

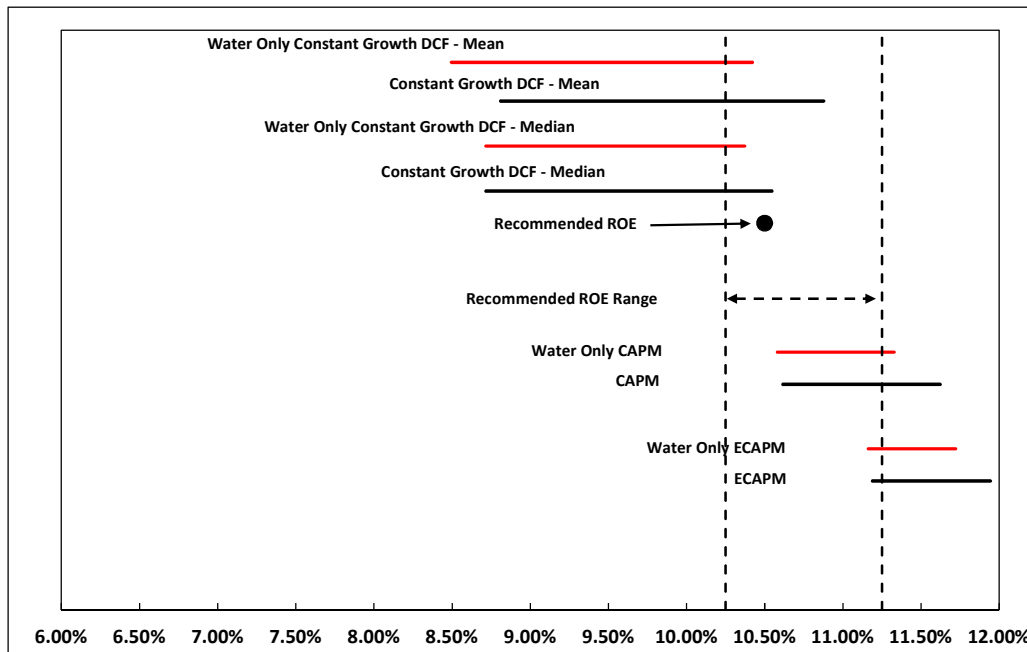
Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

Staff Analysis
SUMMARY OF ROE ANALYSES RESULTS

Staff Analysis

Staff Analysis

		Minimum Growth Rate	Minimum Water Only	Minimum Gas/Electric Only	Average Growth Rate	Average Water Only	Average Gas/Electric Only	Maximum Growth Rate	Maximum Water Only	Maximum Gas/Electric Only
Constant Growth DCF Mean	30-Day Average	8.84%	8.61%	9.03%	9.88%	9.65%	10.07%	10.91%	10.54%	11.21%
	90-Day Average	8.81%	8.49%	9.09%	9.86%	9.52%	10.14%	10.88%	10.41%	11.27%
	180-Day Average	8.77%	8.39%	9.10%	9.82%	9.42%	10.14%	10.84%	10.31%	11.28%
	Constant Growth Average	8.81%	8.50%	9.07%	9.85%	9.53%	10.12%	10.88%	10.42%	11.26%
Constant Growth DCF Median	30-Day Average	8.71%	8.71%	8.94%	10.03%	9.52%	10.08%	10.54%	10.54%	11.01%
	90-Day Average	8.69%	8.69%	9.02%	10.00%	9.51%	10.07%	10.52%	10.34%	11.08%
	180-Day Average	8.75%	8.75%	9.02%	9.90%	9.56%	10.08%	10.58%	10.23%	11.13%
	Constant Growth Average	8.72%	8.72%	8.99%	9.98%	9.53%	10.08%	10.55%	10.37%	11.07%
		Current 30-day Average Treasury Bond Yield	Water Only	Gas/Electric Only	Near-Term Blue Chip Forecast Yield	Water Only	Gas/Electric Only	Long-Term Blue Chip Forecast Yield	Water Only	Gas/Electric Only
CAPM	Value Line Beta	11.62%	11.33%	11.87%	11.58%	11.27%	11.83%	11.55%	11.23%	11.81%
	Bloomberg Beta	10.90%	10.83%	10.96%	10.83%	10.76%	10.89%	10.78%	10.71%	10.84%
	Long-term Avg. Beta	10.74%	10.71%	10.77%	10.67%	10.64%	10.70%	10.62%	10.58%	10.65%
ECAPM	Value Line Beta	11.94%	11.72%	12.13%	11.91%	11.68%	12.10%	11.89%	11.65%	12.08%
	Bloomberg Beta	11.40%	11.35%	11.44%	11.35%	11.30%	11.40%	11.31%	11.26%	11.36%
	Long-term Avg. Beta	11.28%	11.26%	11.31%	11.23%	11.21%	11.25%	11.19%	11.16%	11.21%



Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

Staff Analysis

30-DAY CONSTANT GROWTH DCF – MAWC PROXY GROUP

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	Staff Analysis			[10]	Staff Analysis			[11]	Staff Analysis	
		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Min ROE	Min ROE Water Only	Min ROE Gas	Average ROE	Average ROE Water Only	Average ROE Gas	Max ROE	Max ROE Water Only	Max ROE Gas		
American States Water Company	AWR	\$1.72	\$69.90	2.46%	2.53%	6.50%	4.40%	6.30%	5.73%	6.91%	6.91%	8.26%	8.26%	9.04%	9.04%	9.04%	9.04%	9.04%	9.04%	
Atmos Energy Corporation	ATO	\$3.22	\$116.44	2.77%	2.86%	7.00%	7.50%	7.00%	7.17%	9.86%	9.86%	10.03%	10.03%	10.37%	10.37%	10.37%	10.37%	10.37%	10.37%	
California Water Service Group	CWT	\$1.12	\$46.08	2.43%	2.56%	10.00%	10.80%	n/a	10.40%	12.55%	#####	12.96%	12.96%	13.36%	13.36%	13.36%	13.36%	13.36%	13.36%	
Essential Utilities, Inc.	WTRG	\$1.23	\$35.94	3.42%	3.52%	7.00%	5.20%	5.80%	6.00%	8.71%	8.71%	9.52%	9.52%	10.54%	10.54%	10.54%	10.54%	10.54%	10.54%	
Eversource Energy	ES	\$2.86	\$59.07	4.84%	4.95%	5.50%	3.25%	4.20%	4.32%	8.17%	8.17%	9.26%	9.26%	10.48%	10.48%	10.48%	10.48%	10.48%	10.48%	
Middlesex Water Company	MSEX	\$1.30	\$49.25	2.64%	2.70%	6.50%	2.70%	n/a	4.60%	5.38%	5.38%	7.30%	7.30%	9.23%	9.23%	9.23%	9.23%	9.23%	9.23%	
NISource Inc.	NI	\$1.06	\$27.15	3.90%	4.05%	9.50%	7.30%	6.00%	7.60%	10.02%	10.02%	11.65%	11.65%	13.59%	13.59%	13.59%	13.59%	13.59%	13.59%	
Northwest Natural Gas Company	NWN	\$1.95	\$36.43	5.35%	5.48%	6.50%	2.80%	n/a	4.65%	8.23%	8.23%	10.13%	10.13%	12.03%	12.03%	12.03%	12.03%	12.03%	12.03%	
ONE Gas, Inc.	OGS	\$2.64	\$63.34	4.17%	4.27%	4.00%	5.00%	5.00%	4.67%	8.25%	8.25%	8.93%	8.93%	9.27%	9.27%	9.27%	9.27%	9.27%	9.27%	
SJW Group	SJW	\$1.60	\$54.64	2.93%	3.03%	6.50%	7.50%	7.50%	7.17%	9.52%	9.52%	10.20%	10.20%	10.54%	10.54%	10.54%	10.54%	10.54%	10.54%	
Spire, Inc.	SR	\$3.02	\$60.13	5.02%	5.16%	4.50%	6.36%	5.00%	5.29%	9.64%	9.64%	10.44%	10.44%	11.54%	11.54%	11.54%	11.54%	11.54%	11.54%	
Mean				3.63%	3.74%	6.68%	5.71%	5.85%	6.14%	8.84%	8.84%	9.88%	9.88%	10.91%	10.91%	10.91%	10.91%	10.91%	10.91%	
Median				3.42%	3.52%	6.50%	5.20%	5.90%	5.73%	8.71%	8.71%	9.52%	9.52%	10.54%	10.54%	10.54%	10.54%	10.54%	10.54%	

Notes:

- [1] Source: Bloomberg Professional as of April 30, 2024
- [2] Source: Bloomberg Professional, equals 30-day average as of April 30, 2024
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.50 x [8])
- [5] Source: Value Line
- [6] Source: Yahoo! Finance
- [7] Source: Zacks
- [8] Equals Average ([5], [6], [7])
- [9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
- [10] Equals [4] + [8]
- [11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

90-DAY CONSTANT GROWTH DCF – MAWC PROXY GROUP

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	Staff Analysis			[10]	Staff Analysis			[11]	Staff Analysis	
		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Min ROE	Min ROE Water Only	Min ROE Gas	Average ROE	Average ROE Water Only	Average ROE Gas	Max ROE	Max ROE Water Only	Max ROE Gas		
American States Water Company	AWR	\$1.72	\$73.64	2.34%	2.40%	6.50%	4.40%	6.30%	5.73%	6.79%	6.79%	8.14%	8.14%	8.91%	8.91%	8.91%	8.91%	8.91%	8.91%	
Atmos Energy Corporation	ATO	\$3.22	\$114.74	2.81%	2.91%	7.00%	7.50%	7.00%	7.17%	9.90%	9.90%	10.07%	10.07%	10.41%	10.41%	10.41%	10.41%	10.41%	10.41%	
California Water Service Group	CWT	\$1.12	\$46.98	2.38%	2.51%	10.00%	10.80%	n/a	10.40%	12.50%	#####	12.91%	12.91%	13.31%	13.31%	13.31%	13.31%	13.31%	13.31%	
Essential Utilities, Inc.	WTRG	\$1.23	\$36.10	3.40%	3.51%	7.00%	5.20%	5.80%	6.00%	8.69%	8.69%	9.51%	9.51%	10.52%	10.52%	10.52%	10.52%	10.52%	10.52%	
Eversource Energy	ES	\$2.86	\$57.86	4.94%	5.05%	5.50%	3.25%	4.20%	4.32%	8.27%	8.27%	9.37%	9.37%	10.58%	10.58%	10.58%	10.58%	10.58%	10.58%	
Middlesex Water Company	MSEX	\$1.30	\$54.46	2.39%	2.44%	6.50%	2.70%	n/a	4.60%	5.12%	5.12%	7.04%	7.04%	8.96%	8.96%	8.96%	8.96%	8.96%	8.96%	
NISource Inc.	NI	\$1.06	\$26.25	4.04%	4.19%	9.50%	7.30%	6.00%	7.60%	10.16%	10.16%	11.79%	11.79%	13.73%	13.73%	13.73%	13.73%	13.73%	13.73%	
Northwest Natural Gas Company	NWN	\$1.95	\$36.82	5.30%	5.42%	6.50%	2.80%	n/a	4.65%	8.17%	8.17%	10.07%	10.07%	11.97%	11.97%	11.97%	11.97%	11.97%	11.97%	
ONE Gas, Inc.	OGS	\$2.64	\$61.79	4.27%	4.37%	4.00%	5.00%	5.00%	4.67%	8.36%	8.36%	9.04%	9.04%	9.38%	9.38%	9.38%	9.38%	9.38%	9.38%	
SJW Group	SJW	\$1.60	\$58.46	2.74%	2.83%	6.50%	7.50%	7.50%	7.17%	9.33%	9.33%	10.00%	10.00%	10.34%	10.34%	10.34%	10.34%	10.34%	10.34%	
Spire, Inc.	SR	\$3.02	\$59.69	5.06%	5.19%	4.50%	6.36%	5.00%	5.29%	9.67%	9.67%	10.48%	10.48%	11.58%	11.58%	11.58%	11.58%	11.58%	11.58%	
Mean				3.61%	3.71%	6.68%	5.71%	5.85%	6.14%	8.81%	8.81%	9.86%	9.86%	10.91%	10.91%	10.91%	10.91%	10.91%	10.91%	
Median				3.40%	3.51%	6.50%	5.20%	5.90%	5.73%	8.69%	8.69%	9.51%	9.51%	10.52%	10.52%	10.52%	10.52%	10.52%	10.52%	

Notes:

- [1] Source: Bloomberg Professional as of April 30, 2024
- [2] Source: Bloomberg Professional, equals 30-day average as of April 30, 2024
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.50 x [8])
- [5] Source: Value Line
- [6] Source: Yahoo! Finance
- [7] Source: Zacks
- [8] Equals Average ([5], [6], [7])
- [9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
- [10] Equals [4] + [8]
- [11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

180-DAY CONSTANT GROWTH DCF – MAWC PROXY GROUP

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	Staff Analysis			[10]	Staff Analysis			[11]	Staff Analysis	
		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Min ROE	Min ROE Water Only	Min ROE Gas / Electric	Average ROE	Average ROE Water Only	Average ROE Gas / Electric	Max ROE	Max ROE Water Only	Max ROE Gas / Electric		
American States Water Company	AWR	\$1.72	\$77.04	2.23%	2.30%	6.50%	4.40%	6.30%	5.73%	6.68%	6.68%	8.03%	8.03%	8.81%	8.81%	8.81%	8.81%	8.81%	8.81%	
Atmos Energy Corporation	ATO	\$3.22	\$112.81	2.85%	2.96%	7.00%	7.50%	7.00%	7.17%	9.95%	9.95%	10.12%	10.12%	10.46%	10.46%	10.46%	10.46%	10.46%	10.46%	
California Water Service Group	CWT	\$1.12	\$48.23	2.32%	2.44%	10.00%	10.80%	n/a	10.40%	12.44%	#####	12.84%	12.84%	13.25%	13.25%	13.25%	13.25%	13.25%	13.25%	
Essential Utilities, Inc.	WTRG	\$1.23	\$35.51	3.46%	3.56%	7.00%	5.20%	5.80%	6.00%	8.75%	8.75%	9.56%	9.56%	10.58%	10.58%	10.58%	10.58%	10.58%	10.58%	
Eversource Energy	ES	\$2.86	\$57.87	4.94%	5.05%	5.50%	3.25%	4.20%	4.32%	8.27%	8.27%	9.37%	9.37%	10.58%	10.58%	10.58%	10.58%	10.58%	10.58%	
Middlesex Water Company	MSEX	\$1.30	\$61.28	2.12%	2.17%	6.50%	2.70%	n/a	4.60%	4.85%	4.85%	6.77%	6.77%	8.69%	8.69%	8.69%	8.69%	8.69%	8.69%	
NISource Inc.	NI	\$1.06	\$25.79	4.11%	4.27%	9.50%	7.30%	6.00%	7.60%	10.23%	10.23%	11.87%	11.87%	13.81%	13.81%	13.81%	13.81%	13.81%	13.81%	
Northwest Natural Gas Company	NWN	\$1.95	\$37.07	5.26%	5.38%	6.50%	2.80%	n/a	4.65%	8.13%	8.13%	10.03%	10.03%	11.93%	11.93%	11.93%	11.93%	11.93%	11.93%	
ONE Gas, Inc.	OGS	\$2.64	\$63.77	4.14%	4.24%	4.00%	5.00%	5.00%	4.67%	8.22%	8.22%	8.90%	8.90%	9.24%	9.24%	9.24%	9.24%	9.24%	9.24%	
SJW Group	SJW	\$1.60	\$60.72	2.63%	2.73%	6.50%	7.50%	7.50%	7.17%	9.22%	9.22%	9.90%	9.90%	10.23%	10.23%	10.23%	10.23%	10.23%	10.23%	
Spire, Inc.	SR	\$3.02	\$58.64	5.15%	5.29%	4.50%	6.36%	5.00%	5.29%	9.77%	9.77%	10.57%	10.57%	11.67%	11.67%	11.67%	11.67%	11.67%	11.67%	
Mean				3.57%	3.67%	6.68%	5.71%	5.85%	6.14%	8.77%	8.77%	9.82%	9.82%	10.91%	10.91%	10.91%	10.91%	10.91%	10.91%	
Median				3.46%	3.56%	6.50%	5.20%	5.90%	5.73%	8.75%	8.75%	9.56%	9.56%	10.58%	10.58%	10.58%	10.58%	10.58%	10.58%	

Notes:

- [1] Source: Bloomberg Professional as of April 30, 2024
- [2] Source: Bloomberg Professional, equals 30-day average as of April 30, 2024
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.50 x [8])
- [5] Source: Value Line
- [6] Source: Yahoo! Finance
- [7] Source: Zacks
- [8] Equals Average ([5], [6], [7])
- [9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
- [10] Equals [4] + [8]
- [11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VL BETA

Water
Natural Gas
Electric

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original	[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis			
% Wate	Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.59%	0.70	12.91%	8.31%	10.41%	10.41%		11.04%	11.04%	
0%	Atmos Energy Corporation	ATO	4.59%	0.85	12.91%	8.31%	11.66%		11.66%	11.97%		11.97%
100%	California Water Service Group	CWT	4.59%	0.75	12.91%	8.31%	10.83%	10.83%		11.35%	11.35%	
57%	Essential Utilities, Inc.	WTRG	4.59%	1.00	12.91%	8.31%	12.91%	12.91%		12.91%	12.91%	
2%	Eversource Energy	ES	4.59%	0.95	12.91%	8.31%	12.49%		12.49%	12.59%		12.59%
100%	Middlesex Water Company	MSEX	4.59%	0.75	12.91%	8.31%	10.83%	10.83%		11.35%	11.35%	
0%	NiSource Inc.	NI	4.59%	0.90	12.91%	8.31%	12.07%		12.07%	12.28%		12.28%
0%	Northwest Natural Gas Company	NWN	4.59%	0.85	12.91%	8.31%	11.66%		11.66%	11.97%		11.97%
0%	ONE Gas, Inc.	OGS	4.59%	0.85	12.91%	8.31%	11.66%		11.66%	11.97%		11.97%
100%	SJW Group	SJW	4.59%	0.85	12.91%	8.31%	11.66%	11.66%		11.97%	11.97%	
0%	Spire, Inc.	SR	4.59%	0.85	12.91%	8.31%	11.66%		11.66%	11.97%		11.97%
	Mean						11.62%	11.33%	11.87%	11.94%	11.72%	12.13%
	Median						11.66%	10.83%	11.66%	11.97%	11.35%	11.97%

Notes:

- [1] Bloomberg Professional 30-day average as of April 30, 2024
- [2] Value Line reports
- [3] Schedule AEB-6, Bulkley's Direct Testimony
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VL BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original	[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis			
% Wate	Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q3 2024 - Q3 2025)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.32%	0.70	12.91%	8.59%	10.33%	10.33%		10.97%	10.97%	
0%	Atmos Energy Corporation	ATO	4.32%	0.85	12.91%	8.59%	11.62%		11.62%	11.94%		11.94%
100%	California Water Service Group	CWT	4.32%	0.75	12.91%	8.59%	10.76%	10.76%		11.30%	11.30%	
57%	Essential Utilities, Inc.	WTRG	4.32%	1.00	12.91%	8.59%	12.91%	12.91%		12.91%	12.91%	
2%	Eversource Energy	ES	4.32%	0.95	12.91%	8.59%	12.48%		12.48%	12.58%		12.58%
100%	Middlesex Water Company	MSEX	4.32%	0.75	12.91%	8.59%	10.76%	10.76%		11.30%	11.30%	
0%	NiSource Inc.	NI	4.32%	0.90	12.91%	8.59%	12.05%		12.05%	12.26%		12.26%
0%	Northwest Natural Gas Company	NWN	4.32%	0.85	12.91%	8.59%	11.62%		11.62%	11.94%		11.94%
0%	ONE Gas, Inc.	OGS	4.32%	0.85	12.91%	8.59%	11.62%		11.62%	11.94%		11.94%
100%	SJW Group	SJW	4.32%	0.85	12.91%	8.59%	11.62%	11.62%		11.94%	11.94%	
0%	Spire, Inc.	SR	4.32%	0.85	12.91%	8.59%	11.62%		11.62%	11.94%		11.94%
	Mean						11.58%	11.27%	11.83%	11.91%	11.68%	12.10%
	Median						11.62%	10.76%	11.62%	11.94%	11.30%	11.94%

Notes:

- [1] Blue Chip Financial Forecasts, Vol. 43, No. 5. May 1, 2024, at 2
- [2] Value Line reports
- [3] Schedule AEB-6, Bulkley's Direct Testimony
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VL BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original	[1]	[2]	[3]	[4]	[5]	Staff Analysis	[6]	Staff Analysis
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Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

% Wate	Company	Ticker	Projected 30-year U.S. Treasury bond yield (2025 -		Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
			2029)	Beta (β)								
81%	American States Water Company	AWR	4.10%	0.70	12.91%	8.81%	10.26%	10.26%		10.92%	10.92%	
0%	Atmos Energy Corporation	ATO	4.10%	0.85	12.91%	8.81%	11.59%		11.59%	11.92%		11.92%
100%	California Water Service Group	CWT	4.10%	0.75	12.91%	8.81%	10.70%	10.70%		11.25%	11.25%	
57%	Essential Utilities, Inc.	WTRG	4.10%	1.00	12.91%	8.81%	12.91%	12.91%		12.91%	12.91%	
2%	Eversource Energy	ES	4.10%	0.95	12.91%	8.81%	12.47%		12.47%	12.58%		12.58%
100%	Middlesex Water Company	MSEX	4.10%	0.75	12.91%	8.81%	10.70%	10.70%		11.25%	11.25%	
0%	NiSource Inc.	NI	4.10%	0.90	12.91%	8.81%	12.03%		12.03%	12.25%		12.25%
0%	Northwest Natural Gas Company	NWN	4.10%	0.85	12.91%	8.81%	11.59%		11.59%	11.92%		11.92%
0%	ONE Gas, Inc.	OGS	4.10%	0.85	12.91%	8.81%	11.59%		11.59%	11.92%		11.92%
100%	SJW Group	SJW	4.10%	0.85	12.91%	8.81%	11.59%	11.59%		11.92%	11.92%	
0%	Spire, Inc.	SR	4.10%	0.85	12.91%	8.81%	11.59%		11.59%	11.92%		11.92%
Mean							11.55%	11.23%	11.81%	11.89%	11.65%	12.08%
Median							11.59%	10.70%	11.59%	11.92%	11.25%	11.92%

Notes:

- [1] Blue Chip Financial Forecasts, Vol. 42, No. 12, December 1, 2023, at 14
- [2] Value Line reports
- [3] Schedule AEB-6, Bulkley's Direct Testimony
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & BLOOMBERG BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

% Wate	Company	Ticker	[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
			Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.59%	0.65	12.91%	8.31%	9.96%	9.96%		10.70%	10.70%	
0%	Atmos Energy Corporation	ATO	4.59%	0.75	12.91%	8.31%	10.84%		10.84%	11.35%		11.35%
100%	California Water Service Group	CWT	4.59%	0.69	12.91%	8.31%	10.32%	10.32%		10.97%	10.97%	
57%	Essential Utilities, Inc.	WTRG	4.59%	0.85	12.91%	8.31%	11.63%	11.63%		11.95%	11.95%	
2%	Eversource Energy	ES	4.59%	0.80	12.91%	8.31%	11.25%		11.25%	11.66%		11.66%
100%	Middlesex Water Company	MSEX	4.59%	0.77	12.91%	8.31%	10.98%	10.98%		11.47%	11.47%	
0%	NiSource Inc.	NI	4.59%	0.80	12.91%	8.31%	11.27%		11.27%	11.68%		11.68%
0%	Northwest Natural Gas Company	NWN	4.59%	0.70	12.91%	8.31%	10.39%		10.39%	11.02%		11.02%
0%	ONE Gas, Inc.	OGS	4.59%	0.77	12.91%	8.31%	11.02%		11.02%	11.49%		11.49%
100%	SJW Group	SJW	4.59%	0.80	12.91%	8.31%	11.24%	11.24%		11.65%	11.65%	
0%	Spire, Inc.	SR	4.59%	0.77	12.91%	8.31%	10.97%		10.97%	11.46%		11.46%
Mean							10.90%	10.83%	10.96%	11.40%	11.35%	11.44%
Median							10.98%	10.98%	11.00%	11.47%	11.47%	11.47%

Notes:

- [1] Bloomberg Professional 30-day average as of April 30, 2024
- [2] Bloomberg Professional
- [3] Schedule AEB-6, Bulkley's Direct Testimony
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

% Wate	Company	Ticker	[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
			Near-term projected 30-year U.S. Treasury bond yield (Q3 2024 - Q3 2025)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.32%	0.65	12.91%	8.59%	9.87%	9.87%		10.63%	10.63%	
0%	Atmos Energy Corporation	ATO	4.32%	0.75	12.91%	8.59%	10.77%		10.77%	11.30%		11.30%
100%	California Water Service Group	CWT	4.32%	0.69	12.91%	8.59%	10.24%	10.24%		10.91%	10.91%	
57%	Essential Utilities, Inc.	WTRG	4.32%	0.85	12.91%	8.59%	11.59%	11.59%		11.92%	11.92%	
2%	Eversource Energy	ES	4.32%	0.80	12.91%	8.59%	11.20%		11.20%	11.62%		11.62%
100%	Middlesex Water Company	MSEX	4.32%	0.77	12.91%	8.59%	10.92%	10.92%		11.42%	11.42%	

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

0% NiSource Inc.	NI	4.32%	0.80	12.91%	8.59%	11.22%	11.22%	11.64%	11.64%
0% Northwest Natural Gas Company	NWN	4.32%	0.70	12.91%	8.59%	10.31%	10.31%	10.96%	10.96%
0% ONE Gas, Inc.	OGS	4.32%	0.77	12.91%	8.59%	10.96%	10.96%	11.45%	11.45%
100% SJW Group	SJW	4.32%	0.80	12.91%	8.59%	11.18%	11.18%	11.61%	11.61%
0% Spire, Inc.	SR	4.32%	0.77	12.91%	8.59%	10.91%	10.91%	11.41%	11.41%
Mean						10.83%	10.76%	10.89%	11.35%
Median						10.92%	10.92%	10.93%	11.42%

Notes:

- [1] Blue Chip Financial Forecasts, Vol. 43, No. 5. May 1, 2024, at 2
- [2] Bloomberg Professional
- [3] Schedule AEB-6, Bulkley's Direct Testimony
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original		[1]	[2]	[3]	[4]	[5]	Staff Analysis	[6]	Staff Analysis			
% Wate	Company	Ticker	30-day average of 30-year U.S. Treasury bond yield (2025 - 2029)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.10%	0.65	12.91%	8.81%	9.79%	9.79%		10.57%	10.57%	
0%	Atmos Energy Corporation	ATO	4.10%	0.75	12.91%	8.81%	10.71%		10.71%	11.26%		11.26%
100%	California Water Service Group	CWT	4.10%	0.69	12.91%	8.81%	10.17%	10.17%		10.86%	10.86%	
57%	Essential Utilities, Inc.	WTRG	4.10%	0.85	12.91%	8.81%	11.56%	11.56%		11.89%	11.89%	
2%	Eversource Energy	ES	4.10%	0.80	12.91%	8.81%	11.15%		11.15%	11.59%		11.59%
100%	Middlesex Water Company	MSEX	4.10%	0.77	12.91%	8.81%	10.87%	10.87%		11.38%	11.38%	
0%	NiSource Inc.	NI	4.10%	0.80	12.91%	8.81%	11.18%		11.18%	11.61%		11.61%
0%	Northwest Natural Gas Company	NWN	4.10%	0.70	12.91%	8.81%	10.24%		10.24%	10.91%		10.91%
0%	ONE Gas, Inc.	OGS	4.10%	0.77	12.91%	8.81%	10.91%		10.91%	11.41%		11.41%
100%	SJW Group	SJW	4.10%	0.80	12.91%	8.81%	11.14%	11.14%		11.58%	11.58%	
0%	Spire, Inc.	SR	4.10%	0.77	12.91%	8.81%	10.86%		10.86%	11.37%		11.37%
Mean							10.78%	10.71%	10.84%	11.31%	11.26%	11.36%
Median							10.87%	10.87%	10.88%	11.38%	11.38%	11.39%

Notes:

- [1] Blue Chip Financial Forecasts, Vol. 42, No. 12, December 1, 2023, at 14
- [2] Source: Bloomberg Professional
- [3] Schedule AEB-6, Bulkley's Direct Testimony
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original		[1]	[2]	[3]	[4]	[5]	Staff Analysis	[6]	Staff Analysis			
% Wate	Company	Ticker	30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.59%	0.69	12.91%	8.31%	10.33%	10.33%		10.97%	10.97%	
0%	Atmos Energy Corporation	ATO	4.59%	0.75	12.91%	8.31%	10.83%		10.83%	11.35%		11.35%
100%	California Water Service Group	CWT	4.59%	0.70	12.91%	8.31%	10.41%	10.41%		11.04%	11.04%	
57%	Essential Utilities, Inc.	WTRG	4.59%	0.79	12.91%	8.31%	11.16%	11.16%		11.60%	11.60%	
2%	Eversource Energy	ES	4.59%	0.76	12.91%	8.31%	10.91%		10.91%	11.41%		11.41%
100%	Middlesex Water Company	MSEX	4.59%	0.74	12.91%	8.31%	10.74%	10.74%		11.28%	11.28%	
0%	NiSource Inc.	NI	4.59%	0.76	12.91%	8.31%	10.91%		10.91%	11.41%		11.41%
0%	Northwest Natural Gas Company	NWN	4.59%	0.71	12.91%	8.31%	10.49%		10.49%	11.10%		11.10%
0%	ONE Gas, Inc.	OGS	4.59%	0.74	12.91%	8.31%	10.74%		10.74%	11.28%		11.28%
100%	SJW Group	SJW	4.59%	0.76	12.91%	8.31%	10.91%	10.91%		11.41%	11.41%	
0%	Spire, Inc.	SR	4.59%	0.74	12.91%	8.31%	10.74%		10.74%	11.28%		11.28%
Mean							10.74%	10.71%	10.77%	11.28%	11.26%	11.31%
Median							10.74%	10.74%	10.79%	11.28%	11.28%	11.32%

Notes:

- [1] Bloomberg Professional 30-day average as of April 30, 2024
- [2] Source: Schedule AEB-4 p. 4

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

[3] Schedule AEB-6, Bulkley's Direct Testimony

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original		[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
		Near-term projected 30- year U.S. Treasury bond yield (Q3 2024 - Q3 2025)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.32%	0.69	12.91%	8.59%	10.24%		10.91%	10.91%	
0%	Atmos Energy Corporation	ATO	4.32%	0.75	12.91%	8.59%		10.76%	11.30%		11.30%
100%	California Water Service Group	CWT	4.32%	0.70	12.91%	8.59%	10.33%		10.97%	10.97%	
57%	Essential Utilities, Inc.	WTRG	4.32%	0.79	12.91%	8.59%	11.10%		11.55%	11.55%	
2%	Eversource Energy	ES	4.32%	0.76	12.91%	8.59%		10.85%	11.36%		11.36%
100%	Middlesex Water Company	MSEX	4.32%	0.74	12.91%	8.59%	10.67%		11.23%	11.23%	
0%	NiSource Inc.	NI	4.32%	0.76	12.91%	8.59%		10.85%	11.36%		11.36%
0%	Northwest Natural Gas Company	NWN	4.32%	0.71	12.91%	8.59%		10.42%	11.04%		11.04%
0%	ONE Gas, Inc.	OGS	4.32%	0.74	12.91%	8.59%		10.67%	11.23%		11.23%
100%	SJW Group	SJW	4.32%	0.76	12.91%	8.59%	10.85%		11.36%	11.36%	
0%	Spire, Inc.	SR	4.32%	0.74	12.91%	8.59%		10.67%	11.23%		11.23%
	Mean					10.67%	10.64%	10.70%	11.23%	11.21%	11.25%
	Median					10.67%	10.67%	10.72%	11.23%	11.23%	11.26%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 43, No. 5, May 1, 2024, at 2

[2] Source: Schedule AEB-4 p. 4

[3] Schedule AEB-6, Bulkley's Direct Testimony

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original		[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
		Projected 30- year U.S. Treasury bond yield (2025 - 2029)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.10%	0.69	12.91%	8.81%	10.18%		10.86%	10.86%	
0%	Atmos Energy Corporation	ATO	4.10%	0.75	12.91%	8.81%		10.70%	11.25%		11.25%
100%	California Water Service Group	CWT	4.10%	0.70	12.91%	8.81%	10.26%		10.92%	10.92%	
57%	Essential Utilities, Inc.	WTRG	4.10%	0.79	12.91%	8.81%	11.06%		11.52%	11.52%	
2%	Eversource Energy	ES	4.10%	0.76	12.91%	8.81%		10.79%	11.32%		11.32%
100%	Middlesex Water Company	MSEX	4.10%	0.74	12.91%	8.81%	10.62%		11.19%	11.19%	
0%	NiSource Inc.	NI	4.10%	0.76	12.91%	8.81%		10.79%	11.32%		11.32%
0%	Northwest Natural Gas Company	NWN	4.10%	0.71	12.91%	8.81%		10.35%	10.99%		10.99%
0%	ONE Gas, Inc.	OGS	4.10%	0.74	12.91%	8.81%		10.62%	11.19%		11.19%
100%	SJW Group	SJW	4.10%	0.76	12.91%	8.81%	10.79%		11.32%	11.32%	
0%	Spire, Inc.	SR	4.10%	0.74	12.91%	8.81%		10.62%	11.19%		11.19%
	Mean					10.62%	10.58%	10.65%	11.19%	11.16%	11.21%
	Median					10.62%	10.62%	10.66%	11.19%	11.19%	11.22%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 42, No. 12, December 1, 2023, at 14

[2] Source: Schedule AEB-4 p. 4

[3] Schedule AEB-6, Bulkley's Direct Testimony

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VL BETA

Water
 Natural Gas
 Electric

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis		
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric	
81%	American States Water Company	AWR	4.57%	0.70	11.93%	7.36%	9.72%	9.72%		10.27%	10.27%		
0%	Atmos Energy Corporation	ATO	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	California Water Service Group	CWT	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
57%	Essential Utilities, Inc.	WTRG	4.57%	0.99	11.93%	7.36%	11.83%	11.83%		11.86%	11.86%		
2%	Eversource Energy	ES	4.57%	0.94	11.93%	7.36%	11.47%		11.47%	11.58%		11.58%	
100%	Middlesex Water Company	MSEX	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
0%	NiSource Inc.	NI	4.57%	0.93	11.93%	7.36%	11.38%		11.38%	11.51%		11.51%	
0%	Northwest Natural Gas Company	NWN	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
0%	ONE Gas, Inc.	OGS	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	SJW Group	SJW	4.57%	0.84	11.93%	7.36%	10.73%	10.73%		11.03%	11.03%		
0%	Spire, Inc.	SR	4.57%	0.85	11.93%	7.36%	10.82%		10.82%	11.10%		11.10%	
Mean								10.74%	10.46%	10.98%	11.04%	10.82%	11.21%
Median								10.73%	10.00%	10.78%	11.03%	10.48%	11.06%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Value Line reports

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VL BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis		
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric	
81%	American States Water Company	AWR	4.57%	0.70	11.93%	7.36%	9.72%	9.72%		10.27%	10.27%		
0%	Atmos Energy Corporation	ATO	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	California Water Service Group	CWT	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
57%	Essential Utilities, Inc.	WTRG	4.57%	0.99	11.93%	7.36%	11.83%	11.83%		11.86%	11.86%		
2%	Eversource Energy	ES	4.57%	0.94	11.93%	7.36%	11.47%		11.47%	11.58%		11.58%	
100%	Middlesex Water Company	MSEX	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
0%	NiSource Inc.	NI	4.57%	0.93	11.93%	7.36%	11.38%		11.38%	11.51%		11.51%	
0%	Northwest Natural Gas Company	NWN	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
0%	ONE Gas, Inc.	OGS	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	SJW Group	SJW	4.57%	0.84	11.93%	7.36%	10.73%	10.73%		11.03%	11.03%		
0%	Spire, Inc.	SR	4.57%	0.85	11.93%	7.36%	10.82%		10.82%	11.10%		11.10%	
Mean								10.74%	10.46%	10.98%	11.04%	10.82%	11.21%
Median								10.73%	10.00%	10.78%	11.03%	10.48%	11.06%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Value Line reports

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VL BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
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Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond		Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM		
			yield	Beta (β)							Water Only	Gas / Electric	
81%	American States Water Company	AWR	4.57%	0.70	11.93%	7.36%	9.72%	9.72%		10.27%	10.27%		
0%	Atmos Energy Corporation	ATO	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	California Water Service Group	CWT	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
57%	Essential Utilities, Inc.	WTRG	4.57%	0.99	11.93%	7.36%	11.83%	11.83%		11.86%	11.86%		
2%	Eversource Energy	ES	4.57%	0.94	11.93%	7.36%	11.47%		11.47%	11.58%		11.58%	
100%	Middlesex Water Company	MSEX	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
0%	NiSource Inc.	NI	4.57%	0.93	11.93%	7.36%	11.38%		11.38%	11.51%		11.51%	
0%	Northwest Natural Gas Company	NWN	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
0%	ONE Gas, Inc.	OGS	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	SJW Group	SJW	4.57%	0.84	11.93%	7.36%	10.73%	10.73%		11.03%	11.03%		
0%	Spire, Inc.	SR	4.57%	0.85	11.93%	7.36%	10.82%		10.82%	11.10%		11.10%	
Mean								10.74%	10.46%	10.98%	11.04%	10.82%	11.21%
Median								10.73%	10.00%	10.78%	11.03%	10.48%	11.06%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Value Line reports

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & BLOOMBERG BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis		
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond		Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM		
			yield	Beta (β)							Water Only	Gas / Electric	
81%	American States Water Company	AWR	4.57%	0.65	11.93%	7.36%	9.32%	9.32%		9.97%	9.97%		
0%	Atmos Energy Corporation	ATO	4.57%	0.75	11.93%	7.36%	10.10%		10.10%	10.55%		10.55%	
100%	California Water Service Group	CWT	4.57%	0.69	11.93%	7.36%	9.64%	9.64%		10.21%	10.21%		
57%	Essential Utilities, Inc.	WTRG	4.57%	0.85	11.93%	7.36%	10.80%	10.80%		11.08%	11.08%		
2%	Eversource Energy	ES	4.57%	0.80	11.93%	7.36%	10.46%		10.46%	10.83%		10.83%	
100%	Middlesex Water Company	MSEX	4.57%	0.77	11.93%	7.36%	10.23%	10.23%		10.65%	10.65%		
0%	NiSource Inc.	NI	4.57%	0.80	11.93%	7.36%	10.48%		10.48%	10.84%		10.84%	
0%	Northwest Natural Gas Company	NWN	4.57%	0.70	11.93%	7.36%	9.70%		9.70%	10.26%		10.26%	
0%	ONE Gas, Inc.	OGS	4.57%	0.77	11.93%	7.36%	10.26%		10.26%	10.68%		10.68%	
100%	SJW Group	SJW	4.57%	0.80	11.93%	7.36%	10.45%	10.45%		10.82%	10.82%		
0%	Spire, Inc.	SR	4.57%	0.77	11.93%	7.36%	10.22%		10.22%	10.64%		10.64%	
Mean								10.15%	10.09%	10.20%	10.59%	10.55%	10.63%
Median								10.23%	10.23%	10.24%	10.65%	10.65%	10.66%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Bloomberg Professional

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond		Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM	
			yield	Beta (β)							Water Only	Gas / Electric
81%	American States Water Company	AWR	4.57%	0.65	11.93%	7.36%	9.32%	9.32%		9.97%	9.97%	
0%	Atmos Energy Corporation	ATO	4.57%	0.75	11.93%	7.36%	10.10%		10.10%	10.55%		10.55%
100%	California Water Service Group	CWT	4.57%	0.69	11.93%	7.36%	9.64%	9.64%		10.21%	10.21%	
57%	Essential Utilities, Inc.	WTRG	4.57%	0.85	11.93%	7.36%	10.80%	10.80%		11.08%	11.08%	
2%	Eversource Energy	ES	4.57%	0.80	11.93%	7.36%	10.46%		10.46%	10.83%		10.83%
100%	Middlesex Water Company	MSEX	4.57%	0.77	11.93%	7.36%	10.23%	10.23%		10.65%	10.65%	

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

0%	NiSource Inc.	NI	4.57%	0.80	11.93%	7.36%	10.48%	10.48%	10.84%	10.84%		
0%	Northwest Natural Gas Company	NWN	4.57%	0.70	11.93%	7.36%	9.70%	9.70%	10.26%	10.26%		
0%	ONE Gas, Inc.	OGS	4.57%	0.77	11.93%	7.36%	10.26%	10.26%	10.68%	10.68%		
100%	SJW Group	SJW	4.57%	0.80	11.93%	7.36%	10.45%	10.45%	10.82%	10.82%		
0%	Spire, Inc.	SR	4.57%	0.77	11.93%	7.36%	10.22%	10.22%	10.64%	10.64%		
Mean							10.15%	10.09%	10.20%	10.59%	10.55%	10.63%
Median							10.23%	10.23%	10.24%	10.65%	10.65%	10.66%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Bloomberg Professional

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 x (R_m - R_f) + 0.75 x \beta x (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.57%	0.65	11.93%	7.36%	9.32%	9.32%		9.97%	9.97%	
0%	Atmos Energy Corporation	ATO	4.57%	0.75	11.93%	7.36%	10.10%		10.10%	10.55%		10.55%
100%	California Water Service Group	CWT	4.57%	0.69	11.93%	7.36%	9.64%	9.64%		10.21%	10.21%	
57%	Essential Utilities, Inc.	WTRG	4.57%	0.85	11.93%	7.36%	10.80%	10.80%		11.08%	11.08%	
2%	Eversource Energy	ES	4.57%	0.80	11.93%	7.36%	10.46%		10.46%	10.83%		10.83%
100%	Middlesex Water Company	MSEX	4.57%	0.77	11.93%	7.36%	10.23%	10.23%		10.65%	10.65%	
0%	NiSource Inc.	NI	4.57%	0.80	11.93%	7.36%	10.48%		10.48%	10.84%		10.84%
0%	Northwest Natural Gas Company	NWN	4.57%	0.70	11.93%	7.36%	9.70%		9.70%	10.26%		10.26%
0%	ONE Gas, Inc.	OGS	4.57%	0.77	11.93%	7.36%	10.26%		10.26%	10.68%		10.68%
100%	SJW Group	SJW	4.57%	0.80	11.93%	7.36%	10.45%	10.45%		10.82%	10.82%	
0%	Spire, Inc.	SR	4.57%	0.77	11.93%	7.36%	10.22%		10.22%	10.64%		10.64%
Mean							10.15%	10.09%	10.20%	10.59%	10.55%	10.63%
Median							10.23%	10.23%	10.24%	10.65%	10.65%	10.66%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Source: Bloomberg Professional

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 x (R_m - R_f) + 0.75 x \beta x (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.57%	0.69	11.93%	7.36%	9.65%	9.65%		10.22%	10.22%	
0%	Atmos Energy Corporation	ATO	4.57%	0.75	11.93%	7.36%	10.09%		10.09%	10.55%		10.55%
100%	California Water Service Group	CWT	4.57%	0.70	11.93%	7.36%	9.72%	9.72%		10.27%	10.27%	
57%	Essential Utilities, Inc.	WTRG	4.57%	0.79	11.93%	7.36%	10.38%	10.38%		10.77%	10.77%	
2%	Eversource Energy	ES	4.57%	0.76	11.93%	7.36%	10.16%		10.16%	10.60%		10.60%
100%	Middlesex Water Company	MSEX	4.57%	0.74	11.93%	7.36%	10.01%	10.01%		10.49%	10.49%	
0%	NiSource Inc.	NI	4.57%	0.76	11.93%	7.36%	10.16%		10.16%	10.60%		10.60%
0%	Northwest Natural Gas Company	NWN	4.57%	0.71	11.93%	7.36%	9.79%		9.79%	10.33%		10.33%
0%	ONE Gas, Inc.	OGS	4.57%	0.74	11.93%	7.36%	10.01%		10.01%	10.49%		10.49%
100%	SJW Group	SJW	4.57%	0.76	11.93%	7.36%	10.16%	10.16%		10.60%	10.60%	
0%	Spire, Inc.	SR	4.57%	0.74	11.93%	7.36%	10.01%		10.01%	10.49%		10.49%
Mean							10.01%	9.98%	10.04%	10.49%	10.47%	10.51%
Median							10.01%	10.01%	10.05%	10.49%	10.49%	10.52%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Source: Schedule AEB-4 p. 4

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 x (R_m - R_f) + 0.75 x \beta x (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.57%	0.69	9.43%	4.86%	7.93%	7.93%		8.30%	8.30%	
0%	Atmos Energy Corporation	ATO	4.57%	0.75	9.43%	4.86%	8.22%		8.22%	8.52%		8.52%
100%	California Water Service Group	CWT	4.57%	0.70	9.43%	4.86%	7.97%	7.97%		8.34%	8.34%	
57%	Essential Utilities, Inc.	WTRG	4.57%	0.79	9.43%	4.86%	8.41%	8.41%		8.67%	8.67%	
2%	Eversource Energy	ES	4.57%	0.76	9.43%	4.86%	8.27%		8.27%	8.56%		8.56%
100%	Middlesex Water Company	MSEX	4.57%	0.74	9.43%	4.86%	8.17%	8.17%		8.48%	8.48%	
0%	NiSource Inc.	NI	4.57%	0.76	9.43%	4.86%	8.27%		8.27%	8.56%		8.56%
0%	Northwest Natural Gas Company	NWN	4.57%	0.71	9.43%	4.86%	8.02%		8.02%	8.38%		8.38%
0%	ONE Gas, Inc.	OGS	4.57%	0.74	9.43%	4.86%	8.17%		8.17%	8.48%		8.48%
100%	SJW Group	SJW	4.57%	0.76	9.43%	4.86%	8.27%	8.27%		8.56%	8.56%	
0%	Spire, Inc.	SR	4.57%	0.74	9.43%	4.86%	8.17%		8.17%	8.48%		8.48%
Mean							8.17%	8.15%	8.18%	8.48%	8.47%	8.50%
Median							8.17%	8.17%	8.19%	8.48%	8.48%	8.50%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Source: Schedule AEB-4 p. 4

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

$$K = R_f + \beta (R_m - R_f)$$

$$K = R_f + 0.25 x (R_m - R_f) + 0.75 x \beta x (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.57%	0.69	9.43%	4.86%	7.93%	7.93%		8.30%	8.30%	
0%	Atmos Energy Corporation	ATO	4.57%	0.75	9.43%	4.86%	8.22%		8.22%	8.52%		8.52%
100%	California Water Service Group	CWT	4.57%	0.70	9.43%	4.86%	7.97%	7.97%		8.34%	8.34%	
57%	Essential Utilities, Inc.	WTRG	4.57%	0.79	9.43%	4.86%	8.41%	8.41%		8.67%	8.67%	
2%	Eversource Energy	ES	4.57%	0.76	9.43%	4.86%	8.27%		8.27%	8.56%		8.56%
100%	Middlesex Water Company	MSEX	4.57%	0.74	9.43%	4.86%	8.17%	8.17%		8.48%	8.48%	
0%	NiSource Inc.	NI	4.57%	0.76	9.43%	4.86%	8.27%		8.27%	8.56%		8.56%
0%	Northwest Natural Gas Company	NWN	4.57%	0.71	9.43%	4.86%	8.02%		8.02%	8.38%		8.38%
0%	ONE Gas, Inc.	OGS	4.57%	0.74	9.43%	4.86%	8.17%		8.17%	8.48%		8.48%
100%	SJW Group	SJW	4.57%	0.76	9.43%	4.86%	8.27%	8.27%		8.56%	8.56%	
0%	Spire, Inc.	SR	4.57%	0.74	9.43%	4.86%	8.17%		8.17%	8.48%		8.48%
Mean							8.17%	8.15%	8.18%	8.48%	8.47%	8.50%
Median							8.17%	8.17%	8.19%	8.48%	8.48%	8.50%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Source: Schedule AEB-4 p. 4

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])