Feb	8.03	Feb	6.69	Feb	4.81	Feb	3.59	Feb	2.57		
Mar	11.81	Mar	8.29	Mar	6.93	Mar	4.80	Mar	3.64	Mar	2.63		
Apr	11.47	Apr	8.21	Apr	7.09	Apr	4.90	Apr	3.76	Apr	2.59		
May	11.05	May	8.27	May	6.94	May	4.53	May	4.23	May	2.96		
Jun	10.44	Jun	8.47	Jun	6.77	Jun	4.37	Jun	4.52	Jun	3.11		
Jul	10.50	Jul	8.45	Jul	6.51	Jul	4.93	Jul	4.41	Jul	3.07		
Aug	10.56	Aug	8.14	Aug	6.58	Aug	5.30	Aug	4.37	Aug	2.86		
Sep	10.61	Sep	7.95	Sep	6.50	Sep	5.14	Sep	4.19	Sep	2.95		
Oct	10.50	Oct	7.93	Oct	6.33	Oct	5.16	Oct	4.19	Oct	2.89		
Nov	10.06	Nov	7.92	Nov	6.11	Nov	5.13	Nov	4.31	Nov	3.03		
Dec	9.54	Dec	7.70	Dec	5.99	Dec	5.08	Dec	4.49	Dec	2.97		

Sources:

<http://research.stlouisfed.org/fred2/data/GS30.txt>

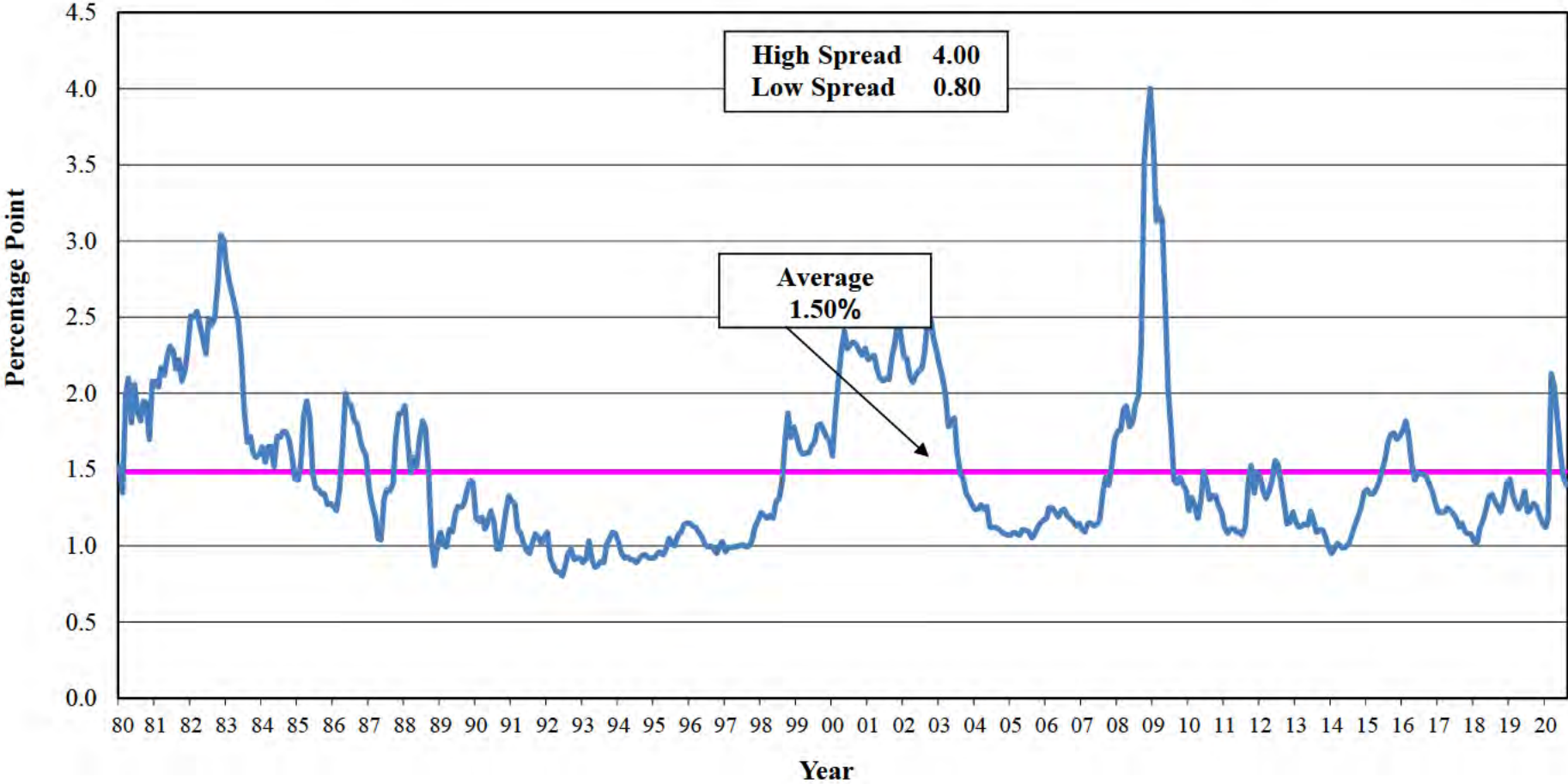
Missouri-American Water Company  
Case Nos. WR-2020-0344 & SR-2020-0345

Average Yields on Moody's Public Utility Bonds and  
Thirty-Year U.S. Treasury Bonds (1980 - 2020)



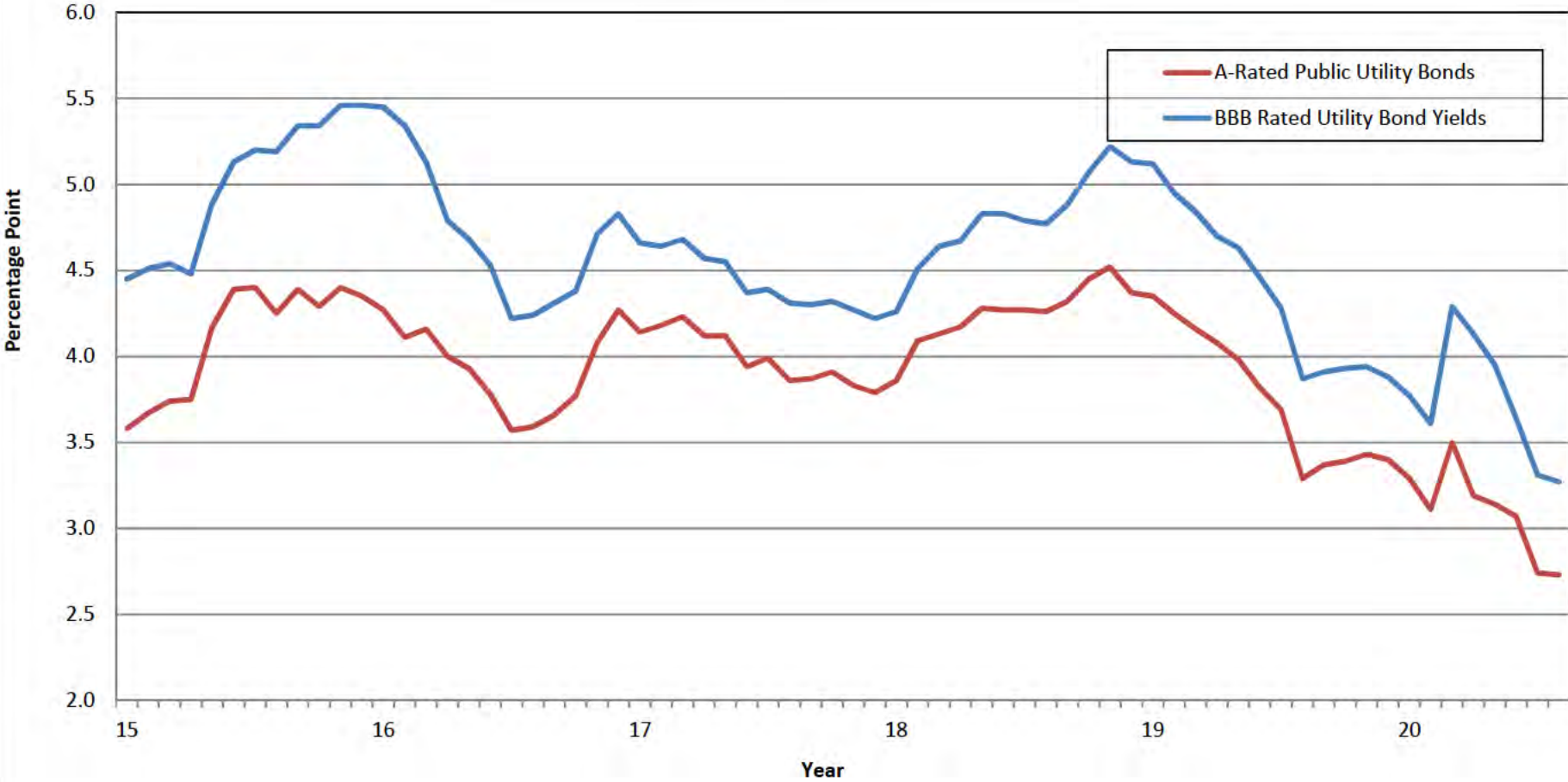
Missouri-American Water Company  
Case Nos. WR-2020-0344 & SR-2020-0345

Monthly Spreads Between Yields on Moody's Public Utility Bonds and  
30-Year U.S. Treasury Bonds (1980 - 2020)



Missouri-American Water Company  
Case Nos. WR-2020-0344 & SR-2020-0345

Average Yields on A-rated Utility Bonds and BBB-rated Utility Bonds  
(2015- 2020)



**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

**Historical Consolidated Capital Structures for  
American Water**

*(Dollars in thousands)*

Capital Components	2007	2008	2009	2010	2011	2012	2013
Common Equity	\$4,542,046.0	\$4,102,001.0	\$4,000,859.0	\$4,127,725.0	\$4,235,837.0	\$4,443,268.0	\$4,727,804.0
Preferred Stock	\$28,864.0 <sup>2,3</sup>	\$28,707.0 <sup>2,3</sup>	\$28,503.0 <sup>2,3</sup>	\$27,818.0 <sup>2,3</sup>	\$25,684.0 <sup>2,3</sup>	\$20,581.0 <sup>2,3</sup>	\$17,177.0 <sup>2,3</sup>
Long-Term Debt	\$4,771,292.0 <sup>1</sup>	\$4,799,885.0 <sup>1</sup>	\$5,342,248.0 <sup>1</sup>	\$5,455,031.0 <sup>1</sup>	\$5,368,805.0 <sup>1</sup>	\$5,306,428.0 <sup>1</sup>	\$5,227,055.0 <sup>1</sup>
	<u>\$9,342,202.0</u>	<u>\$8,930,593.0</u>	<u>\$9,371,610.0</u>	<u>\$9,610,574.0</u>	<u>\$9,630,326.0</u>	<u>\$9,770,277.0</u>	<u>\$9,972,036.0</u>

Capital Components	2014	2015	2016	2017	2018	2019
Common Equity	\$4,915,591.0	\$504,900.0	\$521,800.0	\$5,385,000.0	\$5,864,000.0	\$6,121,000.0
Preferred Stock	\$15,501.0 <sup>2,3</sup>	\$12,000.0 <sup>2,3</sup>	\$10,000.0 <sup>2,3</sup>	\$8,000.0 <sup>2,3</sup>	\$7,000.0 <sup>2,3</sup>	\$5,000.0 <sup>2,3</sup>
Long-Term Debt	\$5,493,876.0 <sup>1</sup>	\$591,600.0 <sup>1</sup>	\$632,300.0 <sup>1</sup>	\$6,490,000.0 <sup>1</sup>	\$7,576,000.0 <sup>1</sup>	\$8,644,000.0 <sup>1</sup>
	<u>\$10,424,968.0</u>	<u>\$1,108,500.0</u>	<u>\$1,164,100.0</u>	<u>\$11,883,000.0</u>	<u>\$13,447,000.0</u>	<u>\$14,770,000.0</u>

**Historical Consolidated Capital Structures for  
Missouri-American**

*(Dollars in thousands)*

Capital Components	2007	2008	2009	2010	2011	2012	2013
Common Equity	\$298,926.0	\$336,785.0	\$377,129.0	\$413,150.0	\$435,152.0	\$446,793.0	\$474,431.0
Preferred Stock	\$2,620.0 <sup>3</sup>	\$2,620.0 <sup>3</sup>	\$2,608.0 <sup>3</sup>	\$2,596.0 <sup>3</sup>	\$2,295.0 <sup>3</sup>	\$2,000.0 <sup>3</sup>	\$1,750.0 <sup>3</sup>
Long-Term Debt	\$316,037.0	\$385,870.0	\$410,156.0	\$409,276.0	\$433,834.0	\$448,494.0	\$468,450.0
Total	<u>\$617,583.0</u>	<u>\$725,275.0</u>	<u>\$789,893.0</u>	<u>\$825,022.0</u>	<u>\$871,281.0</u>	<u>\$897,287.0</u>	<u>\$944,631.0</u>

Capital Components	2014	2015	2016	2017	2018	2019
Common Equity	\$485,204.0	\$526,454.00	\$569,572.4	\$664,862.0	\$682,960.00	\$778,764.0
Preferred Stock	\$1,500.0 <sup>3</sup>	\$1,250.00 <sup>3</sup>	\$1,000.0 <sup>3</sup>	\$500.0 <sup>3</sup>	\$250.00 <sup>3</sup>	\$0.0 <sup>3</sup>
Long-Term Debt	\$468,461.0	\$517,822.00	\$566,963.9	\$586,549.0	\$631,599.00	\$706,285.0
Total	<u>\$955,165.0</u>	<u>\$1,045,526.0</u>	<u>\$1,137,536.3</u>	<u>\$1,251,911.0</u>	<u>\$1,314,809.0</u>	<u>\$1,485,049.0</u>

Note:

1. Includes current maturities on long-term debt.
2. Includes redeemable preferred stock.
3. Includes current maturities on preferred stock.

Sources:

Missouri-American Water Company's response to Staff Data Request Nos. 0159 and 0229 in Case No. WR-2017-0285, as well as Schedule JLS-5-1 in the Appendices to Staff's Cost of Service Report in Case No. WR-2017-0285 and Form 10-K.

**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

**Historical Consolidated Capital Structures for  
American Water**

*(Dollars in thousands)*

Capital Components	2007	2008	2009	2010	2011	2012	2013
Common Equity	48.62%	45.93%	42.69%	42.95%	43.98%	45.48%	47.41%
Preferred Stock	0.31% <sup>2,3</sup>	0.32% <sup>2,3</sup>	0.30% <sup>2,3</sup>	0.29% <sup>2,3</sup>	0.27% <sup>2,3</sup>	0.21% <sup>2,3</sup>	0.17% <sup>2,3</sup>
Long-Term Debt	51.07% <sup>1</sup>	53.75% <sup>1</sup>	57.00% <sup>1</sup>	56.76% <sup>1</sup>	55.75% <sup>1</sup>	54.31% <sup>1</sup>	52.42% <sup>1</sup>
	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>
Capital Components	2014	2015	2016	2017	2018	2019	Average
Common Equity	47.15%	45.55%	44.82%	45.32%	43.61%	41.44%	<b>45.00%</b>
Preferred Stock	0.15% <sup>2,3</sup>	1.08% <sup>2,3</sup>	0.86% <sup>2,3</sup>	0.07% <sup>2,3</sup>	0.05% <sup>2,3</sup>	0.03% <sup>2,3</sup>	<b>0.32%</b>
Long-Term Debt	52.70% <sup>1</sup>	53.37% <sup>1</sup>	54.32% <sup>1</sup>	54.62% <sup>1</sup>	56.34% <sup>1</sup>	58.52% <sup>1</sup>	<b>54.69%</b>
	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>

**Historical Consolidated Capital Structures for  
Missouri-American**

*(Dollars in thousands)*

Capital Components	2007	2008	2009	2010	2011	2012	2013
Common Equity	48.40%	46.44%	47.74%	50.08%	49.94%	49.79%	50.22%
Preferred Stock	0.42% <sup>3</sup>	0.36% <sup>3</sup>	0.33% <sup>3</sup>	0.31% <sup>3</sup>	0.26% <sup>3</sup>	0.22% <sup>3</sup>	0.19% <sup>3</sup>
Long-Term Debt	51.17% <sup>1</sup>	53.20% <sup>1</sup>	51.93% <sup>1</sup>	49.61% <sup>1</sup>	49.79% <sup>1</sup>	49.98% <sup>1</sup>	49.59% <sup>1</sup>
Total	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>
Capital Components	2014	2015	2016	2017	2018	2019	Average
Common Equity	50.80%	50.35%	50.07%	53.11%	51.94%	52.44%	<b>50.10%</b>
Preferred Stock	0.16% <sup>3</sup>	0.12% <sup>3</sup>	0.09% <sup>3</sup>	0.04% <sup>3</sup>	0.02% <sup>3</sup>	0.00% <sup>3</sup>	<b>0.19%</b>
Long-Term Debt	49.05% <sup>1</sup>	49.53% <sup>1</sup>	49.84% <sup>1</sup>	46.85% <sup>1</sup>	48.04% <sup>1</sup>	47.56% <sup>1</sup>	<b>49.70%</b>
Total	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>

Note:

1. Includes current maturities on long-term debt.
2. Includes redeemable preferred stock.
3. Includes current maturities on preferred stock.

Sources:

Missouri-American Water Company's response to Staff Data Request Nos. 0159 and 0229 in Case No. WR-2017-0285, as well as Schedule JLS-5-1 in the Appendices to Staff's Cost of Service Report in Case No. WR-2017-0285 and Form 10-K.

**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

**Capital Structure as of June 30, 2020**  
**for American Water<sup>1</sup>**

Capital Component	Amount	Percentage of Capital
Common Stock Equity	** _____ **	** _____ **
Preferred Stock	** _____ **	** _____ **
Long-Term Debt	** _____ **	** _____ **
<b>Total Capitalization</b>	<b>** _____ **</b>	<b>_____</b>
	<b>= _____ =</b>	<b><u>100.00%</u></b>

**Capital Structure as of June 30, 2020**  
**for Missouri-American Water<sup>2</sup>**

Capital Component	Amount	Percentage of Capital
Common Stock Equity	824,108,853	50.24%
Preferred Stock	250,000	0.02%
Long-Term Debt	816,103,540	49.75%
<b>Total Capitalization</b>	<b><u>1,640,462,393</u></b>	<b><u>100%</u></b>

Notes:

1. Based on the response to Staff's Data Request No. 0039.1

2. Based on the response to Staff's Data Request No. 0039

**Missouri-American Water Company  
Case Nos. WR-2020-0344 & SR-2020-0345**

**Embedded Cost of Long-Term Debt as of June 30, 2020  
for American Water & Missouri-American Water Company**

**American Water**

Total Annual Cost:	**	_____	**
Total Carrying Value:	**	_____	**
Embedded Cost = Total Annual Cost/Total Carrying Value	**	_____	**

Note:

Source: Missouri-American Water Company's response to Staff's Data Request No. 0041,  
Revised at 10/30/2020.

**Missouri-American Water**

Total Annual Cost:	\$39,226,882
Total Carrying Value:	\$807,155,147
Embedded Cost = Total Annual Cost/Total Carrying Value	4.86%

Note:

Source: Missouri-American Water Company's response to Staff's Data Request No. 0041



**Missouri-American Water Company  
Case Nos. WR-2020-0344 SR-2020-0345**

**Embedded Cost of Preferred Stock as of June 30, 2020  
for American Water & Missouri-American Water**

**American Water**

Total Annual Cost:	**	_____	**
Total Carrying Value:	**	_____	**
Embedded Cost = Total Annual Cost/Total Carrying Value	**	_____	**

**Note**

Source: Missouri-American Water Company's response to Staff's Data Request No. 0041

**Missouri-American Water**

Total Annual Cost:	\$24,371
Total Carrying Value:	\$234,128
Embedded Cost = Total Annual Cost/Total Carrying Value	10.41%

**Note**

Source: Missouri-American Water Company's response to Staff's Data Request No. 0041

**MISSOURI-AMERICAN WATER COMPANY**  
**CASE NOS. WR-2020-0344 & SR-2020-0345**  
**PROXY GROUP SCREENING DATA AND RESULTS**

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]		
Water Utility Companies	Ticker	Stock Publicly Traded	Information Provided by Value Line	Information Provided by Reuters	5-Year Data Available	Dividends	At Least Investment Grade Credit Rating	S&P Global Rating	Moody's	At least 50% of Regulated Income from Water Utility	At least 70% of Income from Regulated Operations	No Reduced Dividend Since 2015	Positive Growth Rates from at Least Two Sources	Covered by More Than 1 Analyst	Comparable Company Met All Criteria
American States Water Co	AWR	Yes	Yes	Yes	Yes	Yes	Yes	A+	NA	Yes	Yes	Yes	Yes	Yes	Yes
American Water Works Company Inc.	AWK	Yes	Yes	Yes	Yes	Yes	Yes	A	Baa1	Yes	Yes	Yes	Yes	Yes	Yes
California Water Service Group	CWT	Yes	Yes	Yes	Yes	Yes	Yes	A+	NA	Yes	Yes	Yes	Yes	Yes	Yes
Consolidated Water Co. Ltd.	CWCO	Yes	Yes	Yes	Yes	Yes	No	NA	NA	NA	NA	Yes	Yes	Yes	No
Essential Utilities Inc.	WTRG	Yes	Yes	Yes	Yes	Yes	Yes	A	Baa2	Yes	Yes	Yes	Yes	Yes	Yes
Middlesex Water Company	MSEX	Yes	Yes	Yes	Yes	Yes	Yes	A	NA	Yes	Yes	Yes	Yes	Yes	Yes
SJW Group	SJW	Yes	Yes	Yes	Yes	Yes	Yes	A-	NA	Yes	Yes	Yes	Yes	Yes	Yes
York Water Co	YORW	Yes	Yes	Yes	Yes	Yes	Yes	A-	NA	Yes	Yes	Yes	Yes	Yes	Yes

Note:

- [1] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [2] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [3] Source: Reuters, <https://www.reuters.com/>
- [4] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [5] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [6] Source: S&P Global Market Intelligence
- [7] Source: S&P Global Market Intelligence
- [8] Source: S&P Global Market Intelligence
- [9] Source: SEC Form 10-K Filings
- [10] Source: SEC Form 10-K Filings
- [11] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [12] Source: S&P Global Market Intelligence, Value Line Investment Survey, Yahoo! Finance, and Zacks
- [13] Source: S&P Global Market Intelligence, Value Line Investment Survey, Yahoo! Finance, and Zacks

**MISSOURI-AMERICAN WATER COMPANY**  
**CASE NOS. WR-2020-0344 & SR-2020-0345**  
**PROXY GROUP LIST**

	Water Utility Companies	Ticker
1	American States Water Co	AWR
2	American Water Works Company Inc.	AWK
3	California Water Service Group	CWT
4	Essential Utilities Inc.	WTRG
5	Middlesex Water Company	MSEX
6	SJW Group	SJW
7	York Water Co	YORW

**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

**Growth Rate Estimates**  
**Based on Dividend per Share (DPS), Earning per Share (EPS), and Book Value per Share (BVPS)**  
**for the Comparable Water Utility Companies**

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]
	Past 10-Years				Past 5-Year				Projected 5-Year				Average				Projective Nominal GDP Growth Rate			Growth	
Water Utility Companies	DPS	EPS	BVPS	Average	DPS	EPS	BVPS	Average	DPS	EPS	BVPS	Average	DPS	EPS	BVPS	Average	CBO	FOMC	SSA	Average	Rate
1 American States Water Co	8.00%	9.50%	5.50%	7.67%	7.50%	5.00%	4.00%	5.50%	9.50%	6.50%	5.50%	7.17%	8.33%	7.00%	5.00%	6.78%	4.20%	4.00%	5.90%	4.70%	5.90%
2 American Water Works Company Inc.	16.00%	45.50%	2.50%	21.33%	10.50%	6.50%	4.00%	7.00%	8.50%	8.50%	5.00%	7.33%	11.67%	20.17%	3.83%	11.89%	4.20%	4.00%	5.90%	4.70%	7.23%
3 California Water Service Group	2.50%	4.50%	4.50%	3.83%	3.50%	4.50%	4.50%	4.17%	5.50%	6.50%	1.00%	4.33%	3.83%	5.17%	3.33%	4.11%	4.20%	4.00%	5.90%	4.70%	5.90%
4 Essential Utilities Inc.	7.50%	7.00%	8.00%	7.50%	8.00%	1.50%	9.00%	6.17%	7.50%	7.00%	7.00%	7.17%	7.67%	5.17%	8.00%	6.94%	4.20%	4.00%	5.90%	4.70%	6.23%
5 Middlesex Water Company	2.50%	8.00%	4.50%	5.00%	4.00%	12.00%	6.00%	7.33%	5.50%	6.00%	1.50%	4.33%	4.00%	8.67%	4.00%	5.56%	4.20%	4.00%	5.90%	4.70%	5.57%
6 SJW Group	6.00%	7.50%	7.50%	7.00%	9.00%	4.50%	12.00%	8.50%	6.00%	10.50%	5.50%	7.33%	7.00%	7.50%	8.33%	7.61%	4.20%	4.00%	5.90%	4.70%	8.57%
7 York Water Co	3.00%	6.00%	4.50%	4.50%	4.00%	6.00%	4.00%	4.67%	6.00%	7.00%	4.00%	5.67%	4.33%	6.33%	4.17%	4.94%	4.20%	4.00%	5.90%	4.70%	6.23%
<b>Average</b>	<b>6.50%</b>	<b>12.57%</b>	<b>5.29%</b>	<b>8.12%</b>	<b>6.64%</b>	<b>5.71%</b>	<b>6.21%</b>	<b>6.19%</b>	<b>6.93%</b>	<b>7.43%</b>	<b>4.21%</b>	<b>6.19%</b>	<b>6.69%</b>	<b>8.57%</b>	<b>5.24%</b>	<b>6.83%</b>	<b>4.20%</b>	<b>4.00%</b>	<b>5.90%</b>	<b>4.70%</b>	<b>6.52%</b>

Note:

- [1] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [2] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [3] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [4]  $[(1)+(2)+(3)]/3$
- [5] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [6] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [7] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [8]  $[(6)+(7)+(8)]/3$
- [9] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [10] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [11] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [12]  $[(9)+(10)+(11)]/3$
- [13]  $[(1)+(5)+(9)]/3$
- [14]  $[(2)+(6)+(10)]/3$
- [15]  $[(3)+(7)+(11)]/3$
- [16]  $[(13)+(14)+(15)]/3$
- [17] Source: Congress Budget Office (CBO), Retrieve in September 15, 2020.
- [18] Source: Federal Open Market Committee (FOMC), Retrieve in September 15, 2020.
- [19] Source: Social Security Administration (SSA), Retrieve in September 15, 2020.
- [20]  $[(17)+(18)+(19)]/3$
- [21]  $(2 \times [10] + [20])/3$

**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

**Average High / Low Stock Price for June 2020 through August 2020**  
**for the Comparable Water Utility Companies**

Company Name	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]
		<u>June 2020</u>		<u>July 2020</u>		<u>August 2020</u>		Average High/Low Stock Price (06/01 - 08/31)
		High Stock Price	Low Stock Price	High Stock Price	Low Stock Price	High Stock Price	Low Stock Price	
1 American States Water Co	AWR	84.00	73.71	82.19	74.74	81.14	73.65	78.24
2 American Water Works Company Inc.	AWK	134.26	120.67	148.51	128.45	150.47	138.85	136.87
3 California Water Service Group	CWT	49.20	44.10	50.84	45.68	49.93	44.09	47.31
4 Essential Utilities Inc.	WTRG	46.77	40.04	46.42	41.90	48.14	42.06	44.22
5 Middlesex Water Company	MSEX	72.41	61.50	68.69	61.55	69.89	63.67	66.28
6 SJW Group	SJW	66.77	56.84	66.20	59.69	71.45	60.93	63.65
7 York Water Co	YORW	48.46	42.07	51.27	44.63	49.00	43.90	46.55

Note:

[1] Source: Wall Street Journal, <https://www.wsj.com/market-data>

[2] Source: Wall Street Journal, <https://www.wsj.com/market-data>

[3] Source: Wall Street Journal, <https://www.wsj.com/market-data>

[4] Source: Wall Street Journal, <https://www.wsj.com/market-data>

[5] Source: Wall Street Journal, <https://www.wsj.com/market-data>

[6] Source: Wall Street Journal, <https://www.wsj.com/market-data>

[7] = (([1]+[2]+[3]+[4]+[5]+[6]) / 6

**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

**Discounted Cash Flow (DCF) Costs of Common Equity (COE) Estimates**  
**Based on Dividend per Share, Stock Price, and Growth Rate of 2020 Data**  
**for the Comparable Water Utility Companies**

2020	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected EPS Growth	Projected GDP Growth	Projected Growth Rate	COE
<b>Water Utility Companies</b>								
1 American States Water Co	1.25	78.24	1.60%	1.64%	6.50%	4.70%	5.90%	7.54%
2 American Water Works Company Inc.	2.15	136.87	1.57%	1.63%	8.50%	4.70%	7.23%	8.86%
3 California Water Service Group	0.82	47.31	1.73%	1.78%	6.50%	4.70%	5.90%	7.68%
4 Essential Utilities Inc.	0.97	44.22	2.19%	2.26%	7.00%	4.70%	6.23%	8.50%
5 Middlesex Water Company	1.04	66.28	1.57%	1.61%	6.00%	4.70%	5.57%	7.18%
6 SJW Group	1.28	63.65	2.01%	2.10%	10.50%	4.70%	8.57%	10.66%
7 York Water Co	0.73	46.55	1.57%	1.62%	7.00%	4.70%	6.23%	7.85%
<b>Average</b>	<b>1.18</b>	<b>69.02</b>	<b>1.75%</b>	<b>1.81%</b>	<b>7.43%</b>	<b>4.70%</b>	<b>6.52%</b>	<b>8.33%</b>
							Lower Bound	7.54%
							Upper Bound	8.86%
							Difference of Averages between 2017 and 2020	0.20%

**Note:**

- [1] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020; Projected Dividend Declared per Share 2020.  
[2] Source: The Wall Street Journal; Average Monthly Highest and Lowest of June, July, and August 2020.  
[3] = [1] / [2]  
[4] = [3] x (1 + .5 x [7])  
[5] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.  
[6] Source: Column [20] of Schedule SJW-11.  
[7] = (2 x [5] + [6]) / 3  
[8] = [4] + [7]

**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

**Discounted Cash Flow (DCF) Costs of Common Equity (COE) Estimates**  
**Based on Dividend per Share, Stock Price, and Growth Rate of 2017 Data**  
**for the Comparable Water Utility Companies**

2017	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Water Utility Companies	Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected EPS Growth	Projected GDP Growth	Growth Rate	COE
1 American States Water Co	1.03	49.38	2.09%	2.15%	6.50%	4.70%	5.90%	8.05%
2 American Water Works Company Inc.	1.72	81.02	2.12%	2.20%	8.50%	4.70%	7.23%	9.43%
3 California Water Service Group	0.74	37.92	1.95%	2.03%	9.00%	4.70%	7.57%	9.59%
4 Essential Utilities Inc.	0.97	44.43	2.18%	2.25%	7.00%	4.70%	6.23%	8.48%
5 Middlesex Water Company	0.86	39.02	2.20%	2.28%	8.50%	4.70%	7.23%	9.52%
6 SJW Group	0.92	54.09	1.70%	1.74%	4.50%	4.70%	4.57%	6.31%
7 York Water Co	0.69	34.26	2.01%	2.08%	7.00%	4.70%	6.23%	8.31%
Average	0.99	48.59	2.04%	2.10%	7.29%	4.70%	6.42%	8.53%
							Lower Bound	8.05%
							Upper Bound	9.52%

**Note:**

- [1] Source: Schedule JLS-13 of ER-2017-0285  
[2] Source: Schedule JLS-13 of ER-2017-0285  
[3] = [1] / [2]  
[4] = [3] x (1 + .5 x [7])  
[5] Source: Schedule JLS-11-5 of ER-2017-0285  
[6] Source: Column [20] of Schedule SJW-11  
[7] = (2 x [5] + [6]) / 3  
[8] = [4] + [7]

**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

**Capital Asset Pricing Model (CAPM) Costs of Common Equity (COE) Estimates**  
**Based on Historical Return Differences Between Common Stocks and Long-Term U.S. Treasuries**  
**for the Comparable Water Utility Companies**

2020	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
			Large Company Stocks (1926-2018)		Long-term Government Bonds (1926-2018)		MAWC S&P 500	Market Risk Premium			CAPM Cost of Common Equity		
Water Utility Companies	Risk-Free Rate	Beta	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Expected Market Return	Geometric Mean	Arithmetic Mean	MAWC S&P 500	Geometric Mean	Arithmetic Mean	MAWC S&P 500
1 American States Water Co	1.39%	0.65	10.00%	11.90%	5.50%	5.90%	13.18%	4.50%	6.00%	11.79%	4.32%	5.29%	9.06%
2 American Water Works Company Inc.	1.39%	0.85	10.00%	11.90%	5.50%	5.90%	13.18%	4.50%	6.00%	11.79%	5.22%	6.49%	11.42%
3 California Water Service Group	1.39%	0.65	10.00%	11.90%	5.50%	5.90%	13.18%	4.50%	6.00%	11.79%	4.32%	5.29%	9.06%
4 Essential Utilities Inc.	1.39%	0.90	10.00%	11.90%	5.50%	5.90%	13.18%	4.50%	6.00%	11.79%	5.44%	6.79%	12.01%
5 Middlesex Water Company	1.39%	0.75	10.00%	11.90%	5.50%	5.90%	13.18%	4.50%	6.00%	11.79%	4.77%	5.89%	10.24%
6 SJW Group	1.39%	0.80	10.00%	11.90%	5.50%	5.90%	13.18%	4.50%	6.00%	11.79%	4.99%	6.19%	10.83%
7 York Water Co	1.39%	0.80	10.00%	11.90%	5.50%	5.90%	13.18%	4.50%	6.00%	11.79%	4.99%	6.19%	10.83%
Average	1.39%	0.77	10.00%	11.90%	5.50%	5.90%	13.18%	4.50%	6.00%	11.79%	4.86%	6.02%	10.49%
												Lower Bound	4.86%
												Upper Bound	10.49%
												Middle Point	7.68%

**Note:**

- [1] Source: Federal Reserve Bank of St. Louis; 3-month (June-August, 2020) average of 30-year Treasury Bond Rate.
- [2] Source: The Value Line Investment Survey: Ratings & Reports, July 10, 2020.
- [3] Source: Duff&Philips, 2019 Valuation Handbook: Guide to Cost of Capital.
- [4] Source: Duff&Philips, 2019 Valuation Handbook: Guide to Cost of Capital.
- [5] Source: Duff&Philips, 2019 Valuation Handbook: Guide to Cost of Capital.
- [6] Source: Duff&Philips, 2019 Valuation Handbook: Guide to Cost of Capital.
- [7] Source: Data Request No. 0092
- [8] = [3] - [5]
- [9] = [4] - [6]
- [10] = [4] - [7]
- [11] = [1] + [2] x [8]
- [12] = [1] + [2] x [9]
- [13] = [1] + [2] x [10]



**Missouri-American Water Company**  
**Case Nos. WR-2020-0344 & SR-2020-0345**

**Recommended Allowed Rate of Return as of June 30, 2020**  
**for Missouri-American Water Company**

Capital Component	Percentage of Capital	Embedded Cost	Allowed Rate of Return Common Equity Return of:		
			Lower <b>9.30%</b>	ROE <b>9.55%</b>	Upper <b>9.80%</b>
Common Stock Equity	** _____ **	-	3.68%	3.78%	3.88%
Preferred Stock	** _____ **	_____	0.00%	0.00%	0.00%
Long-Term Debt	** _____ **	_____	2.54%	2.54%	2.54%
Total	<b><u>100.00%</u></b>		<b><u>6.23%</u></b>	<b><u>6.33%</u></b>	<b><u>6.43%</u></b>

Note:

Sources: Schedule 6, Schedule 7, Schedule 8 and Schedule 13

**Missouri-American Water Company  
Case Nos. WR-2020-0344 & SR-2020-0345**

**Authorized ROE of the U.S. Utility by Sector  
2010-2020**

<u>Year</u>	<u>Water Utility</u>		<u>Gas Utility</u>		<u>Electric Utility</u>	
	<u>ROE (%)</u>	<u>Case (No.)</u>	<u>ROE (%)</u>	<u>Case (No.)</u>	<u>ROE (%)</u>	<u>Case (No.)</u>
2010	10.16	25	10.15	39	10.37	61
2011	10.06	11	9.92	16	10.29	42
2012	9.82	22	9.94	35	10.17	58
2013	9.75	6	9.68	21	10.03	49
2014	9.68	11	9.78	26	9.91	38
2015	9.75	13	9.60	16	9.84	31
2016	9.64	11	9.54	26	9.77	42
2017	9.62	12	9.72	24	9.74	53
2018	9.41	17	9.59	40	9.60	48
2019	9.58	11	9.71	32	9.65	47
2020	8.82	3	9.46	17	9.47	38

Note:

Source: S&P Global Market Intelligence, Retrieved in September 1, 2020.

**Missouri-American Water Company  
Case Nos. WR-2020-0344 & SR-2020-0345**

**Authorized ROE and ROR of Other AWC's Subsidiary**

<u>Company/State</u>	<u>ROE</u>	<u>ROR</u>	<u>Effective Date</u>
Hawaii-American Water Company	10.20%	8.10%	12/5/2011
Tennessee-American Water Company	10.00%	7.23%	11/1/2012
Virginia-American Water Company	9.25%	7.13%	4/1/2016
Illinois-American Water Company	9.79%	7.47%	1/1/2017
Iowa-American Water Company	9.60%	8.28%	3/24/2017
New York-American Water Company	9.10%	6.56%	6/1/2017
California-American Water Company	9.20%	7.61%	1/1/2018
Pennsylvania-American Water Company	10.00%	7.75%	1/1/2018
Missouri-American Water Company	10.00%	7.78%	5/28/2018 <sup>1</sup>
New Jersey-American Water Company	9.60%	7.46%	10/29/2018
Maryland-American Water Company	9.90%	7.09%	2/5/2019
West Virginia-American Water Company	9.75%	7.21%	2/25/2019
Kentucky-American Water Company	9.70%	7.69%	6/28/2019
Indiana-American Water Company	9.80%	6.17%	7/1/2019

Note:

Source: Data Request No. 0052, S&P GMI

Source: S&P Global Market Intelligence, Retrieved in September 1, 2020.

<sup>1</sup> Settled with ROE 9.5% - 10.0%