

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Niagara Mohawk Power Corporation	07/20	National Grid USA	Case No. 20-E-0380 20-G-0381	Return on Equity
Corning Natural Gas Corporation	02/20	Corning Natural Gas Corporation	Case No. 20-G-0101	Return on Equity
New York State Electric and Gas Company  Rochester Gas and Electric	05/19	New York State Electric and Gas Company  Rochester Gas and Electric	19-E-0378 19-G-0379 19-E-0380 19-G-0381	Return on Equity
Brooklyn Union Gas Company d/b/a National Grid NY KeySpan Gas East Corporation d/b/a National Grid	04/19	Brooklyn Union Gas Company d/b/a National Grid NY KeySpan Gas East Corporation d/b/a National Grid	19-G-0309 19-G-0310	Return on Equity
Central Hudson Gas and Electric Corporation	07/17	Central Hudson Gas and Electric Corporation	Electric 17-E-0459 Gas 17-G-0460	Return on Equity
Niagara Mohawk Power Corporation	04/17	National Grid USA	Case No. 17-E-0238 17-G-0239	Return on Equity
Corning Natural Gas Corporation	06/16	Corning Natural Gas Corporation	Case No. 16-G-0369	Return on Equity
National Fuel Gas Company	04/16	National Fuel Gas Company	Case No. 16-G-0257	Return on Equity
KeySpan Energy Delivery	01/16	KeySpan Energy Delivery	Case No. 15-G-0058 Case No. 15-G-0059	Return on Equity
New York State Electric and Gas Company Rochester Gas and Electric	05/15	New York State Electric and Gas Company Rochester Gas and Electric	Case No. 15-E-0283 Case No. 15-G-0284 Case No. 15-E-0285 Case No. 15-G-0286	Return on Equity
<b>North Dakota Public Service Commission</b>				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Montana-Dakota Utilities Co.	05/22	Montana-Dakota Utilities Co.	C-PU-22-194	Return on Equity
Montana-Dakota Utilities Co.	08/20	Montana-Dakota Utilities Co.	C-PU-20-379	Return on Equity
Northern States Power Company	12/12	Northern States Power Company	C-PU-12-813	Return on Equity
Northern States Power Company	12/10	Northern States Power Company	C-PU-10-657	Return on Equity
<b>Oklahoma Corporation Commission</b>				
Oklahoma Gas & Electric	12/21	Oklahoma Gas & Electric	Cause No. PUD 202100164	Return on Equity
Arkansas Oklahoma Gas Corporation	01/13	Arkansas Oklahoma Gas Corporation	Cause No. PUD 201200236	Return on Equity
<b>Oregon Public Service Commission</b>				
PacifiCorp d/b/a Pacific Power & Light	03/22	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-399	Return on Equity
PacifiCorp d/b/a Pacific Power & Light	02/20	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-374	Return on Equity
<b>Pennsylvania Public Utility Commission</b>				
American Water Works Company Inc.	04/22	Pennsylvania-American Water Company	Docket No. R-2020-3031672 (water) Docket No. R-2020-3031673 (wastewater)	Return on Equity
American Water Works Company Inc.	04/20	Pennsylvania-American Water Company	Docket No. R-2020-3019369 (water) Docket No. R-2020-3019371 (wastewater)	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
American Water Works Company Inc.	04/17	Pennsylvania-American Water Company	Docket No. R-2017-2595853	Return on Equity
<b>South Dakota Public Utilities Commission</b>				
MidAmerican Energy Company	05/22	MidAmerican Energy Company	D-NG22-005	Return on Equity
Northern States Power Company	06/14	Northern States Power Company	Docket No. EL14-058	Return on Equity
<b>Texas Public Utility Commission</b>				
Entergy Texas, Inc.	07/22	Entergy Texas, Inc.	D-53719	Return on Equity
Southwestern Public Service Commission	08/19	Southwestern Public Service Commission	Docket No. D-49831	Return on Equity
Southwestern Public Service Company	01/14	Southwestern Public Service Company	Docket No. 42004	Return on Equity
<b>Utah Public Service Commission</b>				
PacifiCorp d/b/a Rocky Mountain Power	05/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20-035-04	Return on Equity
<b>Virginia State Corporation Commission</b>				
Virginia American Water Company, Inc.	11/21	Virginia American Water Company, Inc.	Docket No. PUR-2021-00255	Return on Equity
Virginia American Water Company, Inc.	11/18	Virginia American Water Company, Inc.	Docket No. PUR-2018-00175	Return on Equity
<b>Washington Utilities Transportation Commission</b>				
Cascade Natural Gas Corporation	06/20	Cascade Natural Gas Corporation	Docket No. UG-200568	Return on Equity
PacifiCorp d/b/a Pacific Power & Light	12/19	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-191024	Return on Equity
Cascade Natural Gas Corporation	04/19	Cascade Natural Gas Corporation	Docket No. UG-190210	Return on Equity
<b>West Virginia Public Service Commission</b>				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
West Virginia American Water Company	04/21	West Virginia American Water Company	Case No. 21-02369-W-42T	Return on Equity
West Virginia American Water Company	04/18	West Virginia American Water Company	Case No. 18-0573-W-42T Case No. 18-0576-S-42T	Return on Equity
<b>Wisconsin Public Service Commission</b>				
Wisconsin Electric Power Company and Wisconsin Gas LLC	04/22	Wisconsin Electric Power Company and Wisconsin Gas LLC	Docket No. 05-UR-110	Return on Equity
Wisconsin Public Service Corp.	04/22	Wisconsin Public Service Corp.	6690-UR-127	Return on Equity
Alliant Energy		Alliant Energy		Return on Equity
Wisconsin Electric Power Company and Wisconsin Gas LLC	03/19	Wisconsin Electric Power Company and Wisconsin Gas LLC	Docket No. 05-UR-109	Return on Equity
Wisconsin Public Service Corp.	03/19	Wisconsin Public Service Corp.	6690-UR-126	Return on Equity
<b>Wyoming Public Service Commission</b>				
PacifiCorp d/b/a Rocky Mountain Power	03/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20000-578-ER-20	Return on Equity
Montana-Dakota Utilities Co.	05/19	Montana-Dakota Utilities Co.	30013-351-GR-19	Return on Equity

#### CERTIFICATIONS/ACCREDITATIONS

Certified General Appraiser, licensed in the Commonwealth of Massachusetts and the State of New Hampshire

SUMMARY OF ROE ANALYSES RESULTS

<b>Constant Growth DCF</b>			
	Mean Low	Mean	Mean High
30-Day Average	8.05%	9.12%	10.14%
90-Day Average	8.09%	9.16%	10.18%
180-Day Average	8.12%	9.19%	10.21%
Constant Growth Average	8.08%	9.16%	10.18%
	Median Low	Median	Median High
30-Day Average	7.60%	9.22%	9.99%
90-Day Average	7.74%	9.28%	9.98%
180-Day Average	7.87%	9.35%	10.01%
Constant Growth Average	7.74%	9.28%	10.00%
<b>CAPM</b>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.89%	11.94%	11.93%
Bloomberg Beta	11.32%	11.40%	11.38%
Long-term Avg. Beta	10.59%	10.70%	10.68%
<b>ECAPM</b>			
Value Line Beta	12.18%	12.22%	12.21%
Bloomberg Beta	11.75%	11.81%	11.80%
Long-term Avg. Beta	11.21%	11.29%	11.27%
<b>Risk Premium</b>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results	10.14%	10.32%	10.28%

PROXY GROUP SCREENING DATA AND RESULTS - FINAL PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Company	Ticker	Dividends	S&P Credit Rating Between BBB- and AAA	Covered by More Than 1 Analyst	Positive Growth Rates from at least two sources (Value Line, Yahoo! First Call, and Zacks)	Generation Assets Included in Rate Base	% Company-Owned Generation > 40%	% Regulated Operating Income > 60%	% Regulated Electric Operating Income > 80%	Announced Merger
ALLETE, Inc.	ALE	Yes	BBB	Yes	Yes	Yes	48.42%	95.8%	97.18%	No
Alliant Energy Corporation	LNT	Yes	A-	Yes	Yes	Yes	69.07%	96.6%	91.18%	No
Ameren Corporation	AEE	Yes	BBB+	Yes	Yes	Yes	76.86%	100.0%	85.23%	No
American Electric Power Company, Inc.	AEP	Yes	A-	Yes	Yes	Yes	53.74%	95.4%	100.00%	No
Duke Energy Corporation	DUK	Yes	BBB+	Yes	Yes	Yes	82.70%	99.4%	90.89%	No
Entergy Corporation	ETR	Yes	BBB+	Yes	Yes	Yes	66.73%	100.0%	99.47%	No
Evergy, Inc.	EVRG	Yes	A-	Yes	Yes	Yes	64.10%	100.0%	100.00%	No
IDACORP, Inc.	IDA	Yes	BBB	Yes	Yes	Yes	71.93%	99.8%	100.00%	No
NextEra Energy, Inc.	NEE	Yes	A-	Yes	Yes	Yes	97.24%	85.1%	100.00%	No
NorthWestern Corporation	NWE	Yes	BBB	Yes	Yes	Yes	57.89%	99.7%	84.22%	No
OGE Energy Corporation	OGE	Yes	BBB+	Yes	Yes	Yes	57.21%	100.0%	100.00%	No
Otter Tail Corporation	OTTR	Yes	BBB	Yes	Yes	Yes	58.28%	82.7%	100.00%	No
Portland General Electric Company	POR	Yes	BBB+	Yes	Yes	Yes	62.41%	100.0%	100.00%	No
Southern Company	SO	Yes	BBB+	Yes	Yes	Yes	78.45%	84.6%	80.48%	No
Xcel Energy Inc.	XEL	Yes	A-	Yes	Yes	Yes	57.43%	100.0%	86.47%	No

Notes:

- [1] Source: Bloomberg Professional  
[2] Source: Bloomberg Professional  
[3] Source: Yahoo! Finance and Zacks  
[4] Source: Yahoo! Finance, Value Line Investment Survey, and Zacks  
[5] to [6] Source: S&P Capital IQ Pro  
[7] to [8] Source: Form 10-K's for 2021, 2020, and 2019  
[9] Source: S&P Capital IQ Pro Financial News Releases

30-DAY CONSTANT GROWTH DCF – MONTANA-DAKOTA PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.60	\$58.39	4.45%	4.62%	6.00%	8.70%	8.10%	7.60%	10.59%	12.22%	13.35%
Alliant Energy Corporation	LNT	\$1.71	\$60.91	2.81%	2.89%	6.00%	6.30%	6.20%	6.17%	8.89%	9.06%	9.20%
Ameren Corporation	AEE	\$2.36	\$91.83	2.57%	2.66%	6.50%	6.37%	7.20%	6.69%	9.02%	9.35%	9.86%
American Electric Power Company, Inc.	AEP	\$3.12	\$100.22	3.11%	3.21%	6.50%	6.25%	6.10%	6.28%	9.31%	9.49%	9.71%
Duke Energy Corporation	DUK	\$4.02	\$106.48	3.78%	3.88%	5.00%	5.62%	6.10%	5.57%	8.87%	9.45%	9.99%
Entergy Corporation	ETR	\$4.04	\$115.37	3.50%	3.60%	4.00%	6.19%	6.80%	5.66%	7.57%	9.26%	10.42%
Evergy, Inc.	EVERG	\$2.29	\$67.69	3.38%	3.48%	7.50%	3.71%	5.20%	5.47%	7.16%	8.95%	11.01%
IDACORP, Inc.	IDA	\$3.00	\$109.12	2.75%	2.79%	4.00%	2.70%	2.70%	3.13%	5.49%	5.93%	6.80%
NextEra Energy, Inc.	NEE	\$1.70	\$86.05	1.98%	2.07%	10.00%	9.35%	9.70%	9.68%	11.42%	11.75%	12.07%
NorthWestern Corporation	NWE	\$2.52	\$53.30	4.73%	4.80%	3.00%	4.50%	1.70%	3.07%	6.47%	7.87%	9.33%
OGE Energy Corporation	OGE	\$1.64	\$40.75	4.02%	4.10%	6.50%	1.80%	3.50%	3.97%	5.96%	8.07%	10.66%
Otter Tail Corporation	OTTR	\$1.65	\$72.44	2.28%	2.35%	4.50%	9.00%	n/a	6.75%	6.83%	9.10%	11.38%
Portland General Electric Company	POR	\$1.81	\$50.58	3.58%	3.65%	4.50%	3.16%	4.60%	4.09%	6.80%	7.74%	8.26%
Southern Company	SO	\$2.72	\$77.01	3.53%	3.63%	6.50%	6.59%	4.00%	5.70%	7.60%	9.33%	10.24%
Xcel Energy Inc.	XEL	\$1.95	\$73.40	2.66%	2.74%	6.00%	7.04%	6.40%	6.48%	8.74%	9.22%	9.79%
Mean				3.27%	3.37%	5.77%	5.83%	5.59%	5.75%	8.05%	9.12%	10.14%
Median				3.38%	3.48%	6.00%	6.25%	6.10%	5.70%	7.60%	9.22%	9.99%

Notes:  
[1] Source: Bloomberg Professional  
[2] Source: Bloomberg Professional, equals 30-day average as of September 30, 2022  
[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 – MONTANA-DAKOTA PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.60	\$59.22	4.39%	4.56%	6.00%	8.70%	8.10%	7.60%	10.52%	12.16%	13.28%
Alliant Energy Corporation	LNT	\$1.71	\$59.82	2.86%	2.95%	6.00%	6.30%	6.20%	6.17%	8.94%	9.11%	9.25%
Ameren Corporation	AEE	\$2.36	\$90.31	2.61%	2.70%	6.50%	6.37%	7.20%	6.69%	9.07%	9.39%	9.91%
American Electric Power Company, Inc.	AEP	\$3.12	\$97.87	3.19%	3.29%	6.50%	6.25%	6.10%	6.28%	9.39%	9.57%	9.79%
Duke Energy Corporation	DUK	\$4.02	\$106.71	3.77%	3.87%	5.00%	5.62%	6.10%	5.57%	8.86%	9.45%	9.98%
Entergy Corporation	ETR	\$4.04	\$113.92	3.55%	3.65%	4.00%	6.19%	6.80%	5.66%	7.62%	9.31%	10.47%
Evergy, Inc.	EVERG	\$2.29	\$66.59	3.44%	3.53%	7.50%	3.71%	5.20%	5.47%	7.21%	9.00%	11.07%
IDACORP, Inc.	IDA	\$3.00	\$107.39	2.79%	2.84%	4.00%	2.70%	2.70%	3.13%	5.53%	5.97%	6.85%
NextEra Energy, Inc.	NEE	\$1.70	\$81.95	2.07%	2.17%	10.00%	9.35%	9.70%	9.68%	11.52%	11.86%	12.18%
NorthWestern Corporation	NWE	\$2.52	\$55.43	4.55%	4.62%	3.00%	4.50%	1.70%	3.07%	6.28%	7.68%	9.15%
OGE Energy Corporation	OGE	\$1.64	\$39.76	4.13%	4.21%	6.50%	1.80%	3.50%	3.97%	6.06%	8.17%	10.76%
Otter Tail Corporation	OTTR	\$1.65	\$69.91	2.36%	2.44%	4.50%	9.00%	n/a	6.75%	6.91%	9.19%	11.47%
Portland General Electric Company	POR	\$1.81	\$49.74	3.64%	3.71%	4.50%	3.16%	4.60%	4.09%	6.86%	7.80%	8.32%
Southern Company	SO	\$2.72	\$74.22	3.66%	3.77%	6.50%	6.59%	4.00%	5.70%	7.74%	9.47%	10.38%
Xcel Energy Inc.	XEL	\$1.95	\$71.79	2.72%	2.80%	6.00%	7.04%	6.40%	6.48%	8.80%	9.28%	9.85%
Mean				3.31%	3.41%	5.77%	5.83%	5.59%	5.75%	8.09%	9.16%	10.18%
Median				3.44%	3.53%	6.00%	6.25%	6.10%	5.70%	7.74%	9.28%	9.98%

Notes:  
[1] Source: Bloomberg Professional  
[2] Source: Bloomberg Professional, equals 90-day average as of September 30, 2022  
[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 – MONTANA-DAKOTA PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.60	\$60.46	4.30%	4.46%	6.00%	8.70%	8.10%	7.60%	10.43%	12.06%	13.19%
Alliant Energy Corporation	LNT	\$1.71	\$59.52	2.87%	2.96%	6.00%	6.30%	6.20%	6.17%	8.96%	9.13%	9.26%
Ameren Corporation	AEE	\$2.36	\$89.66	2.63%	2.72%	6.50%	6.37%	7.20%	6.69%	9.09%	9.41%	9.93%
American Electric Power Company, Inc.	AEP	\$3.12	\$95.79	3.26%	3.36%	6.50%	6.25%	6.10%	6.28%	9.46%	9.64%	9.86%
Duke Energy Corporation	DUK	\$4.02	\$105.88	3.80%	3.90%	5.00%	5.62%	6.10%	5.57%	8.89%	9.48%	10.01%
Entergy Corporation	ETR	\$4.04	\$112.84	3.58%	3.68%	4.00%	6.19%	6.80%	5.66%	7.65%	9.35%	10.50%
Evergy, Inc.	EVRG	\$2.29	\$65.69	3.49%	3.58%	7.50%	3.71%	5.20%	5.47%	7.26%	9.05%	11.12%
IDACORP, Inc.	IDA	\$3.00	\$107.56	2.79%	2.83%	4.00%	2.70%	2.70%	3.13%	5.53%	5.97%	6.84%
NextEra Energy, Inc.	NEE	\$1.70	\$79.48	2.14%	2.24%	10.00%	9.35%	9.70%	9.68%	11.59%	11.93%	12.25%
NorthWestern Corporation	NWE	\$2.52	\$56.53	4.46%	4.53%	3.00%	4.50%	1.70%	3.07%	6.20%	7.59%	9.06%
OGE Energy Corporation	OGE	\$1.64	\$39.03	4.20%	4.29%	6.50%	1.90%	3.50%	3.97%	6.14%	8.25%	10.84%
Otter Tail Corporation	OTTR	\$1.65	\$65.67	2.51%	2.60%	4.50%	9.00%	n/a	6.75%	7.07%	9.35%	11.63%
Portland General Electric Company	POR	\$1.81	\$50.23	3.60%	3.68%	4.50%	3.16%	4.60%	4.09%	6.82%	7.76%	8.29%
Southern Company	SO	\$2.72	\$71.63	3.80%	3.91%	6.50%	6.59%	4.00%	5.70%	7.87%	9.60%	10.51%
Xcel Energy Inc.	XEL	\$1.95	\$70.73	2.76%	2.85%	6.00%	7.04%	6.40%	6.48%	8.84%	9.33%	9.89%
Mean				3.35%	3.44%	5.77%	5.83%	5.59%	5.75%	8.12%	9.19%	10.21%
Median				3.49%	3.58%	6.00%	6.25%	6.10%	5.70%	7.87%	9.35%	10.01%

Notes:

- [1] Source: Bloomberg Professional  
[2] Source: Bloomberg Professional, equals 180-day average as of September 30, 2022  
[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])

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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm – Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.47%	0.90	13.04%	9.58%	12.08%	12.32%
Alliant Energy Corporation	LNT	3.47%	0.85	13.04%	9.58%	11.61%	11.97%
Ameren Corporation	AEE	3.47%	0.85	13.04%	9.58%	11.61%	11.97%
American Electric Power Company, Inc.	AEP	3.47%	0.75	13.04%	9.58%	10.65%	11.25%
Duke Energy Corporation	DUK	3.47%	0.85	13.04%	9.58%	11.61%	11.97%
Entergy Corporation	ETR	3.47%	0.95	13.04%	9.58%	12.56%	12.68%
Eversys, Inc.	EVRG	3.47%	0.90	13.04%	9.58%	12.08%	12.32%
IDACORP, Inc.	IDA	3.47%	0.80	13.04%	9.58%	11.13%	11.61%
NextEra Energy, Inc.	NEE	3.47%	0.95	13.04%	9.58%	12.56%	12.68%
NorthWestern Corporation	NWE	3.47%	0.95	13.04%	9.58%	12.56%	12.68%
OG Energy Corporation	OGF	3.47%	1.05	13.04%	9.58%	13.52%	13.40%
Otter Tail Corporation	OTTR	3.47%	0.85	13.04%	9.58%	11.61%	11.97%
Portland General Electric Company	POR	3.47%	0.85	13.04%	9.58%	11.61%	11.97%
Southern Company	SO	3.47%	0.90	13.04%	9.58%	12.08%	12.32%
Xcel Energy Inc.	XEL	3.47%	0.80	13.04%	9.58%	11.13%	11.61%
Mean						11.89%	12.18%
Median						11.61%	11.97%

Notes:

- [1] Source: Bloomberg Professional, as of September 30, 2022  
[2] Source: Value Line  
[3] Source: Schedule 7  
[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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30- year U.S. Treasury bond yield (Q1 2023 - Q1 2024)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm – Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.88%	0.90	13.04%	9.16%	12.13%	12.36%
Alliant Energy Corporation	LNT	3.88%	0.85	13.04%	9.16%	11.67%	12.01%
Ameren Corporation	AEE	3.88%	0.85	13.04%	9.16%	11.67%	12.01%
American Electric Power Company, Inc.	AEP	3.88%	0.75	13.04%	9.16%	10.75%	11.32%
Duke Energy Corporation	DUK	3.88%	0.85	13.04%	9.16%	11.67%	12.01%
Entergy Corporation	ETR	3.88%	0.95	13.04%	9.16%	12.58%	12.70%
Eversys, Inc.	EVRG	3.88%	0.90	13.04%	9.16%	12.13%	12.36%
IDACORP, Inc.	IDA	3.88%	0.80	13.04%	9.16%	11.21%	11.67%
NextEra Energy, Inc.	NEE	3.88%	0.95	13.04%	9.16%	12.58%	12.70%
NorthWestern Corporation	NWE	3.88%	0.95	13.04%	9.16%	12.58%	12.70%
OG Energy Corporation	OGF	3.88%	1.05	13.04%	9.16%	13.50%	13.39%
Otter Tail Corporation	OTTR	3.88%	0.85	13.04%	9.16%	11.67%	12.01%
Portland General Electric Company	POR	3.88%	0.85	13.04%	9.16%	11.67%	12.01%
Southern Company	SO	3.88%	0.90	13.04%	9.16%	12.13%	12.36%
Xcel Energy Inc.	XEL	3.88%	0.80	13.04%	9.16%	11.21%	11.67%
Mean						11.94%	12.22%
Median						11.67%	12.01%

Notes:

- [1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 9, September 30, 2022, at 2  
[2] Source: Value Line  
[3] Source: Schedule 7  
[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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.80%	0.90	13.04%	9.24%	12.12%	12.35%
Alliant Energy Corporation	LNT	3.80%	0.85	13.04%	9.24%	11.66%	12.00%
Ameren Corporation	AEE	3.80%	0.85	13.04%	9.24%	11.66%	12.00%
American Electric Power Company, Inc.	AEP	3.80%	0.75	13.04%	9.24%	10.73%	11.31%
Duke Energy Corporation	DUK	3.80%	0.85	13.04%	9.24%	11.66%	12.00%
Entergy Corporation	ETR	3.80%	0.95	13.04%	9.24%	12.58%	12.70%
Eversys, Inc.	EVRG	3.80%	0.90	13.04%	9.24%	12.12%	12.35%
IDACORP, Inc.	IDA	3.80%	0.80	13.04%	9.24%	11.19%	11.66%
NextEra Energy, Inc.	NEE	3.80%	0.95	13.04%	9.24%	12.58%	12.70%
NorthWestern Corporation	NWE	3.80%	0.95	13.04%	9.24%	12.58%	12.70%
OGE Energy Corporation	OGE	3.80%	1.05	13.04%	9.24%	13.50%	13.39%
Otter Tail Corporation	OTTR	3.80%	0.85	13.04%	9.24%	11.66%	12.00%
Portland General Electric Company	POR	3.80%	0.85	13.04%	9.24%	11.66%	12.00%
Southern Company	SO	3.80%	0.90	13.04%	9.24%	12.12%	12.35%
Xcel Energy Inc.	XEL	3.80%	0.80	13.04%	9.24%	11.19%	11.66%
Mean						11.93%	12.21%
Median						11.66%	12.00%

Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 14

[2] Source: Value Line

[3] Source: Schedule 7

[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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.47%	0.83	13.04%	9.58%	11.39%	11.80%
Alliant Energy Corporation	LNT	3.47%	0.81	13.04%	9.58%	11.21%	11.67%
Ameren Corporation	AEE	3.47%	0.77	13.04%	9.58%	10.81%	11.37%
American Electric Power Company, Inc.	AEP	3.47%	0.78	13.04%	9.58%	10.96%	11.48%
Duke Energy Corporation	DUK	3.47%	0.73	13.04%	9.58%	10.50%	11.13%
Entergy Corporation	ETR	3.47%	0.88	13.04%	9.58%	11.85%	12.15%
Eversys, Inc.	EVRG	3.47%	0.81	13.04%	9.58%	11.27%	11.71%
IDACORP, Inc.	IDA	3.47%	0.82	13.04%	9.58%	11.33%	11.76%
NextEra Energy, Inc.	NEE	3.47%	0.83	13.04%	9.58%	11.38%	11.79%
NorthWestern Corporation	NWE	3.47%	0.88	13.04%	9.58%	11.88%	12.17%
OGE Energy Corporation	OGE	3.47%	0.94	13.04%	9.58%	12.46%	12.60%
Otter Tail Corporation	OTTR	3.47%	0.88	13.04%	9.58%	11.87%	12.17%
Portland General Electric Company	POR	3.47%	0.80	13.04%	9.58%	11.13%	11.61%
Southern Company	SO	3.47%	0.80	13.04%	9.58%	11.10%	11.59%
Xcel Energy Inc.	XEL	3.47%	0.76	13.04%	9.58%	10.71%	11.29%
Mean						11.32%	11.75%
Median						11.27%	11.71%

Notes:

[1] Source: Bloomberg Professional, as of September 30, 2022

[2] Source: Bloomberg Professional, based on 10-year weekly returns, as of August 31, 2022

[3] Source: Schedule 7

[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

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

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

Company	Ticker	[1] Near-term projected 30- year U.S. Treasury bond yield (Q1 2023 - Q1 2024)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm - Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
ALLETE, Inc.	ALE	3.88%	0.83	13.04%	9.16%	11.46%	11.85%
Alliant Energy Corporation	LNT	3.88%	0.81	13.04%	9.16%	11.29%	11.73%
Ameren Corporation	AEE	3.88%	0.77	13.04%	9.16%	10.91%	11.44%
American Electric Power Company, Inc.	AEP	3.88%	0.78	13.04%	9.16%	11.05%	11.55%
Duke Energy Corporation	DUK	3.88%	0.73	13.04%	9.16%	10.61%	11.22%
Entergy Corporation	ETR	3.88%	0.88	13.04%	9.16%	11.90%	12.19%
Eversource Energy, Inc.	EVERG	3.88%	0.81	13.04%	9.16%	11.35%	11.77%
IDACORP, Inc.	IDA	3.88%	0.82	13.04%	9.16%	11.41%	11.82%
NextEra Energy, Inc.	NEE	3.88%	0.83	13.04%	9.16%	11.45%	11.85%
NorthWestern Corporation	NWE	3.88%	0.88	13.04%	9.16%	11.93%	12.21%
OGE Energy Corporation	OGE	3.88%	0.94	13.04%	9.16%	12.48%	12.62%
Otter Tail Corporation	OTTR	3.88%	0.88	13.04%	9.16%	11.92%	12.20%
Portland General Electric Company	POR	3.88%	0.80	13.04%	9.16%	11.21%	11.67%
Southern Company	SO	3.88%	0.80	13.04%	9.16%	11.19%	11.65%
Xcel Energy Inc.	XEL	3.88%	0.76	13.04%	9.16%	10.81%	11.37%
Mean						11.40%	11.81%
Median						11.35%	11.77%

Notes:

- [1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 9, September 30, 2022, at 2  
[2] Source: Bloomberg Professional, based on 10-year weekly returns, as of August 31, 2022  
[3] Source: Schedule 7  
[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

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

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

Company	Ticker	[1] Projected 30-year U.S. Treasury bond yield (2024 - 2028)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm - Rf)	[5] ROE (K)	[6] ECAPM ROE (K)
ALLETE, Inc.	ALE	3.80%	0.83	13.04%	9.24%	11.44%	11.84%
Alliant Energy Corporation	LNT	3.80%	0.81	13.04%	9.24%	11.27%	11.72%
Ameren Corporation	AEE	3.80%	0.77	13.04%	9.24%	10.89%	11.43%
American Electric Power Company, Inc.	AEP	3.80%	0.78	13.04%	9.24%	11.04%	11.54%
Duke Energy Corporation	DUK	3.80%	0.73	13.04%	9.24%	10.59%	11.20%
Entergy Corporation	ETR	3.80%	0.88	13.04%	9.24%	11.89%	12.18%
Eversource Energy, Inc.	EVERG	3.80%	0.81	13.04%	9.24%	11.33%	11.76%
IDACORP, Inc.	IDA	3.80%	0.82	13.04%	9.24%	11.39%	11.81%
NextEra Energy, Inc.	NEE	3.80%	0.83	13.04%	9.24%	11.44%	11.84%
NorthWestern Corporation	NWE	3.80%	0.88	13.04%	9.24%	11.92%	12.20%
OGE Energy Corporation	OGE	3.80%	0.94	13.04%	9.24%	12.48%	12.62%
Otter Tail Corporation	OTTR	3.80%	0.88	13.04%	9.24%	11.91%	12.20%
Portland General Electric Company	POR	3.80%	0.80	13.04%	9.24%	11.20%	11.66%
Southern Company	SO	3.80%	0.80	13.04%	9.24%	11.17%	11.64%
Xcel Energy Inc.	XEL	3.80%	0.76	13.04%	9.24%	10.79%	11.35%
Mean						11.38%	11.80%
Median						11.33%	11.76%

Notes:

- [1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 14  
[2] Source: Bloomberg Professional, based on 10-year weekly returns, as of August 31, 2022  
[3] Source: Schedule 7  
[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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm – Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.47%	0.77	13.04%	9.58%	10.86%	11.41%
Alliant Energy Corporation	LNT	3.47%	0.74	13.04%	9.58%	10.54%	11.17%
Ameren Corporation	AEE	3.47%	0.71	13.04%	9.58%	10.28%	10.97%
American Electric Power Company, Inc.	AEP	3.47%	0.67	13.04%	9.58%	9.85%	10.65%
Duke Energy Corporation	DUK	3.47%	0.64	13.04%	9.58%	9.64%	10.49%
Entergy Corporation	ETR	3.47%	0.72	13.04%	9.58%	10.38%	11.05%
Eversource, Inc.	EVRG	3.47%	0.98	13.04%	9.58%	12.80%	12.86%
IDACORP, Inc.	IDA	3.47%	0.72	13.04%	9.58%	10.38%	11.05%
NextEra Energy, Inc.	NEE	3.47%	0.71	13.04%	9.58%	10.22%	10.93%
NorthWestern Corporation	NWE	3.47%	0.73	13.04%	9.58%	10.44%	11.09%
OGE Energy Corporation	OGE	3.47%	0.92	13.04%	9.58%	12.30%	12.48%
Otter Tail Corporation	OTTR	3.47%	0.85	13.04%	9.58%	11.61%	11.97%
Portland General Electric Company	POR	3.47%	0.74	13.04%	9.58%	10.54%	11.17%
Southern Company	SO	3.47%	0.63	13.04%	9.58%	9.48%	10.37%
Xcel Energy Inc.	XEL	3.47%	0.64	13.04%	9.58%	9.58%	10.45%
Mean						10.59%	11.21%
Median						10.38%	11.05%

Notes:

[1] Source: Bloomberg Professional, as of September 30, 2022

[2] Source: Schedule 6

[3] Source: Schedule 7

[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

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q1 2023 - Q1 2024)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm – Rf)	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.88%	0.77	13.04%	9.16%	10.96%	11.48%
Alliant Energy Corporation	LNT	3.88%	0.74	13.04%	9.16%	10.65%	11.25%
Ameren Corporation	AEE	3.88%	0.71	13.04%	9.16%	10.40%	11.06%
American Electric Power Company, Inc.	AEP	3.88%	0.67	13.04%	9.16%	9.99%	10.75%
Duke Energy Corporation	DUK	3.88%	0.64	13.04%	9.16%	9.78%	10.60%
Entergy Corporation	ETR	3.88%	0.72	13.04%	9.16%	10.50%	11.13%
Eversource, Inc.	EVRG	3.88%	0.98	13.04%	9.16%	12.81%	12.87%
IDACORP, Inc.	IDA	3.88%	0.72	13.04%	9.16%	10.50%	11.13%
NextEra Energy, Inc.	NEE	3.88%	0.71	13.04%	9.16%	10.34%	11.02%
NorthWestern Corporation	NWE	3.88%	0.73	13.04%	9.16%	10.55%	11.17%
OGE Energy Corporation	OGE	3.88%	0.92	13.04%	9.16%	12.33%	12.51%
Otter Tail Corporation	OTTR	3.88%	0.85	13.04%	9.16%	11.67%	12.01%
Portland General Electric Company	POR	3.88%	0.74	13.04%	9.16%	10.65%	11.25%
Southern Company	SO	3.88%	0.63	13.04%	9.16%	9.63%	10.48%
Xcel Energy Inc.	XEL	3.88%	0.64	13.04%	9.16%	9.73%	10.56%
Mean						10.70%	11.29%
Median						10.50%	11.13%

Notes:

[1] Source: Blue Chip Financial Forecasts. Vol. 41, No. 9, September 30, 2022, at 2

[2] Source: Schedule 6

[3] Source: Schedule 7

[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 BETA

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

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

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (R <sub>m</sub> )	Market Risk Premium (R <sub>m</sub> - R <sub>f</sub> )	ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.80%	0.77	13.04%	9.24%	10.94%	11.46%
Alliant Energy Corporation	LNT	3.80%	0.74	13.04%	9.24%	10.63%	11.23%
Ameren Corporation	AEE	3.80%	0.71	13.04%	9.24%	10.37%	11.04%
American Electric Power Company, Inc.	AEP	3.80%	0.67	13.04%	9.24%	9.96%	10.73%
Duke Energy Corporation	DUK	3.80%	0.64	13.04%	9.24%	9.76%	10.58%
Entergy Corporation	ETR	3.80%	0.72	13.04%	9.24%	10.48%	11.12%
Eversource Energy, Inc.	ESV	3.80%	0.98	13.04%	9.24%	12.81%	12.87%
IDACORP, Inc.	IDA	3.80%	0.72	13.04%	9.24%	10.48%	11.12%
NextEra Energy, Inc.	NEE	3.80%	0.71	13.04%	9.24%	10.32%	11.00%
NorthWestern Corporation	NWE	3.80%	0.73	13.04%	9.24%	10.53%	11.16%
OGE Energy Corporation	OGE	3.80%	0.92	13.04%	9.24%	12.32%	12.50%
Otter Tail Corporation	OTTR	3.80%	0.85	13.04%	9.24%	11.66%	12.00%
Portland General Electric Company	POR	3.80%	0.74	13.04%	9.24%	10.63%	11.23%
Southern Company	SO	3.80%	0.63	13.04%	9.24%	9.60%	10.46%
Xcel Energy Inc.	XEL	3.80%	0.64	13.04%	9.24%	9.71%	10.54%
Mean						10.68%	11.27%
Median						10.48%	11.12%

Notes:

[1] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 14

[2] Source: Schedule 6

[3] Source: Schedule 7

[4] Equals [3] - [1]

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

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

HISTORICAL BETA - 2013 - 2021

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
		12/31/2013	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020	12/31/2021	Average
ALLETE, Inc.	ALE	0.75	0.80	0.80	0.75	0.80	0.65	0.65	0.85	0.90	0.77
Alliant Energy Corporation	LNT	0.75	0.80	0.80	0.70	0.70	0.60	0.60	0.85	0.85	0.74
Ameren Corporation	AEE	0.80	0.75	0.75	0.65	0.70	0.55	0.55	0.85	0.80	0.71
American Electric Power Company, Inc.	AEP	0.70	0.70	0.70	0.65	0.65	0.55	0.55	0.75	0.75	0.67
Duke Energy Corporation	DUK	0.65	0.60	0.65	0.60	0.60	0.50	0.50	0.85	0.85	0.64
Entergy Corporation	ETR	0.70	0.70	0.70	0.65	0.65	0.60	0.60	0.95	0.95	0.72
Evergy, Inc.	EVRG						NMF	NMF	1.00	0.95	0.98
IDACORP, Inc.	IDA	0.75	0.80	0.80	0.75	0.70	0.55	0.55	0.80	0.80	0.72
NextEra Energy, Inc.	NEE	0.70	0.70	0.75	0.65	0.65	0.55	0.55	0.90	0.90	0.71
NorthWestern Corporation	NWE	0.70	0.70	0.70	0.70	0.70	0.60	0.60	0.90	0.95	0.73
OGE Energy Corporation	OGE	0.85	0.90	0.95	0.90	0.95	0.85	0.75	1.10	1.05	0.92
Otter Tail Corporation	OTTR	0.95	0.90	0.85	0.85	0.90	0.75	0.70	0.85	0.90	0.85
Portland General Electric Company	POR	0.75	0.80	0.80	0.70	0.70	0.60	0.55	0.85	0.90	0.74
Southern Company	SO	0.55	0.55	0.60	0.55	0.55	0.50	0.50	0.90	0.95	0.63
Xcel Energy Inc.	XEL	0.65	0.65	0.65	0.60	0.60	0.50	0.50	0.80	0.80	0.64
Mean		0.73	0.74	0.75	0.69	0.70	0.60	0.58	0.88	0.89	0.73

Notes:

[1] Value Line, dated December 26, 2013.

[2] Value Line, dated December 31, 2014.

[3] Value Line, dated December 30, 2015.

[4] Value Line, dated December 29, 2016.

[5] Value Line, dated December 28, 2017.

[6] Value Line, dated December 27, 2018.

[7] Value Line, dated December 26, 2019.

[8] Value Line, dated December 30, 2020.

[9] Value Line, dated December 29, 2021.

[10] Average ([1] - [9])

MARKET RISK PREMIUM DERIVED FROM ANALYSTS' LONG-TERM GROWTH ESTIMATES

[1] Estimated Weighted Average Dividend Yield	1.96%
[2] Estimated Weighted Average Long-Term Growth Rate	10.95%
[3] S&P 500 Estimated Required Market Return	13.04%

STANDARD AND POOR'S 500 INDEX

		[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Name	Ticker	Shares Outst'g	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	326.21	75.28	24,556.79	0.10%	6.32%	0.01%	3.50%	0.00%
Signature Bank/New York NY	SBNY	62.93	151.00	9,502.28		1.48%		21.50%	
American Express Co	AXP	749.75	134.91	101,148.50	0.40%	1.54%	0.01%	10.00%	0.04%
Verizon Communications Inc	VZ	4,199.72	37.97	159,463.18	0.84%	6.87%	0.04%	2.50%	0.02%
Broadcom Inc	AVGO	405.00	444.01	179,824.49		3.69%		29.50%	
Boeing Co/The	BA	593.81	121.08	71,898.84					
Caterpillar Inc	CAT	527.91	164.08	86,619.31	0.35%	2.93%	0.01%	8.00%	0.03%
JPMorgan Chase & Co	JPM	2,932.57	104.50	306,463.77	1.22%	3.83%	0.05%	5.00%	0.08%
Chevron Corp	CVX	1,957.44	143.67	281,224.69		3.95%		44.00%	
Coca-Cola Co/The	KO	4,324.63	58.02	242,285.72	0.97%	3.14%	0.03%	7.50%	0.07%
AbbVie Inc	ABBV	1,768.10	134.21	237,296.16	0.95%	4.20%	0.04%	4.50%	0.04%
Walt Disney Co/The	DIS	1,823.08	94.33	171,989.08				30.60%	
FlexCor Technologies Inc	FLT	75.01	176.17	13,215.04	0.05%			10.50%	0.01%
Extra Space Storage Inc	EXR	133.91	172.71	23,127.94	0.09%	3.47%	0.00%	4.00%	0.00%
Exxon Mobil Corp	XOM	4,167.84	87.31	363,876.30		4.03%			
Phillips 66	PSX	481.05	80.72	38,830.44		4.81%		85.00%	
General Electric Co	GE	1,096.55	61.91	67,887.60		0.52%		22.00%	
HP Inc	HPQ	1,006.94	24.92	25,068.00	0.10%	4.01%	0.00%	12.50%	0.01%
Home Depot Inc/The	HD	1,023.73	275.94	282,486.95	1.13%	2.75%	0.03%	9.00%	0.10%
Monolithic Power Systems Inc	MPWR	46.79	363.40	17,003.12		0.83%		23.50%	
International Business Machines Corp	IBM	903.18	118.81	107,306.82	0.43%	5.56%	0.02%	3.00%	0.01%
Johnson & Johnson	JNJ	2,629.18	163.36	429,502.84	1.71%	2.77%	0.05%	8.00%	0.14%
McDonald's Corp	MCD	735.72	230.74	189,759.34	0.68%	2.39%	0.02%	10.50%	0.07%
Merck & Co Inc	MRK	2,633.28	89.12	218,106.07	0.87%	3.20%	0.03%	8.00%	0.07%
3M Co	MMM	553.61	110.50	61,174.35	0.24%	5.39%	0.01%	6.50%	0.02%
American Water Works Co Inc	AWK	181.79	130.18	23,881.27	0.09%	2.01%	0.00%	3.00%	0.00%
Bank of America Corp	BAC	8,035.24	30.20	242,684.22	0.97%	2.91%	0.03%	8.50%	0.08%
Pfizer Inc	PFE	5,612.36	43.78	245,598.52	0.98%	3.66%	0.04%	8.50%	0.08%
Procter & Gamble Co/The	PG	2,389.55	126.25	301,881.19	1.20%	2.89%	0.03%	6.50%	0.08%
AT&T Inc	T	7,126.00	15.34	109,312.84	0.44%	7.24%	0.03%	0.50%	0.00%
Travelers Cos Inc/The	TRV	237.31	153.20	36,356.35	0.15%	2.43%	0.00%	6.50%	0.01%
Raytheon Technologies Corp	RTX	1,476.51	81.86	120,887.44	0.48%	2.69%	0.01%	7.00%	0.03%
Analog Devices Inc	ADI	514.34	139.34	71,888.41	0.29%	2.18%	0.01%	14.00%	0.04%
Walmart Inc	WMT	2,714.24	129.70	362,036.67	1.40%	1.73%	0.02%	7.50%	0.11%
Cisco Systems Inc	CSCO	4,108.84	40.00	164,353.76	0.66%	3.80%	0.02%	8.00%	0.05%
Intel Corp	INTC	4,106.00	25.77	105,811.62	0.42%	5.67%	0.02%	2.50%	0.01%
General Motors Co	GM	1,458.05	32.09	46,788.79	0.19%	1.12%	0.00%	10.00%	0.02%
Microsoft Corp	MSFT	7,457.89	232.90	1,735,943.05	6.93%	1.17%	0.08%	16.50%	1.14%
Dollar General Corp	DG	225.57	239.31	53,981.84	0.22%	0.92%	0.00%	10.00%	0.02%
Cigna Corp	CI	305.12	277.47	84,680.54	0.34%	1.61%	0.01%	10.00%	0.03%
Kinder Morgan Inc	KMI	2,253.00	16.64	37,488.94	0.15%	6.67%	0.01%	18.00%	0.03%
Citigroup Inc	C	1,936.71	41.67	80,702.71	0.32%	4.90%	0.02%	5.50%	0.02%
American International Group Inc	AIG	760.42	47.48	36,104.55		2.70%		#N/A	
Aetna Group Inc	MO	1,800.82	40.38	72,717.23	0.29%	9.31%	0.03%	5.80%	0.02%
HCA Healthcare Inc	HCA	287.03	163.79	52,752.32	0.21%	1.22%	0.00%	12.50%	0.03%
International Paper Co	IP	362.02	31.70	11,475.94	0.05%	5.84%	0.00%	12.50%	0.01%
Hewlett Packard Enterprise Co	HPE	1,296.70	11.98	15,414.88	0.06%	4.01%	0.00%	7.50%	0.00%
Abbott Laboratories	ABT	1,751.22	96.78	189,448.05	0.68%	1.94%	0.01%	8.00%	0.05%
Aflac Inc	AFL	631.92	56.20	35,513.68	0.14%	2.85%	0.00%	9.00%	0.01%
Air Products and Chemicals Inc	APD	221.80	232.73	51,619.28	0.21%	2.78%	0.01%	12.00%	0.02%
Royal Caribbean Cruises Ltd	RCL	255.06	37.90	9,668.74					
Hess Corp	HES	309.62	108.99	33,744.94		1.38%			
Archer-Daniels-Midland Co	ADM	560.56	80.45	45,097.21	0.18%	1.99%	0.00%	13.00%	0.02%
Automatic Data Processing Inc	ADP	415.29	228.19	93,934.90	0.37%	1.84%	0.01%	10.00%	0.04%
Verisk Analytics Inc	VRSK	156.96	170.53	26,786.39	0.11%	0.73%	0.00%	10.50%	0.01%
AutoZone Inc	AZO	19.49	2,141.93	41,741.93	0.17%			14.00%	0.02%
Avery Dennison Corp	AVY	81.26	162.70	13,220.35	0.05%	1.84%	0.00%	12.00%	0.01%
Enphase Energy Inc	ENPH	135.46	277.47	37,585.25				26.50%	
MSCI Inc	MSCI	80.50	421.79	33,955.36	0.14%	1.19%	0.00%	15.50%	0.02%
Ball Corp	BALL	314.31	48.32	15,187.31		1.68%		21.50%	
Ceridian HCM Holding Inc	CDAY	153.06	55.88	8,552.63					
Carrier Global Corp	CARR	941.58	35.58	29,926.89		1.69%			
Bank of New York Mellon Corp/The	BK	908.10	38.52	31,128.13	0.12%	3.64%	0.00%	6.00%	0.01%
Otis Worldwide Corp	OTIS	420.23	63.80	26,810.80		1.82%			
Baxter International Inc	BAX	503.61	53.86	27,124.49	0.11%	2.15%	0.00%	10.00%	0.01%
Becton Dickinson and Co	BDX	285.20	222.83	63,550.00	0.25%	1.56%	0.00%	4.50%	0.01%
Berkshire Hathaway Inc	BRK/B	1,301.13	267.02	347,426.66	1.39%			6.00%	0.08%
Best Buy Co Inc	BBY	225.13	63.34	14,269.80	0.08%	5.58%	0.00%	9.50%	0.01%
Boston Scientific Corp	BSX	1,431.61	38.73	55,446.41	0.22%			16.00%	0.04%
Bristol-Myers Squibb Co	BMJ	2,135.28	71.09	151,795.28		3.04%			
Fortune Brands Home & Security Inc	FBHS	129.32	53.69	6,943.03	0.03%	2.09%	0.00%	10.00%	0.00%
Brown-Forman Corp	BF/B	309.92	66.57	20,631.64	0.08%	1.13%	0.00%	14.00%	0.01%
Coterra Energy Inc	CTRA	795.80	28.12	20,780.94		9.95%			
Campbell Soup Co	CPB	289.36	47.12	14,106.03	0.06%	3.14%	0.00%	5.00%	0.00%
Hilton Worldwide Holdings Inc	HLT	274.29	120.82	33,084.50		0.50%			
Carnival Corp	CCL	1,096.78	7.03	7,710.19					
Qorvo Inc	QRVO	103.20	79.41	8,195.43	0.03%			14.50%	0.00%
Lumen Technologies Inc	LUMN	1,035.34	7.28	7,537.27	0.03%	13.74%	0.00%	3.50%	0.00%
UDR Inc	UDR	324.82	41.71	13,552.54	0.05%	3.64%	0.00%	10.50%	0.01%
Clorox Co/The	CLX	123.16	128.39	15,812.90	0.06%	3.68%	0.00%	7.50%	0.00%
Paycom Software Inc	PAYC	60.03	329.99	19,807.98				21.00%	



STANDARD AND POOR'S 500 INDEX

		(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Name	Ticker	Shares Outst'g	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
CMS Energy Corp	CMS	290.20	58.24	16,901.02	0.07%	3.16%	0.00%	8.50%	0.00%
Newell Brands Inc	NWL	413.60	13.89	5,744.90		6.62%			
Colgate-Palmolive Co	CL	834.12	70.25	58,596.93	0.23%	2.68%	0.01%	8.50%	0.02%
EPAM Systems Inc	EPAM	57.37	362.19	20,777.75				20.50%	
Comerica Inc	CMA	130.82	71.10	9,301.30	0.04%	3.83%	0.00%	9.00%	0.00%
Conagra Brands Inc	CAG	480.63	32.63	15,682.89	0.06%	4.05%	0.00%	4.00%	0.00%
Consolidated Edison Inc	ED	354.58	85.76	30,408.95	0.12%	3.68%	0.00%	4.00%	0.00%
Corning Inc	GLW	845.32	29.02	24,531.13	0.10%	3.72%	0.00%	17.50%	0.02%
Cummins Inc	CMI	140.99	203.51	28,693.28	0.11%	3.09%	0.00%	8.50%	0.01%
Caesars Entertainment Inc	CZR	214.42	32.26	6,917.09					
Danaher Corp	DHR	727.45	258.29	187,891.77	0.75%	0.39%	0.00%	17.00%	0.13%
Target Corp	TGT	450.25	148.39	68,296.43	0.27%	2.91%	0.01%	13.00%	0.04%
Deere & Co	DE	301.82	333.89	100,774.68	0.40%	1.35%	0.01%	15.00%	0.08%
Dominion Energy Inc	D	832.50	69.11	57,534.28	0.23%	3.86%	0.01%	5.00%	0.01%
Dover Corp	DOV	143.55	116.58	16,734.94	0.07%	1.73%	0.00%	9.00%	0.01%
Alliant Energy Corp	LNT	250.93	52.99	13,296.57	0.05%	3.23%	0.00%	6.00%	0.00%
Duke Energy Corp	DUK	770.00	93.02	71,825.40	0.29%	4.32%	0.01%	5.00%	0.01%
Regency Centers Corp	REG	171.12	53.85	9,214.60	0.04%	4.64%	0.00%	12.50%	0.00%
Eaton Corp PLC	ETN	398.30	133.38	53,117.29	0.21%	2.43%	0.01%	12.00%	0.03%
Ecolab Inc	ECL	284.99	144.42	41,158.11	0.16%	1.41%	0.00%	10.50%	0.02%
PerkinElmer Inc	PKI	126.22	120.33	15,188.53	0.08%	0.23%	0.00%	4.00%	0.00%
Emerson Electric Co	EMR	591.30	73.22	43,294.99	0.17%	2.81%	0.00%	10.50%	0.02%
EOG Resources Inc	EOG	568.05	111.73	65,478.81	0.28%	2.69%	0.01%	18.00%	0.05%
Aon PLC	AON	210.63	267.87	56,500.75	0.23%	0.64%	0.00%	6.50%	0.01%
Entergy Corp	ETR	203.42	100.63	20,499.95	0.08%	4.01%	0.00%	4.00%	0.00%
Equifax Inc	EFX	122.40	171.43	20,993.03	0.08%	0.91%	0.00%	10.00%	0.01%
EQT Corp	EQT	369.44	40.75	15,054.68		1.47%			
IQVIA Holdings Inc	IQV	186.51	181.14	33,784.06	0.13%			14.50%	0.02%
Gartner Inc	IT	79.09	278.69	21,884.52	0.09%			15.50%	0.01%
FedEx Corp	FDX	260.22	148.47	38,634.86	0.15%	3.10%	0.00%	13.00%	0.02%
FMC Corp	FMC	125.96	105.70	13,313.87	0.05%	2.01%	0.00%	11.00%	0.01%
Brown & Brown Inc	BRO	282.45	60.48	17,082.82	0.07%	0.68%	0.00%	8.00%	0.01%
Ford Motor Co	F	3,949.39	11.20	44,233.11		5.36%		33.50%	
NexEra Energy Inc	NEE	1,984.78	78.41	154,058.32	0.61%	2.17%	0.01%	10.00%	0.06%
Franklin Resources Inc	BEN	468.36	21.52	10,724.84	0.04%	5.39%	0.00%	9.00%	0.00%
Garmin Ltd	GRMN	192.96	80.31	15,488.19	0.06%	3.64%	0.00%	6.00%	0.00%
Freeport-McMoRan Inc	FCX	1,429.27	27.33	39,061.95		2.20%		27.00%	
Dexcom Inc	DXCM	392.58	80.54	31,618.55					
General Dynamics Corp	GD	274.25	212.17	58,186.77	0.23%	2.38%	0.01%	8.50%	0.02%
General Mills Inc	GIS	593.54	76.61	45,470.79	0.18%	2.82%	0.01%	3.50%	0.01%
Genuine Parts Co	GPC	141.43	149.32	21,118.48	0.08%	2.40%	0.00%	9.00%	0.01%
Atmos Energy Corp	ATO	139.89	101.85	14,248.00	0.06%	2.67%	0.00%	7.50%	0.00%
VWV Grainger Inc	BWW	50.87	489.19	24,885.58	0.10%	1.41%	0.00%	9.50%	0.01%
Halliburton Co	HAL	906.94	24.62	22,328.96		1.95%		31.00%	
L3Harris Technologies Inc	LHX	191.35	207.83	39,788.89	0.16%	2.16%	0.00%	18.00%	0.03%
Healthpeak Properties Inc	PEAK	539.58	22.82	12,367.20	0.05%	5.24%	0.00%	17.00%	0.01%
Catalent Inc	CTLT	179.90	72.36	13,017.27				21.00%	
Fortive Corp	FTV	355.70	58.30	20,737.14	0.08%	0.48%	0.00%	12.00%	0.01%
Hershey Co/The	HSY	146.87	220.47	32,380.43	0.13%	1.88%	0.00%	6.50%	0.01%
Synchrony Financial	SYF	461.76	28.19	13,580.79	0.05%	3.26%	0.00%	9.50%	0.01%
Hormel Foods Corp	HRL	546.20	45.44	24,819.24	0.10%	2.29%	0.00%	8.00%	0.01%
Arthur J Gallagher & Co	AJG	210.34	171.22	36,013.73	0.14%	1.19%	0.00%	17.50%	0.03%
Mondelēz International Inc	MDLZ	1,370.57	54.83	75,148.13	0.30%	2.81%	0.01%	9.50%	0.03%
CenterPoint Energy Inc	CNP	829.43	28.18	17,737.39	0.07%	2.56%	0.00%	6.50%	0.00%
Humana Inc	HUM	126.55	485.19	61,402.74	0.25%	0.65%	0.00%	11.00%	0.03%
Willis Towers Watson PLC	WTW	109.97	200.94	22,096.57	0.09%	1.63%	0.00%	8.50%	0.01%
Illinois Tool Works Inc	ITW	309.62	180.65	55,933.21	0.22%	2.90%	0.01%	11.00%	0.02%
CDW Corp/DE	CDW	135.24	156.08	21,108.73	0.08%	1.28%	0.00%	8.50%	0.01%
Trane Technologies PLC	TT	231.72	144.81	33,554.94		1.85%			
Interpublic Group of Cos Inc/The	IPG	391.03	25.60	10,010.32	0.04%	4.53%	0.00%	10.00%	0.00%
International Flavors & Fragrances Inc	IFF	254.95	90.83	23,156.84	0.09%	3.57%	0.00%	7.50%	0.01%
Generac Holdings Inc	GNRC	63.83	178.14	11,370.85				23.50%	
NXP Semiconductors NV	NXPI	262.00	147.51	38,735.83	0.15%	2.29%	0.00%	12.00%	0.02%
Kellogg Co	K	340.11	69.66	23,692.27	0.09%	3.39%	0.00%	3.50%	0.00%
Broadridge Financial Solutions Inc	BR	154.46	144.32	22,291.81	0.09%	2.01%	0.00%	9.00%	0.01%
Kimberly-Clark Corp	KMB	337.62	112.54	37,995.98	0.15%	4.12%	0.01%	5.50%	0.01%
Kimco Realty Corp	KIM	618.48	18.41	11,386.25	0.05%	4.78%	0.00%	8.50%	0.00%
Oracle Corp	ORCL	2,896.17	61.07	164,654.86	0.66%	2.10%	0.01%	9.00%	0.06%
Kroger Co/The	KR	715.81	43.75	31,316.51	0.12%	2.38%	0.00%	5.50%	0.01%
Lennar Corp	LEN	254.99	74.55	19,009.28	0.08%	2.01%	0.00%	9.00%	0.01%
Bi Lilly & Co	LLY	960.18	323.35	307,239.09	1.23%	1.21%	0.01%	11.50%	0.14%
Bath & Body Works Inc	BBWI	228.37	32.60	7,444.99		2.45%		26.50%	
Charter Communications Inc	CHTR	160.66	303.35	48,734.69				22.50%	
Lincoln National Corp	LNC	170.23	43.91	7,474.62	0.03%	4.10%	0.00%	11.50%	0.00%
Loews Corp	L	240.95	49.84	12,008.80	0.05%	0.50%	0.00%	18.50%	0.01%
Lowe's Cos Inc	LOW	820.70	187.81	116,573.85	0.47%	2.24%	0.01%	12.50%	0.06%
IDEX Corp	IEX	75.48	190.85	15,083.88	0.06%	1.20%	0.00%	11.00%	0.01%
Marsh & McLennan Cos Inc	MMC	489.02	148.29	74,498.40	0.30%	1.58%	0.00%	12.00%	0.04%
Masco Corp	MAS	225.52	46.89	10,529.53	0.04%	2.40%	0.00%	8.50%	0.00%
S&P Global Inc	SPGI	333.50	305.35	101,834.23	0.41%	1.11%	0.00%	9.50%	0.04%
Medtronic PLC	MDT	1,329.15	80.75	107,329.10	0.43%	3.37%	0.01%	9.00%	0.04%
Viatis Inc	VTRS	1,212.58	8.52	10,331.19		5.63%			
CVS Health Corp	CVS	1,312.83	95.37	125,204.50	0.50%	2.31%	0.01%	8.00%	0.03%
DuPont de Nemours Inc	DD	500.90	50.40	25,245.46	0.10%	2.62%	0.00%	10.00%	0.01%
Moron Technology Inc	MUJ	1,103.15	50.10	55,267.56	0.22%	0.92%	0.00%	16.00%	0.04%
Motorola Solutions Inc	MSI	166.89	223.97	37,377.23	0.15%	1.41%	0.00%	8.00%	0.01%
Cboe Global Markets Inc	CBOE	106.06	117.37	12,448.50	0.05%	1.70%	0.00%	10.00%	0.00%
Laboratory Corp of America Holdings	LH	90.40	204.81	18,514.82	0.07%	1.41%	0.00%	1.80%	0.00%
Newmont Corp	NEM	793.68	42.03	33,358.37	0.13%	5.23%	0.01%	9.50%	0.01%
NIKE Inc	NKE	1,263.65	83.12	105,034.84		1.47%		24.00%	
NiSource Inc	NI	405.95	25.19	10,225.96	0.04%	3.73%	0.00%	9.50%	0.00%
Norfolk Southern Corp	NSC	234.87	209.65	49,241.33	0.20%	2.37%	0.00%	10.00%	0.02%

STANDARD AND POOR'S 500 INDEX

		(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Name	Ticker	Shares Outst'g	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Principal Financial Group Inc	PFG	249.24	72.15	17,982.45	0.07%	3.55%	0.00%	8.00%	0.00%
Eversource Energy	ES	346.44	77.96	27,008.70	0.11%	3.27%	0.00%	6.50%	0.01%
Northrop Grumman Corp	NOC	154.71	470.32	72,763.68	0.28%	1.47%	0.00%	8.50%	0.02%
Wells Fargo & Co	WFC	3,793.05	40.22	152,556.47	0.61%	2.98%	0.02%	11.50%	0.07%
Nucor Corp	NUE	261.79	106.99	28,008.38	1.87%	1.87%	0.00%	-0.50%	
Occidental Petroleum Corp	OXY	931.49	61.45	57,240.18	0.85%	0.85%	0.00%		
Omnicom Group Inc	OMC	204.84	63.09	12,923.54	0.05%	4.44%	0.00%	6.50%	0.00%
ONEOK Inc	OKE	446.96	51.24	22,897.21	0.09%	7.30%	0.01%	11.50%	0.01%
Raymond James Financial Inc	RJF	215.83	98.82	21,327.83	0.09%	1.38%	0.00%	10.50%	0.01%
PG&E Corp	PCG	1,987.67	12.50	24,845.85	0.10%			7.50%	0.01%
Parker-Hannifin Corp	PH	128.46	242.31	31,127.38	0.12%	2.20%	0.00%	14.00%	0.02%
Rollins Inc	ROL	482.42	34.68	17,077.02	0.07%	1.15%	0.00%	10.50%	0.01%
PPL Corp	PPL	736.19	25.35	18,662.29	0.07%	3.55%	0.00%	3.00%	0.00%
ConocoPhillips	COP	1,273.03	102.34	130,282.20	0.52%	1.80%	0.01%	20.00%	0.10%
PulteGroup Inc	PHM	231.50	37.50	8,681.18	0.03%	1.80%	0.00%	11.00%	0.00%
Pinnacle West Capital Corp	PNW	113.04	64.51	7,292.47	0.03%	5.27%	0.00%	0.50%	0.00%
PNC Financial Services Group Inc/The	PNC	410.12	149.42	61,280.73	0.24%	4.02%	0.01%	12.00%	0.03%
PPG Industries Inc	PPG	235.00	110.69	26,011.82	0.10%	2.24%	0.00%	4.00%	0.00%
Progressive Corp/The	PGR	585.10	118.21	67,994.47	0.27%	0.34%	0.00%	6.50%	0.02%
Public Service Enterprise Group Inc	PEG	488.86	56.23	28,050.90	0.11%	3.84%	0.00%	4.00%	0.00%
Robert Half International Inc	RHI	109.57	76.50	8,381.95	0.03%	2.25%	0.00%	7.50%	0.00%
Edison International	EDX	381.43	56.58	21,581.42	4.95%				
Schlumberger NV	SLB	1,414.39	35.90	50,776.53	1.95%			23.00%	
Charles Schwab Corp/The	SCHW	1,817.79	71.87	130,644.85	0.52%	1.22%	0.01%	9.00%	0.05%
Sherwin-Williams Co/The	SHW	259.18	204.75	53,067.72	0.21%	1.17%	0.00%	11.50%	0.02%
West Pharmaceutical Services Inc	WST	74.05	246.08	18,221.73	0.07%	0.29%	0.00%	17.00%	0.01%
J M Smucker Co/The	SJM	106.56	137.41	14,642.00	0.06%	2.97%	0.00%	4.00%	0.00%
Snap-on Inc	SNA	53.27	201.35	10,725.51	0.04%	2.82%	0.00%	4.50%	0.00%
AMETEK Inc	AME	229.58	113.41	26,036.44	0.10%	0.78%	0.00%	10.00%	0.01%
Southern Co/The	SO	1,062.53	68.00	72,251.70	0.29%	4.00%	0.01%	6.50%	0.02%
Truist Financial Corp	TFC	1,326.39	43.54	57,751.15	0.23%	4.78%	0.01%	6.50%	0.01%
Southwest Airlines Co	LUV	593.35	30.84	18,298.91					
W R Berkley Corp	WRB	285.27	64.58	17,131.33	0.07%	0.62%	0.00%	15.50%	0.01%
Stanley Black & Decker Inc	SWK	147.82	75.21	11,117.24	0.04%	4.25%	0.00%	6.00%	0.00%
Public Storage	PSA	175.64	292.81	51,400.46	0.21%	2.73%	0.01%	8.00%	0.02%
Arista Networks Inc	ANET	304.28	112.89	34,350.17	0.14%			10.00%	0.01%
Sysco Corp	SY	508.11	70.71	35,787.04	0.14%	2.77%	0.00%	16.50%	0.02%
Corteva Inc	CTVA	725.32	57.15	41,452.04	0.17%	1.05%	0.00%	16.50%	0.03%
Texas Instruments Inc	TXN	913.71	164.78	141,423.57	0.56%	3.20%	0.02%	9.00%	0.05%
Tetradon Inc	TXT	211.53	58.26	12,323.85	0.05%	0.14%	0.00%	10.50%	0.01%
Thermo Fisher Scientific Inc	TMO	381.79	507.19	198,711.46	0.79%	0.24%	0.00%	10.00%	0.08%
TJX Cos Inc/The	TJX	1,161.05	62.12	72,124.61	0.29%	1.90%	0.01%	20.00%	0.06%
Globe Life Inc	GL	97.44	99.70	9,714.57	0.04%	0.83%	0.00%	8.00%	0.00%
Johnson Controls International plc	JCI	688.81	49.22	33,903.23	0.14%	2.84%	0.00%	13.00%	0.02%
Ulta Beauty Inc	ULTA	51.22	401.19	20,549.35	0.08%			15.00%	0.01%
Union Pacific Corp	UNP	624.48	194.82	121,661.00	0.49%	2.67%	0.01%	9.50%	0.05%
Keysight Technologies Inc	KEYS	178.80	167.38	28,135.34	0.11%			13.00%	0.01%
UnitedHealth Group Inc	UNH	935.38	505.04	472,405.83	1.89%	1.31%	0.02%	12.00%	0.23%
Marathon Oil Corp	MRO	677.68	22.58	15,299.85	1.42%				
Bio-Rad Laboratories Inc	BIO	24.83	417.14	10,275.83	0.04%			11.50%	0.00%
Ventas Inc	VTR	389.71	40.17	16,056.47	0.06%	4.48%	0.00%	10.50%	0.01%
VF Corp	VFC	368.50	29.91	11,619.89	0.05%	6.69%	0.00%	9.50%	0.00%
Vornado Realty Trust	VNO	191.78	23.16	4,441.51	9.15%			-20.50%	
Vulcan Materials Co	VMC	132.90	157.71	20,958.82	0.08%	1.01%	0.00%	8.50%	0.01%
Weyerhaeuser Co	WY	740.32	28.56	21,143.40	0.08%	2.52%	0.00%	7.00%	0.01%
Whirlpool Corp	WHR	54.51	134.81	7,348.22	0.03%	5.19%	0.00%	6.00%	0.00%
Williams Cos Inc/The	WMB	1,218.53	28.83	34,886.51	0.14%	5.94%	0.01%	8.50%	0.01%
Constellation Energy Corp	CEG	326.66	83.19	27,175.18	0.68%				
WEC Energy Group Inc	WEC	315.44	89.43	28,209.35	0.11%	3.25%	0.00%	6.00%	0.01%
Adobe Inc	ADBE	464.90	275.20	127,940.48	0.51%			14.50%	0.07%
AES Corp/The	AES	967.93	22.60	15,095.31	0.06%	2.80%	0.00%	14.00%	0.01%
Amgen Inc	AMGN	534.93	225.40	120,573.45	0.46%	3.44%	0.02%	5.50%	0.03%
Apple Inc	AAPL	16,070.75	138.20	2,220,977.93	8.86%	0.67%	0.06%	14.00%	1.24%
Autodesk Inc	ADSK	215.96	186.80	40,322.46	0.16%			14.00%	0.02%
Cintas Corp	CTAS	101.53	388.19	39,414.10	0.18%	1.18%	0.00%	13.50%	0.02%
Comcast Corp	CMCSA	4,403.79	29.33	129,183.28	0.52%	3.68%	0.02%	9.50%	0.05%
Molson-Coors Beverage Co	TAP	200.37	47.99	9,615.56	3.17%			49.50%	
KLA Corp	KLAC	141.81	302.63	42,915.36	1.72%			23.00%	
Marmot International Inc/MD	MAR	324.55	140.14	45,482.58	0.18%	0.88%	0.00%	17.50%	0.03%
McCormick & Co Inc/MD	MKC	250.47	71.27	17,851.14	0.07%	2.08%	0.00%	5.50%	0.00%
PACCAR Inc	PCAR	347.72	83.69	29,100.60	0.12%	1.77%	0.00%	5.00%	0.01%
Costco Wholesale Corp	COST	442.96	472.27	208,056.93	0.83%	0.76%	0.01%	10.50%	0.09%
First Republic Bank/CA	FRC	182.72	130.55	23,853.44	0.10%	0.83%	0.00%	11.50%	0.01%
Stryker Corp	SYK	378.32	202.54	76,825.14	0.31%	1.37%	0.00%	8.50%	0.03%
Tyson Foods Inc	TSN	289.62	65.93	19,094.45	0.08%	2.79%	0.00%	8.00%	0.00%
Lamb Weston Holdings Inc	LW	143.72	77.38	11,121.21	0.04%	1.27%	0.00%	5.00%	0.00%
Applied Materials Inc	AMAT	860.31	81.93	70,485.12	0.28%	1.27%	0.00%	17.00%	0.05%
American Airlines Group Inc	AAL	849.95	12.04	7,824.15					
Cardinal Health Inc	CAH	282.01	66.68	17,471.03	0.07%	2.97%	0.00%	5.00%	0.00%
Cincinnati Financial Corp	CINF	159.20	89.57	14,258.45	0.06%	3.08%	0.00%	8.50%	0.00%
Paramount Global	PARA	608.42	19.04	11,584.34	0.05%	5.04%	0.00%	4.50%	0.00%
DR Horton Inc	DHI	347.48	67.35	23,402.85	0.09%	1.34%	0.00%	13.00%	0.01%
Electronic Arts Inc	EA	278.05	115.71	32,172.59	0.13%	0.88%	0.00%	11.50%	0.01%
Expeditors International of Washington Inc	EXPD	163.80	88.31	14,447.07	0.06%	1.52%	0.00%	10.00%	0.01%
Fastenal Co	FAST	574.98	48.04	26,458.22	0.11%	2.69%	0.00%	8.50%	0.01%
M&T Bank Corp	MTB	175.61	176.32	30,964.28	0.12%	2.72%	0.00%	8.00%	0.01%
Xcel Energy Inc	XEL	546.99	64.00	35,007.42	0.14%	3.05%	0.00%	6.00%	0.01%
Fiserv Inc	FISV	639.58	93.57	59,845.87	0.24%			11.00%	0.03%
Fifth Third Bancorp	FTB	686.19	31.96	21,930.83	0.09%	4.13%	0.00%	9.00%	0.01%
Gilead Sciences Inc	GILD	1,253.37	61.89	77,320.21	0.31%	4.73%	0.01%	12.00%	0.04%
Hasbro Inc	HAS	138.09	67.42	9,310.10	0.04%	4.15%	0.00%	11.50%	0.00%
Huntington Bancshares Inc/OH	HBAN	1,442.19	13.18	19,008.12	0.08%	4.70%	0.00%	12.50%	0.01%

STANDARD AND POOR'S 500 INDEX

		(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Name	Ticker	Shares Outst'g	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Welltower Inc	WELL	483.37	64.32	20,803.96	0.12%	3.79%	0.00%	3.80%	0.00%
Biogen Inc	BIIB	145.11	267.00	38,745.17				-10.50%	
Northern Trust Corp	NTRS	208.39	85.96	17,829.59	0.07%	3.51%	0.00%	8.00%	0.01%
Packaging Corp of America	PKG	93.74	112.29	10,526.06	0.04%	4.45%	0.00%	11.00%	0.00%
Paychex Inc	PAYX	360.40	112.21	40,440.60	0.16%	2.82%	0.00%	10.00%	0.02%
QUALCOMM Inc	QCOM	1,123.00	112.98	126,876.54	0.51%	2.66%	0.01%	19.00%	0.10%
Roper Technologies Inc	ROP	106.01	369.64	38,125.44	0.15%	0.68%	0.00%	3.50%	0.01%
Ross Stores Inc	ROST	347.06	84.27	29,247.00	0.12%	1.47%	0.00%	14.00%	0.02%
IDEXX Laboratories Inc	IDXX	83.25	325.80	27,124.15	0.11%			12.00%	0.01%
Starbucks Corp	SBUX	1,147.40	84.26	96,679.92	0.39%	2.52%	0.01%	16.50%	0.06%
KeyCorp	KEY	932.96	18.02	14,941.20	0.06%	4.87%	0.00%	9.00%	0.01%
Fox Corp	FOXA	305.37	30.68	9,368.66	0.04%	1.63%	0.00%	11.00%	0.00%
Fox Corp	FOX	241.57	28.50	8,884.83		1.75%			
State Street Corp	SIT	367.62	60.81	22,354.91	0.09%	4.14%	0.00%	9.50%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	421.39	11.36	4,788.98					
US Bancorp	USB	1,485.78	40.32	59,906.81	0.24%	4.76%	0.01%	6.00%	0.01%
A O Smith Corp	ADS	128.48	48.58	6,241.41	0.02%	2.31%	0.00%	11.50%	0.00%
NortonLifeLock Inc	NLOK	866.03	20.14	13,413.74	0.05%	2.48%	0.00%	9.50%	0.01%
T Rowe Price Group Inc	TROW	225.99	105.01	23,699.92	0.09%	4.57%	0.00%	9.50%	0.01%
Waste Management Inc	WM	413.34	180.21	86,220.56	0.26%	1.62%	0.00%	6.50%	0.02%
Constellation Brands Inc	STZ	161.22	229.68	37,029.93	0.15%	1.39%	0.00%	5.00%	0.01%
DENTSPLY SIRONA Inc	XRAY	215.45	28.35	6,108.06	0.02%	1.76%	0.00%	12.00%	0.00%
Zions Bancorp NA	ZION	150.47	50.88	7,862.96	0.03%	3.22%	0.00%	6.50%	0.00%
Alaska Air Group Inc	ALK	126.77	39.15	4,962.65					
Invesco Ltd	IVZ	454.94	13.70	6,232.68	0.02%	5.47%	0.00%	14.00%	0.00%
Linde PLC	LIN	496.34	289.59	133,807.49	0.53%	1.74%	0.01%	12.00%	0.06%
Intuit Inc	INTU	281.87	387.32	109,173.89	0.44%	0.81%	0.00%	17.50%	0.08%
Morgan Stanley	MS	1,716.83	79.01	135,646.42	0.54%	3.82%	0.02%	10.50%	0.06%
Microchip Technology Inc	MCHP	552.48	61.03	33,718.10	0.13%	1.97%	0.00%	10.00%	0.01%
Chubb Ltd	CB	417.64	181.88	75,980.55	0.30%	1.83%	0.01%	14.50%	0.04%
Hologic Inc	HOLX	249.05	64.52	16,107.61				25.00%	
Citizens Financial Group Inc	CFG	485.64	34.36	17,030.29	0.07%	4.89%	0.00%	9.00%	0.01%
O'Reilly Automotive Inc	ORLY	63.32	703.35	44,534.72	0.18%			13.00%	0.02%
Allstate Corp/The	ALL	270.30	124.53	33,659.96	0.13%	2.73%	0.00%	2.50%	0.00%
Equity Residential	EQR	376.12	67.22	25,282.65		3.72%		-8.00%	
BorgWarner Inc	BWA	236.83	31.40	7,436.49	0.03%	2.17%	0.00%	9.50%	0.00%
Keurig Dr Pepper Inc	KDP	1,418.11	35.82	50,725.13	0.20%	2.23%	0.00%	11.50%	0.02%
Organon & Co	OGN	254.33	23.40	5,951.32		4.79%			
Host Hotels & Resorts Inc	HST	714.89	15.58	11,352.50		3.02%		59.80%	
Incyte Corp	INCY	222.43	66.64	14,822.80				25.50%	
Simon Property Group Inc	SPG	327.35	89.75	29,379.84	0.12%	7.80%	0.01%	3.00%	0.00%
Eastman Chemical Co	EMN	122.81	71.05	8,725.58	0.03%	4.28%	0.00%	9.50%	0.00%
Twitter Inc	TWTR	785.25	43.84	33,548.38					
AvalonBay Communities Inc	AVB	139.83	184.19	25,755.47	0.10%	3.45%	0.00%	8.00%	0.01%
Prudential Financial Inc	PRU	372.60	85.78	31,961.83	0.13%	5.60%	0.01%	5.50%	0.01%
United Parcel Service Inc	UPS	731.85	161.54	118,223.70	0.47%	3.76%	0.02%	11.50%	0.05%
Walgreens Boots Alliance Inc	WBA	884.26	31.40	27,137.87	0.11%	8.11%	0.01%	7.80%	0.01%
STERIS PLC	STE	100.02	166.28	16,630.49	0.07%	1.13%	0.00%	11.50%	0.01%
McKesson Corp	MCK	143.73	339.87	48,849.52	0.19%	0.64%	0.00%	10.00%	0.02%
Lockheed Martin Corp	LMT	255.15	386.29	102,425.57	0.41%	3.11%	0.01%	7.00%	0.03%
AmerisourceBergen Corp	ABC	207.28	135.33	28,048.23	0.11%	1.36%	0.00%	8.50%	0.01%
Capital One Financial Corp	COF	383.82	92.17	35,376.51		2.60%			
Waters Corp	WAT	59.88	289.53	16,138.38	0.08%			8.00%	0.00%
Nordson Corp	NDSN	57.21	212.27	12,144.18	0.05%	1.22%	0.00%	12.00%	0.01%
Dollar Tree Inc	DLTR	223.94	136.10	30,477.83	0.12%			12.00%	0.01%
Darden Restaurants Inc	DRI	122.58	126.32	15,484.31		3.83%		21.00%	
Match Group Inc	MTCH	282.90	47.75	13,512.58				21.00%	
Dominos Pizza Inc	DPZ	35.89	310.20	11,131.53	0.04%	1.42%	0.00%	14.50%	0.01%
NVR Inc	NVR	3.28	3,987.08	13,089.58	0.05%			5.50%	0.00%
NetApp Inc	NTAP	217.37	61.85	13,444.09	0.05%	3.23%	0.00%	8.00%	0.00%
DXC Technology Co	DXC	220.88	24.48	5,627.39	0.02%			12.00%	0.00%
Old Dominion Freight Line Inc	ODFL	111.77	248.77	27,806.02	0.11%	0.48%	0.00%	11.50%	0.01%
DeVita Inc	DVA	91.30	82.77	7,569.90	0.03%			11.00%	0.00%
Hartford Financial Services Group Inc/The	HIG	323.14	61.94	20,015.42	0.08%	2.49%	0.00%	6.50%	0.01%
Iron Mountain Inc	IRM	200.09	43.97	12,781.42	0.05%	5.63%	0.00%	11.00%	0.01%
Estee Lauder Cos Inc/The	EL	231.55	215.90	49,990.78	0.20%	1.11%	0.00%	14.00%	0.03%
Cadence Design Systems Inc	CDNS	273.87	163.43	44,758.57	0.18%			12.00%	0.02%
Tyler Technologies Inc	TYL	41.58	347.50	14,449.40	0.06%			12.00%	0.01%
Universal Health Services Inc	UHS	65.72	88.18	5,794.93	0.02%	0.91%	0.00%	7.00%	0.00%
Skyworks Solutions Inc	SKWS	160.45	85.27	13,681.23	0.05%	2.91%	0.00%	13.00%	0.01%
Quest Diagnostics Inc	DGX	116.61	122.03	14,229.44	0.08%	2.16%	0.00%	3.50%	0.00%
Activision Blizzard Inc	ATVI	782.31	74.34	58,156.70	0.23%	0.63%	0.00%	14.00%	0.03%
Rockwell Automation Inc	ROK	115.44	215.11	24,831.22	0.10%	2.08%	0.00%	9.50%	0.01%
Kraft Heinz Co/The	KHC	1,225.44	33.35	40,868.42	0.16%	4.80%	0.01%	5.50%	0.01%
American Tower Corp	AMT	465.59	214.70	90,961.53	0.40%	2.74%	0.01%	9.00%	0.04%
Regeneron Pharmaceuticals Inc	REGN	107.19	688.87	73,839.98	0.29%			3.00%	0.01%
Amazon.com Inc	AMZN	10,187.56	113.00	1,151,193.72				26.50%	
Jack Henry & Associates Inc	JKHY	72.90	182.27	13,288.03	0.05%	1.08%	0.00%	9.00%	0.00%
Ralph Lauren Corp	RL	42.90	84.93	3,643.33	0.01%			12.50%	0.00%
Boston Properties Inc	BXP	156.74	74.97	11,750.42		5.23%		-1.00%	
Amphenol Corp	APH	564.83	66.96	39,829.68	0.16%	1.19%	0.00%	13.00%	0.02%
Howmet Aerospace Inc	HWM	415.40	30.93	12,848.41	0.05%	0.52%	0.00%	12.00%	0.01%
Pioneer Natural Resources Co	PXD	238.67	216.63	51,678.57		15.83%		21.00%	
Valero Energy Corp	VLO	393.97	106.85	42,095.69	0.17%	3.67%	0.01%	11.00%	0.02%
Synopsys Inc	SNPS	152.91	305.51	46,715.84	0.19%			12.50%	0.02%
Etsy Inc	ETSY	126.61	100.13	12,877.36				24.50%	
CH Robinson Worldwide Inc	CHRW	123.88	96.31	11,931.17	0.05%	2.28%	0.00%	8.50%	0.00%
Accenture PLC	ACN	664.19	257.30	170,895.57	0.88%	1.74%	0.01%	12.50%	0.09%
TransDigm Group Inc	TDG	54.24	524.82	28,463.81	0.11%			18.50%	0.02%
Yum! Brands Inc	YUM	284.54	106.34	30,258.20	0.12%	2.14%	0.00%	10.50%	0.01%
Prologis Inc	PLD	740.34	101.60	75,218.95	0.30%	3.11%	0.01%	6.00%	0.02%
FirstEnergy Corp	FE	571.40	37.00	21,141.62	0.08%	4.22%	0.00%	3.00%	0.00%

STANDARD AND POOR'S 500 INDEX

		(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Name	Ticker	Shares Outst'g	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
VeriSign Inc	VRSN	107.28	173.70	18,635.06	0.07%			11.00%	0.01%
Quanta Services Inc	PWR	143.02	127.39	18,219.70	0.07%	0.22%	0.00%	12.50%	0.01%
Henry Schein Inc	HSIC	136.12	65.77	8,952.28	0.04%			7.00%	0.00%
Ameren Corp	AEE	258.09	80.55	20,789.31	0.08%	2.93%	0.00%	6.50%	0.01%
ANSYS Inc	ANSS	87.07	221.70	19,303.20	0.08%			8.80%	0.01%
FactSet Research Systems Inc	FDS	37.98	400.11	15,196.18	0.06%	0.89%	0.00%	10.50%	0.01%
NVIDIA Corp	NVDA	2,490.00	121.39	302,261.10		0.13%		23.00%	
Sealed Air Corp	SEE	145.23	44.51	6,464.05	0.03%	1.80%	0.00%	10.00%	0.00%
Cognizant Technology Solutions Corp	CTSH	617.79	57.44	20,741.57	0.12%	1.88%	0.00%	7.50%	0.01%
SVB Financial Group	SVB	59.08	335.78	19,838.55	0.08%			6.50%	0.01%
Intuitive Surgical Inc	ISRG	357.11	187.44	66,936.89	0.27%			12.50%	0.03%
Take-Two Interactive Software Inc	TTWO	196.49	109.00	16,147.30	0.07%			10.50%	0.01%
Republic Services Inc	RSB	315.93	126.04	42,979.53	0.17%	1.48%	0.00%	12.50%	0.02%
eBay Inc	EBAY	549.37	36.81	20,222.24	0.08%	2.39%	0.00%	15.50%	0.01%
Goldman Sachs Group Inc/The	GS	341.36	293.06	100,034.38	0.40%	3.41%	0.01%	5.00%	0.02%
SBA Communications Corp	SBAC	107.88	284.85	30,707.47		1.00%		35.50%	
Sempra Energy	SRE	314.31	149.94	47,127.84	0.19%	3.05%	0.01%	7.50%	0.01%
Moody's Corp	MCO	183.50	243.11	44,610.89	0.18%	1.15%	0.00%	8.00%	0.01%
ON Semiconductor Corp	ON	433.24	62.33	27,003.60				22.50%	
Booking Holdings Inc	BKNG	39.71	1,643.21	65,245.30				22.00%	
F5 Inc	FFIV	89.56	144.73	8,620.41	0.03%			10.00%	0.00%
Akamai Technologies Inc	AKAM	158.96	80.32	12,767.43	0.05%			5.50%	0.00%
Charles River Laboratories International Inc	CRL	50.89	198.80	10,009.84	0.04%			12.00%	0.00%
MarketAxess Holdings Inc	MKTX	37.84	222.49	8,374.52	0.03%	1.26%	0.00%	11.00%	0.00%
Devon Energy Corp	DVN	654.80	80.13	39,373.12		10.31%		30.00%	
Bio-Techne Corp	TECH	39.22	284.00	11,139.33	0.04%	0.45%	0.00%	17.50%	0.01%
Alphabet Inc	GOOGL	5,996.00	95.65	573,517.40					
Teleflex Inc	TFX	46.91	201.46	9,449.48	0.04%	0.68%	0.00%	10.00%	0.00%
Netflix Inc	NFLX	444.71	235.44	104,701.58	0.42%			14.50%	0.08%
Allegion plc	ALLE	87.84	89.68	7,877.31	0.03%	1.83%	0.00%	10.50%	0.00%
Agilent Technologies Inc	A	296.04	121.34	35,921.61	0.14%	0.69%	0.00%	12.00%	0.02%
Warner Bros Discovery Inc	WBD	2,427.59	11.50	27,917.32					
Elevance Health Inc	ELV	240.00	454.24	109,018.06	0.44%	1.13%	0.00%	12.50%	0.05%
Trimble Inc	TRMB	247.86	54.27	13,440.35	0.05%			10.00%	0.01%
CME Group Inc	CME	359.43	177.13	83,666.37	0.25%	2.26%	0.01%	8.50%	0.02%
Juniper Networks Inc	JNPR	322.61	26.12	8,426.55	0.03%	3.22%	0.00%	9.00%	0.00%
BlackRock Inc	BLK	150.77	560.28	82,905.17	0.33%	3.55%	0.01%	10.00%	0.03%
DTE Energy Co	DTE	193.74	115.05	22,290.02	0.08%	3.08%	0.00%	4.50%	0.00%
Nasdaq Inc	NDQA	491.23	56.68	27,842.69	0.11%	1.41%	0.00%	8.00%	0.01%
Celanese Corp	CE	108.35	90.34	9,788.25	0.04%	3.01%	0.00%	7.50%	0.00%
Philip Morris International Inc	PM	1,560.16	83.01	128,679.03	0.51%	6.12%	0.03%	7.00%	0.04%
Salesforce Inc	CRM	1,000.00	143.84	143,840.00	0.57%			19.50%	0.11%
Ingersoll Rand Inc	IR	403.18	43.26	17,441.61		0.18%			
Huntington Ingalls Industries Inc	HII	39.95	221.50	8,648.48	0.04%	2.13%	0.00%	10.00%	0.00%
MellLife Inc	MET	797.61	60.78	48,478.98	0.19%	3.26%	0.01%	7.50%	0.01%
Tapestry Inc	TPR	242.05	28.43	6,881.48	0.03%	4.22%	0.00%	10.00%	0.00%
CSX Corp	CSX	2,141.24	26.84	57,042.66	0.23%	1.50%	0.00%	10.50%	0.02%
Edwards Lifesciences Corp	EW	619.94	82.63	51,225.89	0.20%			12.00%	0.02%
Ameriprise Financial Inc	AMP	108.17	251.95	27,252.42	0.11%	1.98%	0.00%	12.50%	0.01%
Zebra Technologies Corp	ZBRA	51.79	262.01	13,569.50	0.05%			11.50%	0.01%
Zimmer Biomet Holdings Inc	ZBH	209.82	104.55	21,936.68	0.09%	0.92%	0.00%	7.00%	0.01%
CBRE Group Inc	CBRE	321.17	87.51	21,682.25	0.09%			8.50%	0.01%
Camden Property Trust	CPT	106.53	119.45	12,724.77	0.05%	3.15%	0.00%	4.50%	0.00%
Mastercard Inc	MA	958.68	284.34	272,589.93	1.09%	0.69%	0.01%	18.50%	0.20%
CarMax Inc	KMX	158.02	66.02	10,432.15	0.04%			13.00%	0.01%
Intercontinental Exchange Inc	ICE	558.46	90.35	50,456.68	0.20%	1.68%	0.00%	6.50%	0.01%
Fidelity National Information Services Inc	FIS	607.98	75.57	45,944.97		2.49%		52.00%	
Chipotle Mexican Grill Inc	CMG	27.77	1,502.76	41,724.13				22.50%	
Wynn Resorts Ltd	WYNN	113.73	63.03	7,168.40				27.00%	
Live Nation Entertainment Inc	LYV	229.97	76.04	17,487.07					
Assurant Inc	AIZ	53.21	145.27	7,729.67	0.03%	1.87%	0.00%	15.50%	0.00%
NRG Energy Inc	NRG	235.15	38.27	8,999.08		3.66%		-10.50%	
Regions Financial Corp	RF	934.40	20.07	18,753.33	0.07%	3.99%	0.00%	11.50%	0.01%
Monster Beverage Corp	MNST	526.89	86.96	45,817.92	0.18%			11.50%	0.02%
Mosaic Co/The	MOS	345.27	48.33	16,686.75		1.24%		38.00%	
Baker Hughes Co	BKR	1,011.75	20.96	21,206.36		3.44%			
Expedia Group Inc	EXPE	152.04	93.89	14,244.16					
Evergy Inc	EVERG	229.48	59.40	13,630.99	0.05%	3.86%	0.00%	7.50%	0.00%
CF Industries Holdings Inc	CF	199.26	96.25	19,178.87		1.68%		32.00%	
Leidos Holdings Inc	LDOS	136.54	87.47	11,943.24	0.05%	1.65%	0.00%	8.50%	0.00%
APA Corp	APA	326.53	34.19	11,164.06		2.92%			
Alphabet Inc	GOOG	6,163.00	96.15	592,572.45	2.36%			18.50%	0.44%
TE Connectivity Ltd	TEL	319.84	110.38	35,297.43	0.14%	2.03%	0.00%	10.50%	0.01%
Cooper Cos Inc/The	COO	49.35	263.90	13,022.41	0.05%	0.02%	0.00%	14.00%	0.01%
Discover Financial Services	DFS	273.17	90.92	24,836.71	0.10%	2.64%	0.00%	16.00%	0.02%
Visa Inc	V	1,835.02	177.85	290,480.41	1.16%	0.84%	0.01%	13.50%	0.16%
Mid-America Apartment Communities Inc	MAA	115.44	155.07	17,901.13	0.07%	3.22%	0.00%	4.50%	0.00%
Xylem Inc/NY	XYL	180.18	87.36	15,740.70	0.06%	1.37%	0.00%	9.00%	0.01%
Marathon Petroleum Corp	MPC	498.62	99.33	49,528.32		2.34%			
Tractor Supply Co	TSCO	111.00	185.88	20,632.68	0.08%	1.98%	0.00%	12.50%	0.01%
Advanced Micro Devices Inc	AMD	1,814.32	63.36	102,283.38				25.50%	
ResMed Inc	RMD	146.43	218.30	31,964.58	0.13%	0.81%	0.00%	8.50%	0.01%
Mettler-Toledo International Inc	MTD	22.51	1,084.12	24,400.29	0.10%			12.50%	0.01%
VICI Properties Inc	VICI	963.09	29.85	28,748.33	0.11%	5.23%	0.01%	8.50%	0.01%
Copart Inc	CPRT	238.06	106.40	25,329.26	0.10%			12.00%	0.01%
Jacobs Solutions Inc	J	127.61	108.49	13,843.97	0.06%	0.85%	0.00%	12.00%	0.01%
Albemarle Corp	ALB	117.13	264.44	30,973.59	0.12%	0.60%	0.00%	15.00%	0.02%
Fortinet Inc	FTNT	788.52	49.13	38,740.04				21.80%	
Moderna Inc	MRNA	391.20	118.25	46,258.40				-2.50%	
Essex Property Trust Inc	ESS	65.12	242.23	15,774.99		3.63%		-4.00%	
CoStar Group Inc	CSGP	406.55	69.65	28,316.35	0.11%			13.00%	0.01%
Realty Income Corp	O	617.58	58.20	35,942.98	0.14%	5.11%	0.01%	6.00%	0.01%

STANDARD AND POOR'S 500 INDEX

		(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Name	Ticker	Shares Outst'g	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Westrock Co	WRK	254.30	30.89	7,855.27	0.03%	3.24%	0.00%	20.00%	0.01%
Westinghouse Air Brake Technologies Corp	WAB	181.88	81.35	14,795.53	0.06%	0.74%	0.00%	9.50%	0.01%
Pool Corp	POOL	39.59	318.21	12,598.25	0.05%	1.26%	0.00%	14.00%	0.01%
Western Digital Corp	WDC	314.49	32.55	10,236.75	0.04%			20.00%	0.01%
PepsiCo Inc	PEP	1,380.09	163.28	225,312.68	0.90%	2.82%	0.03%	6.00%	0.05%
Diamondback Energy Inc	FANG	177.79	120.46	21,415.98		10.13%			
ServiceNow Inc	NOW	202.00	377.61	76,277.22				45.50%	
Church & Dwight Co Inc	CHD	242.91	71.44	17,353.42	0.07%	1.47%	0.00%	6.00%	0.00%
Federal Realty Investment Trust	FRT	80.91	90.12	7,291.43	0.03%	4.79%	0.00%	2.50%	0.00%
MGM Resorts International	MGM	383.10	29.72	11,682.99		0.03%		25.00%	
American Electric Power Co Inc	AEP	513.73	88.45	44,412.30	0.18%	3.61%	0.01%	6.50%	0.01%
SolarEdge Technologies Inc	SEDG	55.84	231.46	12,877.28				22.00%	
Invitation Homes Inc	INVH	610.36	33.77	20,611.86		2.61%			
PTC Inc	PTC	117.47	104.60	12,286.94				29.00%	
JB Hunt Transport Services Inc	JBHT	103.81	166.42	16,238.43	0.08%	1.02%	0.00%	11.50%	0.01%
Lam Research Corp	LRCX	136.94	366.00	50,081.61	0.20%	1.89%	0.00%	20.00%	0.04%
Mohawk Industries Inc	MHK	63.53	91.19	5,793.67	0.02%			10.00%	0.00%
Pentair PLC	PNR	164.46	40.63	6,682.01	0.03%	2.07%	0.00%	13.00%	0.00%
Vertex Pharmaceuticals Inc	VRTX	256.46	289.54	74,255.14	0.30%			12.50%	0.04%
Amcor PLC	AMCR	1,489.02	10.73	15,977.18	0.06%	4.47%	0.00%	14.50%	0.01%
Meta Platforms Inc	META	2,280.67	135.68	309,441.58	1.23%			16.00%	0.20%
T-Mobile US Inc	TMUS	1,254.04	134.17	168,254.68	0.67%			10.00%	0.07%
United Rentals Inc	URI	69.99	270.12	18,904.35	0.08%			18.00%	0.01%
ABIOMED Inc	ABMD	45.46	245.66	11,167.95	0.04%			7.50%	0.00%
Honeywell International Inc	HON	673.99	166.97	112,486.35	0.45%	2.47%	0.01%	11.00%	0.05%
Alexandria Real Estate Equities Inc	ARE	163.17	140.19	22,874.52	0.09%	3.37%	0.00%	10.00%	0.01%
Delta Air Lines Inc	DAL	641.20	28.06	17,992.02					
Seagate Technology Holdings PLC	STX	208.03	53.23	11,073.44	0.04%	5.26%	0.00%	15.00%	0.01%
United Airlines Holdings Inc	UAL	326.73	32.53	10,628.49					
News Corp	NWS	195.82	15.42	3,019.61		1.30%			
Centene Corp	CNC	571.58	77.81	44,474.72	0.18%			10.00%	0.02%
Martin Marietta Materials Inc	MLM	62.37	322.09	20,090.04	0.08%	0.82%	0.00%	5.50%	0.00%
Teradyne Inc	TER	156.78	75.15	11,782.17	0.05%	0.59%	0.00%	8.50%	0.00%
PayPal Holdings Inc	PYPL	1,156.48	86.07	99,537.89	0.40%			12.00%	0.05%
Tesla Inc	TSLA	3,133.47	265.25	831,152.92				52.00%	
DISH Network Corp	DISH	291.87	13.83	4,036.56	0.02%			2.50%	0.00%
Dow Inc	DOW	718.17	43.93	31,549.08	0.13%	6.37%	0.01%	15.00%	0.02%
Everest Re Group Ltd	RE	39.41	262.44	10,342.76	0.04%	2.51%	0.00%	17.50%	0.01%
Teledyne Technologies Inc	TDY	46.87	337.47	15,815.53	0.06%			11.50%	0.01%
News Corp	NWSA	385.60	15.11	5,626.39		1.32%			
Exelon Corp	EXC	991.76	37.46	37,151.22		3.60%			
Global Payments Inc	GPNI	277.16	108.05	29,947.46	0.12%	0.93%	0.00%	17.00%	0.02%
Crown Castle Inc	CCI	433.04	144.55	62,595.79	0.25%	4.07%	0.01%	12.00%	0.03%
Aptiv PLC	APTIV	270.93	78.21	21,189.87				26.00%	
Advance Auto Parts Inc	AAP	60.12	156.34	9,398.85	0.04%	3.84%	0.00%	16.00%	0.01%
Align Technology Inc	ALGN	78.11	207.11	16,176.95	0.06%			17.00%	0.01%
Illumina Inc	ILMN	157.30	190.79	30,011.27	0.12%			6.50%	0.01%
LKQ Corp	LKQ	274.39	47.15	12,937.49	0.05%	2.12%	0.00%	13.00%	0.01%
Nielsen Holdings PLC	NLSN	359.83	27.72	9,974.60		0.67%			
Zoetis Inc	ZTS	468.14	148.29	69,420.33	0.28%	0.88%	0.00%	11.00%	0.03%
Equinix Inc	EQIX	91.08	568.84	51,807.10	0.21%	2.18%	0.00%	15.00%	0.03%
Digital Realty Trust Inc	DLR	287.41	99.18	28,505.13		4.82%		-3.50%	
Las Vegas Sands Corp	LVS	784.16	37.52	28,671.13	0.11%			13.50%	0.02%
Molina Healthcare Inc	MOH	58.10	329.84	19,163.70	0.08%			11.00%	0.01%

Notes:

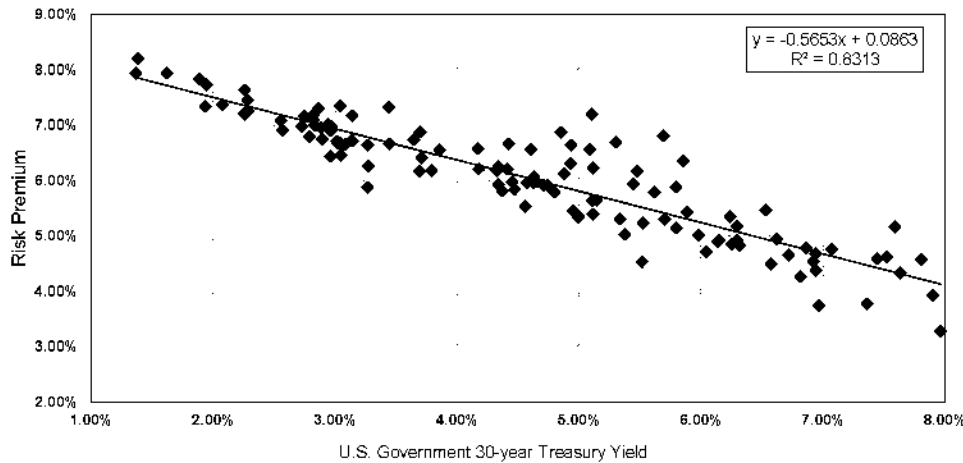
- [1] Equals sum of Col. [9]  
[2] Equals sum of Col. [11]  
[3] Equals  $([1] \times (1 + (0.5 \times [2])) \div [2]$   
[4] Source: Bloomberg Professional as of September 30, 2022  
[5] Source: Bloomberg Professional as of September 30, 2022  
[6] Equals [4] x [5]  
[7] Equals weight in S&P 500 based on market capitalization [6] if Growth Rate > 0% and ≤ 20%  
[8] Source: Bloomberg Professional, as of September 30, 2022  
[9] Equals [7] x [8]  
[10] Source: Value Line, as of September 30, 2022  
[11] Equals [7] x [10]

**BOND YIELD PLUS RISK PREMIUM**

	[1]	[2]	[3]
Quarter	Average Authorized VI Electric ROE	U.S. Govt. 30- year Treasury	Risk Premium
1992.1	12.38%	7.81%	4.58%
1992.2	11.83%	7.90%	3.93%
1992.3	12.03%	7.45%	4.59%
1992.4	12.14%	7.52%	4.62%
1993.1	11.84%	7.07%	4.76%
1993.2	11.64%	6.66%	4.78%
1993.3	11.15%	6.32%	4.84%
1993.4	11.04%	6.14%	4.91%
1994.1	11.07%	6.58%	4.49%
1994.2	11.13%	7.36%	3.77%
1994.3	12.75%	7.59%	5.16%
1994.4	11.24%	7.96%	3.28%
1995.1	11.96%	7.63%	4.33%
1995.2	11.32%	6.94%	4.37%
1995.3	11.37%	6.72%	4.65%
1995.4	11.58%	6.24%	5.35%
1996.1	11.46%	6.29%	5.17%
1996.2	11.46%	6.92%	4.54%
1996.3	10.70%	6.97%	3.73%
1996.4	11.56%	6.62%	4.94%
1997.1	11.08%	6.82%	4.26%
1997.2	11.62%	6.94%	4.68%
1997.3	12.00%	6.53%	5.47%
1997.4	11.06%	6.15%	4.91%
1998.1	11.31%	5.88%	5.43%
1998.2	12.20%	5.85%	6.35%
1998.3	11.65%	5.48%	6.17%
1998.4	12.30%	5.11%	7.19%
1999.1	10.40%	5.37%	5.03%
1999.2	10.94%	5.80%	5.14%
1999.3	10.75%	6.04%	4.71%
1999.4	11.10%	6.26%	4.84%
2000.1	11.21%	6.30%	4.92%
2000.2	11.00%	5.98%	5.02%
2000.3	11.68%	5.79%	5.89%
2000.4	12.50%	5.69%	6.81%
2001.1	11.38%	5.45%	5.93%
2001.2	11.00%	5.70%	5.30%
2001.3	10.76%	5.53%	5.23%
2001.4	11.99%	5.30%	6.69%
2002.1	10.05%	5.52%	4.53%
2002.2	11.41%	5.62%	5.79%
2002.3	11.65%	5.09%	6.56%
2002.4	11.57%	4.93%	6.63%
2003.1	11.72%	4.85%	6.87%
2003.2	11.16%	4.60%	6.56%
2003.3	10.50%	5.11%	5.39%
2003.4	11.34%	5.11%	6.23%
2004.1	11.00%	4.88%	6.12%
2004.2	10.64%	5.34%	5.30%
2004.3	10.75%	5.11%	5.64%
2004.4	11.24%	4.93%	6.31%
2005.1	10.63%	4.71%	5.92%
2005.2	10.31%	4.47%	5.84%
2005.3	11.08%	4.42%	6.66%
2005.4	10.63%	4.65%	5.98%
2006.1	10.70%	4.63%	6.07%
2006.2	10.79%	5.14%	5.64%
2006.3	10.35%	5.00%	5.35%
2006.4	10.65%	4.74%	5.91%
2007.1	10.59%	4.80%	5.79%
2007.2	10.33%	4.99%	5.34%
2007.3	10.40%	4.95%	5.45%
2007.4	10.65%	4.61%	6.04%

**BOND YIELD PLUS RISK PREMIUM**

	[1]	[2]	[3]
Quarter	Average Authorized VI Electric ROE	U.S. Govt. 30- year Treasury	Risk Premium
2008.1	10.62%	4.41%	6.21%
2008.2	10.54%	4.57%	5.96%
2008.3	10.43%	4.45%	5.98%
2008.4	10.39%	3.64%	6.74%
2009.1	10.75%	3.44%	7.31%
2009.2	10.75%	4.17%	6.58%
2009.3	10.50%	4.32%	6.18%
2009.4	10.59%	4.34%	6.25%
2010.1	10.59%	4.62%	5.97%
2010.2	10.18%	4.37%	5.81%
2010.3	10.40%	3.86%	6.55%
2010.4	10.38%	4.17%	6.20%
2011.1	10.09%	4.56%	5.53%
2011.2	10.26%	4.34%	5.92%
2011.3	10.57%	3.70%	6.88%
2011.4	10.39%	3.04%	7.35%
2012.1	10.30%	3.14%	7.17%
2012.2	9.95%	2.94%	7.01%
2012.3	9.90%	2.74%	7.16%
2012.4	10.16%	2.86%	7.30%
2013.1	9.85%	3.13%	6.72%
2013.2	9.86%	3.14%	6.72%
2013.3	10.12%	3.71%	6.41%
2013.4	9.97%	3.79%	6.18%
2014.1	9.86%	3.69%	6.16%
2014.2	10.10%	3.44%	6.66%
2014.3	9.90%	3.27%	6.63%
2014.4	9.94%	2.96%	6.98%
2015.1	9.64%	2.55%	7.08%
2015.2	9.83%	2.88%	6.94%
2015.3	9.40%	2.96%	6.44%
2015.4	9.86%	2.96%	6.90%
2016.1	9.70%	2.72%	6.98%
2016.2	9.48%	2.57%	6.91%
2016.3	9.74%	2.28%	7.46%
2016.4	9.83%	2.83%	7.00%
2017.1	9.72%	3.05%	6.67%
2017.2	9.64%	2.90%	6.75%
2017.3	10.00%	2.82%	7.18%
2017.4	9.91%	2.82%	7.09%
2018.1	9.69%	3.02%	6.66%
2018.2	9.75%	3.09%	6.66%
2018.3	9.69%	3.06%	6.63%
2018.4	9.52%	3.27%	6.25%
2019.1	9.72%	3.01%	6.70%
2019.2	9.58%	2.78%	6.79%
2019.3	9.53%	2.29%	7.25%
2019.4	9.89%	2.26%	7.63%
2020.1	9.72%	1.89%	7.83%
2020.2	9.58%	1.38%	8.19%
2020.3	9.30%	1.37%	7.93%
2020.4	9.56%	1.62%	7.94%
2021.1	9.45%	2.07%	7.38%
2021.2	9.47%	2.26%	7.21%
2021.3	9.27%	1.93%	7.34%
2021.4	9.67%	1.95%	7.73%
2022.1	9.45%	2.25%	7.20%
2022.2	9.50%	3.05%	6.45%
2022.3	9.14%	3.26%	5.88%
AVERAGE	10.61%	4.56%	6.05%



#### SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.911763
R Square	0.831312
Adjusted R Square	0.829918
Standard Error	0.004255
Observations	123

#### ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.010796	0.010796	596.302374	0.000000
Residual	121	0.002191	0.000018		
Total	122	0.012986			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.0863	0.0011	76.8103	0.0000	0.0841	0.0885	0.0841	0.0885
U.S. Govt. 30-year Treasury	(0.5653)	0.0232	(24.4193)	0.0000	(0.6112)	(0.5195)	(0.6112)	(0.5195)

	U.S. Govt. 30-year Treasury	Risk Premium	ROE
	[7]	[8]	[9]
Current 30-day average of 30-year U.S. Treasury bond yield [4]	3.47%	6.67%	10.14%
Blue Chip Near-Term Projected Forecast (Q1 2023 - Q1 2024) [5]	3.68%	6.44%	10.32%
Blue Chip Long-Term Projected Forecast (2024-2028) [6]	3.80%	6.48%	10.28%
AVERAGE			10.24%

#### Notes:

- [1] Source: Regulatory Research Associates, rate cases through September 30, 2022  
[2] Source: S&P Capital IQ Pro, quarterly bond yields are the average of each trading day in the quarter  
[3] Equals Column [1] - Column [2]  
[4] Source: S&P Capital IQ Pro, 30-day average as of September 30, 2022  
[5] Source: Blue Chip Financial Forecasts, Vol. 41, No. 10, September 30, 2022, at 2  
[6] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 14  
[7] See notes [4], [5] & [6]  
[8] Equals 0.066293 + (-0.565341 x Column [7])  
[9] Equals Column [7] + Column [8]



SIZE PREMIUM CALCULATION

Proxy Group Market Capitalization and Market-to-Book Ratio

Company	Ticker	[1] Market Capitalization (\$ billions)	[2] Market-to- Book Ratio
ALLETE, Inc.	ALE	3.33	1.24
Alliant Energy Corporation	LNT	15.29	2.49
Ameren Corporation	AEE	23.78	2.41
American Electric Power Company, Inc.	AEP	51.49	2.14
Duke Energy Corporation	DUK	81.99	1.72
Entergy Corporation	ETR	23.47	2.00
Eversource Energy, Inc.	ESV	15.54	1.87
IDACORP, Inc.	IDA	5.52	2.04
NextEra Energy, Inc.	NEE	189.25	4.64
NorthWestern Corporation	NWE	3.01	1.22
OGE Energy Corporation	OGE	8.16	1.92
Otter Tail Corporation	OTTR	3.02	2.70
Portland General Electric Company	POR	4.55	1.66
Southern Company	SO	81.88	2.85
Xcel Energy Inc.	XEL	40.30	2.52
Average		35.37	2.22
Median		15.54	2.04

MDU-MT		
Common Equity (\$ millions) [3]	\$	124.24
Implied Market Capitalization [4]	\$	253.23
As a percent of Proxy Group Median Market Capitalization		1.63%

Kroll Cost of Capital Navigator – Size Premium

Breakdown of Deciles 1-10	[5] Market Capitalization of Largest Company (\$ millions)	[6] Size Premium
1-Largest	2,324,360.22	-0.22%
2	36,069.22	0.43%
3	16,738.36	0.55%
4	8,212.64	0.54%
5	5,003.75	0.89%
6	3,276.55	1.18%
7	2,164.62	1.34%
8	1,306.04	1.21%
9	627.80	2.10%
10-Smallest	289.01	4.80%
MDU-MT - Implied Market Capitalization	253.23	4.80%
Proxy Group Median	15,537.28	0.55%
Size Premium [7]		4.25%

Notes:

[1] Source: S&P Capital IQ Pro, equals 30-day average as of September 30, 2022

[2] Source: S&P Capital IQ Pro, equals 30-day average as of September 30, 2022

[3] Data provided by MDU

[4] Equals [3] x proxy group median market-to-book ratio

[5] Kroll Cost of Capital Navigator - Size Premium: Annual Data as of 12/31/2021

[6] Kroll Cost of Capital Navigator - Size Premium: Annual Data as of 12/31/2021

[7] Equals 4.80% - 0.55%

FLOTATION COST ADJUSTMENT -- MONTANA-DAKOTA UTILITIES PROXY GROUP

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Company	Date (1)	Shares Issued (000)	Offering Price	Under- writing Discount (3)	Offering Expense (\$000)	Net Proceeds Per Share	Total Flotation Costs (\$000)	Gross Equity Issue Before Costs (\$000)	Net Proceeds (\$000)	Flotation Cost Percentage
MDU Resources Group	2/4/2004	2,300	\$ 23.32	\$ 0.7930	\$ 360	\$ 22.37	\$ 2,174	\$ 53,636	\$ 51,462	4.05%
MDU Resources Group	11/19/2002	2,400	\$ 24.00	\$ 0.7200	\$ 193	\$ 23.20	\$ 1,921	\$ 57,600	\$ 55,680	3.33%
							\$ 4,094	\$ 111,236	\$ 107,142	3.68%

[1] Offering Completion Date

[3] Underwriting discount was calculated as the market price minus the offering price when not explicitly given in the prospectus.

The flotation cost adjustment is derived by dividing the dividend yield by  $1 - F$  (where  $F$  = flotation costs expressed in percentage terms), or by 0.9632, and adding that result to the constant growth rate to determine the cost of equity. Using the formulas shown previously in my testimony, the Constant Growth DCF calculation is modified as follows to accommodate an adjustment for flotation costs:

$$k = \frac{D}{P} \times \frac{1 - 0.5g}{1 - F} + g$$

		[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Expected Dividend Yield Adjusted for Flotation Costs	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Earnings Growth	ROE	ROE Adjusted for Flotation Costs
ALLETE, Inc.	ALE	2.60	58.39	4.45%	4.62%	4.80%	6.00%	8.70%	8.10%	7.60%	12.22%	12.40%
Alliant Energy Corporation	LNT	1.71	60.91	2.81%	2.89%	3.00%	6.00%	6.30%	6.20%	6.17%	9.06%	9.17%
Ameren Corporation	AEE	2.36	91.63	2.57%	2.66%	2.76%	6.50%	6.37%	7.20%	6.89%	9.36%	9.45%
American Electric Power Company, Inc.	AEP	3.12	100.22	3.11%	3.21%	3.33%	6.50%	6.25%	6.10%	6.28%	9.49%	9.62%
Duke Energy Corporation	DUK	4.02	106.48	3.78%	3.88%	4.03%	5.00%	5.62%	6.10%	5.57%	9.45%	9.60%
Entergy Corporation	ETR	4.04	115.37	3.50%	3.60%	3.74%	4.00%	6.19%	6.80%	5.66%	9.26%	9.40%
Energys, Inc.	EVRG	2.29	67.69	3.38%	3.48%	3.61%	7.50%	3.71%	5.20%	5.47%	8.66%	9.08%
IDACORP, Inc.	IDA	3.00	109.12	2.75%	2.79%	2.90%	4.00%	2.70%	2.70%	3.13%	5.93%	6.03%
NextEra Energy, Inc.	NEE	1.70	86.05	1.98%	2.07%	2.15%	10.00%	9.35%	9.70%	9.68%	11.75%	11.83%
NorthWestern Corporation	NWE	2.62	53.30	4.73%	4.80%	4.98%	3.00%	4.50%	1.70%	3.07%	7.87%	8.06%
OGE Energy Corporation	OGE	1.64	40.75	4.02%	4.10%	4.26%	6.50%	1.90%	3.50%	3.97%	8.07%	8.23%
Otter Tail Corporation	OTTR	1.66	72.44	2.28%	2.36%	2.44%	4.50%	9.00%	n/a	6.75%	9.10%	9.19%
Portland General Electric Company	POR	1.81	50.58	3.58%	3.65%	3.79%	4.50%	3.16%	4.80%	4.06%	7.74%	7.88%
Southern Company	SO	2.72	77.01	3.53%	3.63%	3.77%	6.50%	6.59%	4.00%	5.70%	9.33%	9.47%
Xcel Energy Inc.	XEL	1.96	73.40	2.68%	2.74%	2.85%	6.00%	7.04%	6.40%	6.48%	9.22%	9.33%
Mean											9.12%	9.25%
Flotation Cost Adjustment											[21]	0.13%

Notes:

[1]-[4] Sources: MDU Resources Group - Prospectus dated February 4, 2004 and Prospectus dated November 19, 2002.

[5] Equals [6]/[1]

[6] Equals [4] + ([1] x [3])

[7] Equals [1] x [2]

[8] Equals [7] - [6]

[9] Equals [6] / [7]

[10] Source: Bloomberg Professional

[11] Source: Bloomberg Professional, equals 30-day average as of September 30, 2022.

[12] Equals [10] / [11]

[13] Equals [12] x (1 + 0.5 x [18])

[14] Equals [13] / (1 - Flotation Cost)

[15] Source: Value Line

[16] Source: Yahoo! Finance

[17] Source: Zacks

[18] Equals Average ([15], [16], [17])

[19] Equals [13] + [18]

[20] Equals [14] + [19]

[21] Equals Average ([20]) - Average ([19])

2023-2027 CAPITAL EXPENDITURES AS A PERCENT OF 2021 NET PLANT  
(\$ Millions)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
		2021	2023	2024	2025	2026	2027	2023-27 Cap. Ex. / 2021 Net Plant
ALLETE, Inc.	ALE							
Capital Spending per Share			\$5.95	\$8.60	\$7.25	\$7.25	\$7.25	
Common Shares Outstanding			58.00	59.50	61.00	61.00	61.00	
Capital Expenditures			\$345.1	\$392.7	\$442.3	\$442.3	\$442.3	40.48%
Net Plant		\$5,100.2						
Alliant Energy Corporation	LNT							
Capital Spending per Share			\$5.90	\$8.08	\$6.25	\$8.25	\$6.25	
Common Shares Outstanding			251.50	252.25	253.00	253.00	253.00	
Capital Expenditures			\$1,483.9	\$1,532.4	\$1,581.3	\$1,581.3	\$1,581.3	51.78%
Net Plant		\$14,987.0						
Ameren Corporation	AEE							
Capital Spending per Share			\$12.55	\$12.78	\$13.00	\$13.00	\$13.00	
Common Shares Outstanding			267.00	273.50	280.00	280.00	280.00	
Capital Expenditures			\$3,350.9	\$3,494.0	\$3,640.0	\$3,640.0	\$3,640.0	60.71%
Net Plant		\$29,281.0						
American Electric Power Company, Inc.	AEP							
Capital Spending per Share			\$14.15	\$14.08	\$14.00	\$14.00	\$14.00	
Common Shares Outstanding			523.00	534.00	545.00	545.00	545.00	
Capital Expenditures			\$7,400.5	\$7,516.1	\$7,630.0	\$7,630.0	\$7,630.0	57.28%
Net Plant		\$66,001.0						
Duke Energy Corporation	DUK							
Capital Spending per Share			\$16.75	\$16.75	\$16.75	\$16.75	\$16.75	
Common Shares Outstanding			770.00	770.00	770.00	770.00	770.00	
Capital Expenditures			\$12,897.5	\$12,897.5	\$12,897.5	\$12,897.5	\$12,897.5	57.88%
Net Plant		\$111,408.0						
Entergy Corporation	ETR							
Capital Spending per Share			\$19.00	\$19.38	\$19.75	\$19.75	\$19.75	
Common Shares Outstanding			209.00	211.50	214.00	214.00	214.00	
Capital Expenditures			\$3,971.0	\$4,097.8	\$4,226.5	\$4,226.5	\$4,226.5	49.12%
Net Plant		\$42,244.0						
Evergy, Inc.	EVERG							
Capital Spending per Share			\$9.20	\$9.35	\$9.50	\$9.50	\$9.50	
Common Shares Outstanding			230.00	230.00	230.00	230.00	230.00	
Capital Expenditures			\$2,116.0	\$2,150.5	\$2,185.0	\$2,185.0	\$2,185.0	51.17%
Net Plant		\$21,150.0						
IDACORP, Inc.	IDA							
Capital Spending per Share			\$13.25	\$11.63	\$10.00	\$10.00	\$10.00	
Common Shares Outstanding			51.00	51.50	52.00	52.00	52.00	
Capital Expenditures			\$675.8	\$598.7	\$520.0	\$520.0	\$520.0	57.82%
Net Plant		\$4,901.8						
NextEra Energy, Inc.	NEE							
Capital Spending per Share			\$8.40	\$9.20	\$10.00	\$10.00	\$10.00	
Common Shares Outstanding			2,025.00	2,025.00	2,025.00	2,025.00	2,025.00	
Capital Expenditures			\$17,010.0	\$18,630.0	\$20,250.0	\$20,250.0	\$20,250.0	97.02%
Net Plant		\$99,348.0						
NorthWestern Corporation	NWE							
Capital Spending per Share			\$9.10	\$7.80	\$6.50	\$8.50	\$6.50	
Common Shares Outstanding			62.00	62.00	62.00	62.00	62.00	
Capital Expenditures			\$564.2	\$483.6	\$403.0	\$403.0	\$403.0	43.01%
Net Plant		\$5,247.2						
OGE Energy Corporation	OGE							
Capital Spending per Share			\$4.75	\$4.75	\$4.75	\$4.75	\$4.75	
Common Shares Outstanding			200.20	200.20	200.20	200.20	200.20	
Capital Expenditures			\$951.0	\$951.0	\$951.0	\$951.0	\$951.0	48.36%
Net Plant		\$9,832.9						
Otter Tail Corporation	OTTR							
Capital Spending per Share			\$5.90	\$6.08	\$6.25	\$6.25	\$6.25	
Common Shares Outstanding			\$41.90	42.20	\$42.50	42.50	42.50	
Capital Expenditures			\$247.2	\$256.4	\$285.6	\$285.6	\$285.6	61.21%
Net Plant		\$2,124.6						
Portland General Electric Company	POR							
Capital Spending per Share			\$7.55	\$7.58	\$7.60	\$7.60	\$7.60	
Common Shares Outstanding			89.50	89.50	89.50	89.50	89.50	
Capital Expenditures			\$675.7	\$678.0	\$680.2	\$680.2	\$680.2	42.40%
Net Plant		\$8,005.0						
Southern Company	SO							
Capital Spending per Share			\$7.85	\$7.68	\$7.50	\$7.50	\$7.50	
Common Shares Outstanding			1,070.00	1,070.00	1,070.00	1,070.00	1,070.00	
Capital Expenditures			\$8,399.5	\$8,212.3	\$8,025.0	\$8,025.0	\$8,025.0	44.66%

2023-2027 CAPITAL EXPENDITURES AS A PERCENT OF 2021 NET PLANT  
(\$ Millions)

		[1]	[2]	[3]	[4]	[5]	[6]	[7]
		2021	2023	2024	2025	2026	2027	2023-27 Cap. Ex. / 2021 Net Plant
Net Plant		\$91,108.0						
Xcel Energy Inc.	XEL							
Capital Spending per Share			\$9.00	\$9.00	\$9.00	\$9.00	\$9.00	
Common Shares Outstanding			550.00	555.50	561.00	561.00	561.00	
Capital Expenditures			\$4,950.0	\$4,999.5	\$5,049.0	\$5,049.0	\$5,049.0	55.21%
Net Plant		\$45,457.0						
Montana Dakota Utilities	MDU							
Capital Expenditures [8]			\$38.1	\$22.9	\$38.1	\$41.9	\$17.6	62.66%
Net Electric Plant in Service [9]		\$253.2						
			MDU CapEx Total (2023-2027)					\$158.6
			MDU CapEx Annual Average					\$31.7
			Proxy Group Median					51.78%
			MDU as % Proxy Group Median					1.21

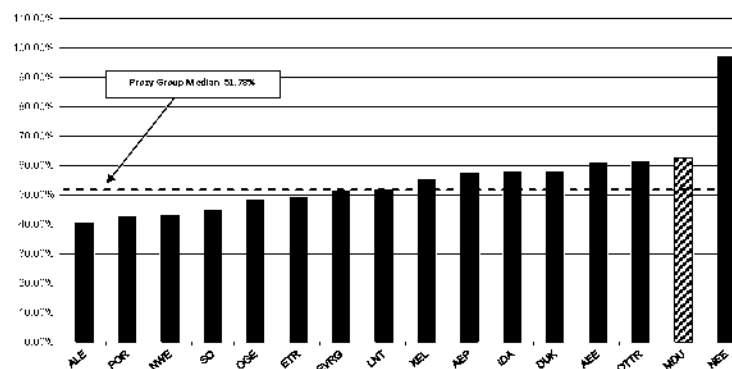
Notes:

[1] - [8] Value Line July 22, 2022, Aug 12, 2022, September 09,2022.

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

[8] & [9] Data provided by MDU.

2023-2027 CAPITAL EXPENDITURES AS A PERCENT OF 2021 NET PLANT



Projected CAPEX / 2021 Net Plant

Company		2023-2027
1 ALLETE, Inc.	ALE	40.48%
2 Portland General Electric Company	POR	42.40%
3 NorthWestern Corporation	NWE	43.01%
4 Southern Company	SO	44.88%
5 OGE Energy Corporation	OGE	48.39%
6 Entergy Corporation	ETR	49.12%
7 Evergy, Inc.	EVRG	51.17%
8 Alliant Energy Corporation	LNT	51.78%
9 Xcel Energy Inc.	XEL	55.21%
10 American Electric Power Company, Inc.	AEP	57.28%
11 IDACORP, Inc.	IDA	57.82%
12 Duke Energy Corporation	DUK	57.88%
13 Ameren Corporation	AEE	60.71%
14 Otter Tail Corporation	OTTR	61.21%
15 Montana Dakota Utilities	MDU	62.88%
16 NextEra Energy, Inc.	NEE	97.02%
Proxy Group Median		51.78%
MDU / Proxy Group		1.21

Notes:  
Source: Schedule 11 pages 1-2 col. [7]

COMPARISON OF MONTANA-DAKOTA AND PROXY GROUP COMPANIES  
RISK ASSESSMENT

Proxy Group Company	Operating Subsidiary	Jurisdiction	Service	Electric fuel/gas commodity/purchase power	Test Year	Non-Volumetric Rate Design					Capital Cost Recovery
						Revenue Decoupling	Formula-based rates	Straight Fixed-Variable Rate Design		Non-Volumetric Rate Design	
ALLETE, Inc.	ALLETE (Minnesota Power)	Minnesota	Electric	Yes	Fully Forecast	No	No	No	No	No	Yes
Alliant Energy Corporation	Interstate Power & Light Co.	Iowa	Electric	Yes	Historical	No	No	No	No	No	Yes
	Interstate Power & Light Co.	Iowa	Gas	Yes	Historical	No	No	No	No	No	No
	Wisconsin Power & Light Co.	Wisconsin	Electric	Yes	Fully Forecast	No	No	No	No	No	No
	Wisconsin Power & Light Co.	Wisconsin	Gas	Yes	Fully Forecast	No	No	No	No	No	No
Ameren Corporation	Ameren Illinois Co.	Illinois	Electric	N/A	Historical	Partial	Yes	No	Yes	Yes	Yes
	Ameren Illinois Co.	Illinois	Gas	Yes	Fully Forecast	Partial	No	No	Yes	Yes	Yes
	Union Electric Co.	Missouri	Electric	Yes - Sharing Band	Historical	Partial	No	No	Yes	Yes	Yes
	Union Electric Co.	Missouri	Gas	Yes	Historical	Partial	No	No	Yes	Yes	Yes
American Electric Power Company, Inc.	Southwestern Electric Power Co.	Arkansas	Electric	Yes	Historical	Partial	Yes	No	Yes	Yes	Yes
	Indiana Michigan Power Co.	Indiana	Electric	Yes	Fully Forecast	Partial	No	No	Yes	Yes	Yes
	Kentucky Power Co.	Kentucky	Electric	Yes	Fully Forecast	Partial	No	No	Yes	Yes	Yes
	Southwestern Electric Power Co.	Louisiana	Electric	Yes	Historical	Partial	Yes	No	Yes	No	Yes
	Indiana Michigan Power Co.	Michigan	Electric	Yes	Fully Forecast	Partial	No	No	Yes	Yes	Yes
	Ohio Power Co.	Ohio	Electric	N/A	Partially Forecast	Partial	No	No	Yes	Yes	Yes
	Public Service Co. of Oklahoma	Oklahoma	Electric	Yes	Historical	Partial	No	No	Yes	Yes	Yes
	Kingsport Power Co.	Tennessee	Electric	Yes	Fully Forecast	No	No	No	No	No	No
	AEP Texas	Texas	Electric	N/A	Historical	No	No	No	No	No	Yes
	Southwestern Electric Power Co.	Texas	Electric	Yes	Historical	No	No	No	No	No	Yes
	Appalachian Power Co.	Virginia	Electric	Yes	Historical	No	No	No	No	No	Yes
	Appalachian Power Co./Wheeling Power Co.	West Virginia	Electric	Yes	Historical	No	No	No	No	No	Yes
Duke Energy Corporation	Duke Energy Florida LLC	Florida	Electric	Yes	Fully Forecast	No	No	No	No	No	Yes
	Duke Energy Indiana LLC	Indiana	Electric	Yes	Historical	Partial	No	No	Yes	Yes	Yes
	Duke Energy Kentucky Inc.	Kentucky	Electric	Yes	Fully Forecast	Partial	No	No	Yes	Yes	Yes
	Duke Energy Kentucky Inc.	Kentucky	Gas	Yes	Fully Forecast	Partial	No	No	Yes	Yes	Yes
	Duke Energy Carolinas LLC/Duke Energy Progress LLC	North Carolina	Electric	Yes	Historical	No	No	No	No	No	Yes
	Piedmont Natural Gas Co. Inc.	North Carolina	Gas	Yes	Historical	Full	No	No	Yes	Yes	Yes
	Duke Energy Ohio Inc.	Ohio	Electric	N/A	Partially Forecast	Partial	No	No	Yes	Yes	Yes
	Duke Energy Ohio Inc.	Ohio	Gas	Yes	Partially Forecast	No	No	Yes	Yes	Yes	Yes
	Duke Energy Carolinas LLC/Duke Energy Progress LLC	South Carolina	Electric	Yes	Historical	No	No	No	No	No	Yes
	Piedmont Natural Gas Co. Inc.	South Carolina	Gas	Yes	Historical	Partial	No	No	Yes	No	Yes
	Piedmont Natural Gas Co. Inc.	Tennessee	Gas	Yes	Fully Forecast	Partial	No	No	Yes	Yes	Yes
	Entergy Arkansas LLC	Arkansas	Electric	Yes	Fully Forecast	Partial	Yes	No	Yes	Yes	Yes
Entergy Corporation	Entergy New Orleans LLC	Louisiana-NOCC	Electric	Yes	Partially Forecast	No	Yes	No	Yes	Yes	Yes
	Entergy New Orleans LLC	Louisiana-NOCC	Gas	Yes	Partially Forecast	No	Yes	No	Yes	No	Yes
	Entergy Louisiana LLC	Louisiana	Electric	Yes	Historical	Partial	Yes	No	Yes	Yes	Yes
	Entergy Louisiana LLC	Louisiana	Gas	Yes	Historical	No	Yes	No	Yes	Yes	Yes
	Entergy Mississippi LLC	Mississippi	Electric	Yes	Fully Forecast	Partial	Yes	No	Yes	No	Yes
	Entergy Texas Inc.	Texas	Electric	Yes	Historical	No	No	No	No	No	Yes
	Entergy Kansas Central Inc.	Kansas	Electric	Yes	Historical	Partial	No	No	Yes	Yes	Yes
	Entergy Metro Inc.	Kansas	Electric	Yes	Historical	No	No	No	No	No	Yes
Evergy, Inc.	Evergy Metro Inc.	Missouri	Electric	Yes - Sharing Band	Historical	Partial	No	No	Yes	Yes	Yes
	Evergy Missouri West Inc.	Missouri	Electric	Yes - Sharing Band	Historical	Partial	No	No	Yes	Yes	Yes
	Idaho Power Co.	Idaho	Electric	Yes - Sharing Band	Partially Forecast	Full	No	No	Yes	No	No
	Idaho Power Co.	Oregon	Electric	Yes - Sharing Band	Partially Forecast	No	No	No	No	No	No
NextEra Energy, Inc.	Florida Power & Light Co.	Florida	Electric	Yes	Fully Forecast	No	No	No	No	No	Yes
	Pivotal Utility Holdings Inc.	Florida	Gas	Yes	Fully Forecast	No	No	No	No	No	Yes
NorthWestern Corporation	Lone Star Transmission LLC	Texas	Electric	N/A	Historical	No	No	No	No	No	Yes
	NorthWestern Corporation	Montana	Electric	Yes - Sharing Band	Historical	No	No	No	No	No	No
	NorthWestern Corporation	Montana	Gas	Yes	Historical	No	No	No	No	No	No
	NorthWestern Corporation	Nebraska	Gas	Yes	Historical	No	No	No	No	No	No
NorthWestern Corporation	NorthWestern Corporation	South Dakota	Electric	Yes	Historical	No	No	No	No	No	No
	NorthWestern Corporation	South Dakota	Gas	Yes	Historical	No	No	No	No	No	No
	OGE Energy Corporation	Oklahoma Gas and Electric Co.	Arkansas	Electric	Yes	Historical	Partial	Yes	No	Yes	Yes
	Oklahoma Gas & Electric Co.	Oklahoma	Electric	Yes	Historical	Partial	No	No	Yes	Yes	Yes
Otter Tail Corporation	Otter Tail Power Co.	Minnesota	Electric	Yes	Fully Forecast	No	No	No	No	No	Yes
	Otter Tail Power Co.	North Dakota	Electric	Yes	Fully Forecast	No	No	No	No	No	Yes
	Otter Tail Power Co.	South Dakota	Electric	Yes	Historical	No	No	No	No	No	Yes

COMPARISON OF MONTANA-DAKOTA AND PROXY GROUP COMPANIES  
RISK ASSESSMENT

		[1]	[2]	[3]	[4]	[5]	[6]	[7]									
Proxy Group Company	Operating Subsidiary	Jurisdiction	Service	Electric fuel/gas commodity purchase power	Test Year	Non-Volumetric Rate Design						Capital Cost Recovery					
						Revenue Decoupling	Formula-based rates	Straight Fixed-Variable Rate Design	Non-Volumetric Rate Design								
Portland General Electric Company	Portland General Electric Co.	Oregon	Electric	Yes - Sharing Band	Fully Forecast	No	No	No	No	No	Yes						
	Alabama Power Co.	Alabama	Electric	Yes	Fully Forecast	No	Yes	No	Yes	Yes	Yes						
Southern Company	Georgia Power Co.	Georgia	Electric	Yes	Fully Forecast	No	Yes	No	Yes	Yes	Yes						
	Atlanta Gas & Light Co.	Georgia	Gas	N/A	Fully Forecast	No	Yes	Yes	Yes	Yes	Yes						
	Northern Illinois Gas Co.	Illinois	Gas	Yes	Fully Forecast	Partial	No	No	Yes	Yes	Yes						
	Mississippi Power Co.	Mississippi	Electric	Yes	Fully Forecast	Partial	Yes	No	Yes	Yes	Yes						
	Chattanooga Gas Co.	Tennessee	Gas	Yes	Fully Forecast	Full	Yes	No	Yes	Yes	No						
	Virginia Natural Gas Inc.	Virginia	Gas	Yes	Historical	Partial	No	No	No	Yes	Yes						
	Public Service Co. of Colorado	Colorado	Electric	Yes	Historical	Partial	No	No	Yes	Yes	Yes						
	Public Service Co. of Colorado	Colorado	Gas	Yes	Historical	Partial	No	No	Yes	Yes	Yes						
	Northern States Power Co.-Minnesota	Minnesota	Electric	Yes	Fully Forecast	Partial	Yes	No	Yes	Yes	Yes						
	Northern States Power Co.-Minnesota	Minnesota	Gas	Yes	Fully Forecast	No	No	No	No	No	Yes						
	Southwestern Public Service Co.	New Mexico	Electric	Yes	Historical	No	No	No	No	No	Yes						
	Northern States Power Co.-Minnesota	North Dakota	Electric	Yes	Fully Forecast	No	No	No	No	No	Yes						
	Northern States Power Co.-Minnesota	North Dakota	Gas	Yes	Fully Forecast	No	No	Yes	No	Yes	No						
	Northern States Power Co.-Minnesota	South Dakota	Electric	Yes	Historical	Partial	No	No	No	Yes	Yes						
	Southwestern Public Service Co.	Texas	Electric	Yes	Historical	No	No	No	No	No	No						
	Northern States Power Co.-Wisconsin	Wisconsin	Electric	Yes	Fully Forecast	No	No	No	No	No	No						
Northern States Power Co.-Wisconsin	Wisconsin	Gas	Yes	Fully Forecast	No	No	No	No	No	No							
						Revenue Decoupling	Formula-based rates	SPV Rates Design	Non-Volumetric Rate Design	CCRM							
Proxy Group Average				Yes	54	Fully Forecast	31	Full	3	Yes	16	Yes	3	Yes	57		
				No	0	Partially Forecast	7	Partial	32	No	61	No	74	No	20		
				Yes - Sharing Band	7	Historical	39	No	42								
				N/A	6												
				Yes/N/A	90.91%	Fully/Partially Forecast	49.35%	RDM	45.45%	Yes	20.78%	Yes	3.90%	Yes	65.84%	CCRM	74.02%
MDU-MT [6]				Yes - Sharing Band		Historical		No		No		No		No		No	

Notes:  
[1] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022. Operating subsidiaries not covered in this report were excluded from this exhibit.  
[2] Regulatory Research Associates, effective as of September 30, 2022.  
[3] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.  
[4] Sources: Company Form 10-K, Company Tariffs, S&P Capital IQ Pro  
[5] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.  
[6] Equals 1 if AND( [3]=No, [4]=No, [5]=No), No, Yes  
[7] Sources: S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated July 18, 2022.  
[8] Data provided by MDU.

COMPARISON OF MONTANA-DAKOTA AND PROXY GROUP COMPANIES  
RRA JURISDICTIONAL RANKINGS

		[1]	[2]
		RRA	
		Rank	Numeric Rank
ALLETE, Inc.	Minnesota	Average / 2	5
Alliant Energy Corporation	Iowa	Above Average / 3	3
	Wisconsin	Above Average / 2	2
Ameren Corporation	Illinois	Average / 2	5
	Missouri	Average / 3	6
American Electric Power Company, Inc.	Arkansas	Average / 1	4
	Indiana	Average / 1	4
	Kentucky	Average / 2	5
	Louisiana (PSC)	Average / 2	5
	Michigan	Above Average / 3	3
	Ohio	Average / 3	6
	Oklahoma	Average / 2	5
	Tennessee	Above Average / 3	3
	Texas (PUC)	Average / 3	6
	Virginia	Average / 1	4
	West Virginia	Below Average / 2	8
Duke Energy	Florida	Above Average / 2	2
	Indiana	Average / 1	4
	Kentucky	Average / 2	5
	North Carolina	Above Average / 3	3
	Ohio	Average / 3	6
	South Carolina	Average / 3	6
	Tennessee	Above Average / 3	3
Entergy	Arkansas	Average / 1	4
	Louisiana (NOCC)	Average / 3	6
	Louisiana (PSC)	Average / 2	5
	Mississippi	Above Average / 3	3
	Texas (PUC)	Average / 3	6
Eversource, Inc.	Kansas	Below Average / 1	7
	Missouri	Average / 3	6
IDACORP, Inc.	Idaho	Average / 2	5
	Oregon	Average / 2	5
NextEra Energy, Inc.	Florida	Above Average / 2	2
	Texas (PUC)	Average / 3	6
NorthWestern Corporation	Montana	Below Average / 1	7
	Nebraska	Average / 1	4
	South Dakota	Average / 2	5
OGE Energy Corporation	Arkansas	Average / 1	4
	Oklahoma	Average / 2	5
Otter Tail Corporation	Minnesota	Average / 2	5
	North Dakota	Average / 1	4
	South Dakota	Average / 2	5
Portland General Electric Company	Oregon	Average / 2	5
Southern Company	Alabama	Above Average / 1	1
	Georgia	Above Average / 2	2
	Illinois	Average / 2	5
	Mississippi	Above Average / 3	3
	Tennessee	Above Average / 3	3
	Virginia	Average / 1	4
Xcel Energy Inc.	Colorado	Average / 1	4
	Minnesota	Average / 2	5
	North Dakota	Average / 1	4
	New Mexico	Below Average / 2	8
	South Dakota	Average / 2	5
	Texas (PUC)	Average / 3	6
	Wisconsin	Above Average / 2	2
Proxy Group Average		Average / 1 - Average / 2	4.54
Montana-Dakota Utilities Co.	Montana	Below Average / 1	7

Notes

[1] Source: State Regulatory Evaluations, Regulatory Research Associates, as of October 15, 2022.  
[2] AA/1= 1, AA/2= 2, AA/3= 3, A/1= 4, A/2= 5, A/3=6, BA/1= 7, BA/2= 8, BA/3= 9



COMPARISON OF MONTANA-DAKOTA AND PROXY GROUP COMPANIES  
S&P JURISDICTIONAL RANKINGS

		[1]	[2]
		S&P	
		Rank	Numeric Rank
ALLETE, Inc.	Minnesota	Highly Credit Supportive	2
Alliant Energy Corporation	Iowa	Most Credit Supportive	1
	Wisconsin	Most Credit Supportive	1
Ameren Corporation	Illinois	Very Credit Supportive	3
	Missouri	Very Credit Supportive	3
American Electric Power Company, Inc.	Arkansas	Highly Credit Supportive	2
	Indiana	Highly Credit Supportive	2
	Kentucky	Most Credit Supportive	1
	Louisiana (PSC)	Highly Credit Supportive	2
	Michigan	Most Credit Supportive	1
	Ohio	Very Credit Supportive	3
	Oklahoma	Very Credit Supportive	3
	Tennessee	Highly Credit Supportive	2
	Texas (PUC)	Very Credit Supportive	3
	Virginia	Highly Credit Supportive	2
	West Virginia	Very Credit Supportive	3
Duke Energy	Florida	Most Credit Supportive	1
	Indiana	Highly Credit Supportive	2
	Kentucky	Most Credit Supportive	1
	North Carolina	Most Credit Supportive	1
	Ohio	Very Credit Supportive	3
	South Carolina	More Credit Supportive	4
	Tennessee	Highly Credit Supportive	2
Entergy	Arkansas	Highly Credit Supportive	2
	Louisiana (NOCC)	Very Credit Supportive	3
	Louisiana (PSC)	Highly Credit Supportive	2
	Mississippi	Credit Supportive	5
	Texas (PUC)	Very Credit Supportive	3
Eversource, Inc.	Kansas	Highly Credit Supportive	2
	Missouri	Very Credit Supportive	3
IDACORP, Inc.	Idaho	Very Credit Supportive	3
	Oregon	Highly Credit Supportive	2
NextEra Energy, Inc.	Florida	Most Credit Supportive	1
	Texas (PUC)	Very Credit Supportive	3
NorthWestern Corporation	Montana	More Credit Supportive	4
	Nebraska	Very Credit Supportive	3
	South Dakota	Very Credit Supportive	3
OGE Energy Corporation	Arkansas	Highly Credit Supportive	2
	Oklahoma	Very Credit Supportive	3
Otter Tail Corporation	Minnesota	Highly Credit Supportive	2
	North Dakota	Highly Credit Supportive	2
	South Dakota	Very Credit Supportive	3
Portland General Electric Company	Oregon	Highly Credit Supportive	2
Southern Company	Alabama	Most Credit Supportive	1
	Georgia	Highly Credit Supportive	2
	Illinois	Very Credit Supportive	3
	Mississippi	Credit Supportive	5
	Tennessee	Highly Credit Supportive	2
	Virginia	Highly Credit Supportive	2
Xcel Energy Inc.	Colorado	Most Credit Supportive	1
	Minnesota	Highly Credit Supportive	2
	North Dakota	Highly Credit Supportive	2
	New Mexico	Credit Supportive	5
	South Dakota	Very Credit Supportive	3
	Texas (PUC)	Very Credit Supportive	3
	Wisconsin	Most Credit Supportive	1
Proxy Group Average		Very Credit Supportive - Highly Credit Supportive	2.38
Montana-Dakota Utilities Co.	Montana	More Credit Supportive	4

Notes

[1] Source: Views On North American Utility Regulatory Jurisdictions May Foreshadow Future Credit Trends—July 2022, Standard and Poor's Ratings Services, July 20, 2022.  
[2] Most= 1, Highly= 2, Very= 3, More= 4, Credit Supportive= 5

# CAPITAL STRUCTURE ANALYSIS

		Most Recent 8 Quarters (2020Q3 - 2022Q2)				
		Common	Long-Term	Preferred	Short-term	Total
		Equity	Debt	Equity	Debt	Total
Proxy Group Company	Ticker	Ratio	Ratio	Ratio	Ratio	Capitalization
ALLETE, Inc.	ALE	56.61%	43.30%	0.00%	0.09%	100.00%
Alliant Energy Corporation	LNT	51.28%	46.32%	1.00%	1.40%	100.00%
Ameren Corporation	AEE	52.44%	45.65%	0.65%	1.26%	100.00%
American Electric Power Company, Inc.	AEP	47.33%	51.04%	0.00%	1.62%	100.00%
Duke Energy Corporation	DUK	52.37%	46.34%	0.00%	1.29%	100.00%
Entergy Corporation	ETR	46.21%	53.68%	0.10%	0.00%	100.00%
Eversource Energy	ESV	58.04%	38.32%	0.00%	3.64%	100.00%
IDACORP, Inc.	IDA	54.05%	45.68%	0.28%	0.00%	100.00%
NextEra Energy, Inc.	NEE	59.86%	38.71%	0.00%	1.43%	100.00%
NorthWestern Corporation	NWE	47.36%	52.08%	0.00%	0.56%	100.00%
OGE Energy Corporation	OGE	52.70%	45.52%	0.00%	1.78%	100.00%
Otter Tail Corporation	OTTR	52.59%	44.82%	0.00%	2.59%	100.00%
Portland General Electric Company	POR	45.43%	52.88%	0.00%	1.68%	100.00%
Southern Company	SO	54.26%	44.76%	0.54%	0.44%	100.00%
Xcel Energy Inc.	XEL	53.85%	45.49%	0.00%	0.65%	100.00%
Average		52.29%	46.31%	0.17%	1.23%	
Median		52.59%	45.65%	0.00%	1.29%	
Maximum		59.86%	53.68%	1.00%	3.64%	
Minimum		45.43%	38.32%	0.00%	0.00%	

## Notes:

- [1] Ratios are weighted by actual common capital, preferred capital, long-term debt and short-term debt of the operating subsidiaries.  
[2] Electric and Natural Gas operating subsidiaries with data listed as N/A from S&P Capital IQ have been excluded from the analysis.

**DEPARTMENT OF PUBLIC SERVICE REGULATION  
BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MONTANA**

In re Montana-Dakota Utilities Co. Application for Authority to Establish Increased Rates for Electric Service	Docket 2022.11.099  September 21, 2023
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**Final Order 7876f**

**Procedural History**

1. On November 4, 2022, Montana-Dakota Utilities Co. (“MDU”) filed with the Montana Public Service Commission (“Commission”) its Application for Authority to Establish Increased Rates for Electric Service (“Application”). In the Application, MDU requested an annual revenue increase of \$10,499,415, reflecting a return on equity (“ROE”) of 10.5% and an overall rate of return (“ROR”) of 7.525%. The requested increase represented an 18.9% increase over adjusted test year electric sales revenues.

2. MDU’s Application included an Application for Interim Increase in Electric Rates (“Interim Request”). The Interim Request sought an annual revenue increase of \$1,716,219 for electric service, which was approximately 16% of the total Application proposal, on an interim basis.

3. On January 14, 2023, the Commission granted MDU’s Interim Request, and the requested interim rates became effective on February 1, 2023. Interim Order 7876a (Jan. 25, 2023).

4. On December 22, 2022, the Montana Consumer Counsel (“MCC”) and Denbury Onshore, LLC (“Denbury”) were granted intervention in this proceeding.

5. On June 12, 2023, MDU, MCC, and Denbury filed a Stipulation and Settlement Agreement (“Stipulation”) with the Commission. The parties agreed that the Stipulation “resolve[s] all issues raised by the parties” in this proceeding. Stip. 1.

6. On June 13, 2023, the Commission held a public listening session on MDU’s Application in Miles City, Montana.

7. On July 25, 2023, the Commission held a public listening session on MDU’s Application and the Stipulation in Sidney, Montana.

8. During a regularly scheduled work session on August 8, 2023, the Commission approved the Stipulation, as discussed below.

### **Findings of Fact**

9. MDU provides electric services to approximately 127,000 retail customers in portions of Montana, North Dakota, and South Dakota. In Montana, MDU provides electric utility services to approximately 25,500 electric customers in 30 communities and employs 146 employees who live and work throughout the state. Test. Nicole A. Kivisto 3 (Nov. 4, 2022).

10. MCC is authorized by law to represent the interests of the consuming public in Commission proceedings. Mont Code. Ann. § 69-2-204(2).

11. Denbury is a large customer that purchases electricity and receives electric transmission and distribution service from MDU. Denbury Onshore LLC’s Petition to Intervene, ¶¶ 1, 3 (Dec. 12, 2022).

12. On June 2, 2023, MDU filed a Motion for an Order Protecting Information Requested in Data Request MCC-160; MCC-161(a), (b), (c), and (d); MCC-162; MCC-166; and MCC-176(d) and (e) (“Motion”). The parties, however, entered their Stipulation without a ruling on MDU’s Motion. The Commission finds that the allegedly confidential information requested in those data requests is not material to the analysis below, and therefore finds the Motion moot.

## **I. The Application**

### **A. Revenue Requirement**

13. In its Application, MDU requested to increase its revenue requirement by \$10,499,415 based on a requested ROE of 10.5% and a corresponding ROR of 7.525%. MDU supported its recommended ROE by applying cost of equity estimation methodologies including the Discounted Cash Flow (“DCF”) model and a Capital Asset Pricing Model (“CAPM”), among others. Test. Ann E. Bulkley 2 (Nov. 4, 2022); Reb. Test. Bulkley 4-6 (May 19, 2022).

14. To demonstrate that its proposed ROE is comparable to the returns earned by other businesses with similar risks, MDU relied on a proxy group of companies that are both publicly traded and comparable to MDU in certain fundamental business and financial respects. Test. Bulkley 24. MDU analyzed 36 companies and ultimately selected 15 that were relative to the risk of MDU’s electric operations. *Id.* at 25-29. MDU’s analysis results in an ROE range of 9.75% to 10.75%. In rebuttal, MDU provided support to its ROE by providing a table of authorized ROEs in the U.S. for the past 3 years that ranged from 9.00% to 10.60%. Reb. Test. Bulkley 9-11.

15. MDU’s original requested revenue requirement and ROE would result in approximately a \$16.96 per month increase for the typical residential customer. Test. Ronald J. Amen 56 (Nov. 4, 2022). During discovery, MDU updated its revenue requirement in response to the closure of one of its industrial customers, Sidney Sugars. Data Req. Resp. Denbury-042 (Mar. 15, 2023). The updated revenue requirement increased the Company’s original revenue requirement request by \$1,033,996 and resulted in an overall revenue requirement request of \$11,533,670. *Id.*

16. Among other things, MDU’s requested revenue requirement included a rate base pro forma adjustment of \$13,504,478 for the retirements of its Lewis and

Clark Unit 1 and Heskett Units I & II power plants (“Retired Coal Assets”). Appl. Stmt. E Rule 38.5.143, 6 (Nov. 4, 2022). MDU requested to recover the \$13,504,478 amortized over a 10-year period, resulting in a \$2,085,960 annual increase to its revenue requirement. This amount also included the return on the unamortized plant balance. See Data Req. Resp. PSC-022 attach. A (Mar. 13, 2023). MDU also sought to include a \$15,243,163 pro forma adjustment for its new 88-megawatt simple cycle combustion turbine known as Heskett Unit IV and the costs associated with the interconnection of Heskett Unit IV. Test. Joseph E. Geiger 2-3 (Nov. 4, 2022); Appl. Stmt. C, Rule 38.5.123 at 16 (Nov. 4, 2022).

17. MCC argued that MDU should receive approval to increase its revenue requirement only by \$3,556,380, based on a 9.10% ROE and a 6.821% ROR. Cross Intervenor Test. Mark Garrett 5-6 (May 19, 2023); Test. Randall Woolridge 4 (Apr. 7, 2023). Denbury argued that MDU should receive approval to increase its revenue requirement by \$3,781,920, based on the same ROE and ROR MCC proposed. Test Kevin C. Higgins 6 (Apr. 7, 2023); Test. Woolridge 4. MCC and Denbury submitted joint testimony to support their recommended ROE and ROR. See generally Test. Woolridge. MCC and Denbury supported their recommended ROE and ROR by producing and analyzing DCF and CAPM models. Test. Woolridge 46-51.

18. MCC and Denbury applied the DCF and CAPM models to a proxy group of publicly held electric utility companies (“Electric Proxy Group”) as well as to the proxy group used by MDU. *Id.* at 4. MCC and Denbury selected their proxy of 24 electric companies by analyzing six different criteria, including credit and bond ratings; long-term earnings per share growth; and dividends. *Id.* at 23-25. Applying the Electric Proxy Group to the DCF and CAPM resulted in an ROE of 9.00% and 8.85%, respectively. *Id.* at 52, 67. Applying MDU’s proxy group to the DCF and CAPM resulted in an ROE of 9.15%. *Id.* at 52

19. Both MCC and Denbury calculated their proposed revenue requirement by adjusting MDU’s proposed revenue requirement. See generally Test. Higgins; Test. Mark Garrett (Apr. 7, 2023); Cross Intervenor Test. Mark Garrett. Among other adjustments, MCC and Denbury advocated for an adjustment to

remove all costs associated with the Heskett IV power plant and the facilities to interconnect Heskett IV. Test. Mark Garrett 40; Test. Higgins 12. Also, MCC and Denbury both proposed adjustments related to MDU's request to recover \$2,085,960 for the retired coal assets. Data Req. Resp. PSC-022 attach. A (MDU's revenue requirement for retired coal assets). MCC proposed a \$362,748 reduction to revenue associated with the retired plant rate base and a \$707,364 reduction to the retired plant depreciation expense, for a total reduction of \$1,070,112. *See* Test. Mark Garrett MG-3, cells L17, L31. Denbury proposed a \$369,759 reduction to revenue associated with retired plant depreciation expense and a \$405,590 reduction to revenue associated with the retired plant rate base, for a total reduction of \$775,349. *See* Test. Higgins Ex. KCH-3, at 1. After these adjustments, MCC's proposal would have allowed MDU to recover \$1,015,848 annually for the retired coal assets, and Denbury's proposal would have allowed \$1,310,611 annually. In short, both MCC and Denbury allowed revenue associated with the retired coal assets.

20. MCC also advocated for adjustments to MDU's proposed revenue requirement relating to prepaid retirement benefit assets, dues and memberships, investor relations, D&O insurance, post-test-year closure of the Sidney Sugars plant, and post-test-year revenue growth regarding the Sydney Sugar plant closure. Test. Mark Garrett 28-34, 37-39, 45-50, 56; Cross-Intervenor Test. Mark Garrett 5-6; Cross-Intervenor Test. David E. Dismukes 2 (May 19, 2023).

## **B. Cost Allocation and Rate Design**

21. To guide their proposed allocation of revenue requirement among classes, the parties relied primarily on their respective class cost of service studies ("CCOSS"), which measure MDU's historical costs and allocate those costs to each customer class based on cost responsibility. MDU's revenue proposal consisted of adjustments in varying proportions to the present revenue levels of all the customer classes to improve each class's revenue-to-cost ratio. Test. Amen 50-51. MDU proposed to allocate the revenue requirement to its customer classes as follows: a

19.16% increase for residential customers; a 15.09% increase for small general customers; a 12.87% increase for large general customers; a 15.40% increase for municipal pumping customers; and a 13.48% increase for outdoor lighting customers. Test. Amen 53. MDU's cost allocation and rate design were supported by a class cost of service study. *See id.* at 15-44.

22. The MCC proposed to limit the rate increase to any single customer class by 1.15 times the overall system average increase. Test. Dismukes 46. Specifically, MCC proposed to allocate the revenue requirement to MDU's customer classes by increasing rates by 5.09% for all customer classes except the Large General Primary class, the Space Heating class, and the Municipal Pumping class. Test. David E. Dismukes Ex. DED-17 (Apr. 7, 2023). For those specific classes, MCC advocated a 5.96% increase to rates. *Id.* MCC's cost allocation and rate design was supported by a corresponding class cost of service study. *See* Test. Dismukes 9-40.

23. Denbury recommended a cap of 1.5 times the overall system increase and assigned that increase to all customer classes where its CCOSS indicated an increase of at least that amount to achieve its costs of service. Test. Higgins 50-51. For all other customer classes Denbury recommended an increase equal to the amount necessary to align the class with its costs-of-service, plus an equal percentage increase to allow MDU to collect Denbury's proposed revenue requirement. *Id.* Denbury's cost allocation and rate design were supported by a class cost of service study. *See* Exhibit KCH-16.

24. Issues with the underlying load data supplied by MDU called the results of MDU's and MCC's CCOSS into question. Denbury objected that MDU's CCOSS was based on class usage and coincident peak data from a load study of calendar year 2019 while the billing determinants were based on the test period ending June 30, 2022. Test. Higgins 39-46. Recognizing this issue, MDU adjusted its CCOSS in rebuttal testimony by revising the 12 Coincident Peak ("CP") allocation factor to reflect the class demands on MDU's system during the test period ending June 2022. Reb. Test. Amen 20.



## **II. The Stipulation**

25. After prehearing discovery concluded, MDU, MCC, and Denbury jointly filed the Stipulation. It includes a variety of provisions related to MDU's revenue requirement, cost allocation, and rate design. See Stipulation ¶¶ 8-14. (June 12, 2023). In the Stipulation, the parties agreed to admit into the evidentiary record (a) all pre-filed testimony and exhibits of the witnesses for the parties to support the reasonableness of the Stipulation and (b) all data requests and responses. Stip. ¶ 13.

26. For the reasons set forth below, the Commission finds that the Stipulation as a whole is a fair and equitable settlement of the issues in this case and that approval will result in just and reasonable rates for MDU's electric customers.

### **A. Revenue Requirement**

27. The Stipulation is silent regarding issue-specific adjustments to rate base and net operating income. However, the Stipulation includes several provisions concerning the overall revenue requirement increase.

28. In the Stipulation, the parties agreed to an overall revenue increase of \$6.1 million. Stip. ¶ 8(A). Of the \$6.1 million, \$1.2 million is attributable to annual amortization and return related to retired coal plant deferrals and \$1,989,835 is attributable to pass-through property taxes. *Id.* ¶¶ 8(E), (G); Data Req. Resp. PSC-026 (Mar. 13, 2023); Appl. Rule 38.5.173 at 1. The remaining approximately \$2.9 million is not attributed to any specific capital investments and operating and maintenance expenses.

29. To evaluate the reasonableness of the Stipulation, the Commission analyzed the record evidence and developed what it considers reasonable, conservative, low and high values for MDU's revenue requirement and ROE.

30. The Commission finds that an increase to MDU's revenue requirement of \$4,909,821 represents a conservative low-end increase. This estimate largely adopts MCC's adjustments, except for prepaid retirement benefit asset, dues and memberships, and post-test-year revenue growth regarding the Sydney Sugar plant closure.

31. The low-end revenue requirement estimate reflects an ROE of 9.44%, based on a DCF model of MCC and Denbury's proxy group, but with corrections recommended by MDU's expert. Reb. Test. Bulkley, Ex. AEB-4, Schedule 8 (incorporating an adjusted dividend yield of 3.84% and a growth rate of 5.60% within the Electric Proxy Group). The low-end ROE was supported by adjustments within MDU's rebuttal testimony, which include the alignment of dividends and stock prices through time and adjustments involving corrections for inconsistencies within MCC and Denbury's DCF model. Reb. Test. Bulkley 4. The low-end ROE is further supported by the exclusion of downward adjustments to growth rates which exceeded the boundaries of reasonableness at the margin within MCC's and Denbury's DCF model due to the rejection of midpoint earnings per share growth rates which reflect investor expectations. Test. Woolridge 46-51; Reb. Test. Bulkley 34-35.

32. In contrast, the Commission finds that an increase to MDU's revenue requirement of \$9,929,494 represents a conservative high-end estimate. To calculate the conservative high-end increase to MDU's revenue requirement, the estimate adopts a majority of MDU's positions, but adjusted the revenue requirement to include MCC's recommendations for Heskett Unit IV, investor relations, D&O insurance, and the Sidney Sugars plant closure.

33. The high-end revenue requirement reflects an ROE of 10.10%. To calculate the high-end ROE, the Commission excluded MDU's assumptions within the CAPM, primarily the proposed expected market return of 13.04%. Intervenor testimony critical of MDU's proposed earnings per share growth of 10.95% was strongly supported by references to a variety of marketplace participants with much lower growth expectations. Test. Woolridge 79-89. The downward adjustment to the

ROE from MDU's proposed ROE of 10.5% to 10.10% also incorporates reasonable adjustments for business risks within the cost of equity assessment. *Id.* at 8-9.

34. Based on its analysis, the Commission finds that the stipulated revenue requirement of \$6.1 million is reasonable because it falls between the conservative low-end of \$4,909,821 and the conservative high-end of \$9,929,494. Further, the Commission finds that the stipulated ROE of 9.65% is reasonable because it falls between the low-end ROE of 9.44% and the high-end ROE of 10.10%.

### **B. Cost Allocation and Rate Design**

35. The Stipulation includes various provisions related to the allocation of revenue requirement and rate design. As explained below, the Commission finds that the overall cost allocation in the Stipulation is reasonable.

36. The Stipulation proposed an overall rate increase of 9.10%. Stip. Appendix 1. For a typical residential customer using 792 Kwh, the bill impact would amount to an increase of approximately \$8.00 per month or \$96.09 per year.

37. The Commission finds that the mix of interests represented among the stipulating parties is sufficiently diverse to produce class revenue allocations that are just and reasonable.

38. The Stipulation includes no increase on the customer charges for residential, small general service, irrigation, and space heating customers, while the remaining customer classes will receive the customer charge rate design as initially proposed by MDU. Stip. ¶ 8(A), Appendix 2.

39. The Commission finds that the stipulated rate design to be just and reasonable. In its testimony, MCC did not raise any issues with the proposed increases in customer charges outside of the residential customer class, and Denbury did not specifically address MDU's proposed rate design.

### **Conclusions of Law**

40. All findings of fact that are properly construed as conclusions of law are incorporated herein and adopted as such.

41. The Commission has full power of supervision, regulation, and control of public utilities. Mont. Code Ann. § 69-3-102 (2021). MDU is a “public utility” subject to regulation by the Commission as it provides electric service within the state of Montana. Mont. Code Ann. § 69-3-101.

42. Procedural due process is flexible and calls for such procedural protections as the particular situation demands. *Geil v. Missoula Irrigation Dist.*, 2002 MT 269, ¶ 58, 312 Mont. 320, 59 P.3d 398. “The fundamental requirement of due process is the opportunity to be heard at a meaningful time and in a meaningful manner.” *Id.* ¶ 61 (internal quotation marks and citations omitted). The Commission concludes it has provided adequate public notice of this proceeding and an opportunity for all interested parties to be heard and that no further process is necessary to approve the Stipulation.

43. The rates charged by a utility must be just and reasonable. Mont. Code Ann. § 69-3-330. Determining “just and reasonable rates” involves a balancing of investor and consumer interests. *Fed. Power Comm’n. v. Hope Nat. Gas Co.*, 320 U.S. 591, 603 (1942). The Stipulation was a result of an agreement between the MDU, a large industrial consumer (Denbury), and the representative of the interests of the consuming public (MCC). The fact that representatives of both the investors and the consumers independently agreed to the rates in the Stipulation suggests that the result is a just and reasonable balancing of interests. Having reviewed the Stipulation and the record in its entirety, the Commission concludes that the Stipulation results in rates that balance investor and consumer interests.

44. A utility is entitled to an opportunity to earn a fair return on the value of its investment. *Bluefield Water Works & Improvement Co. v. Public Serv. Comm’n*, 262 U.S. 679, 690 (1923) (citing *Smyth v. Ames* 169 U.S. 466, 547 (1898)). The return should be commensurate with returns on investments in other enterprises having corresponding risks. *Hope Nat. Gas Co.*, 320 U.S. at 603. The Commission concludes that the 9.65% ROE is commensurate with the returns on investments in other enterprises having corresponding risks.

45. In determining just and reasonable rates, the Commission is not bound “to the use of any single formula or combination of formulae.” *Id.* at 602. Rather, the Commission should review the impact of the rates in their entirety to determine whether they are just and reasonable. *Id.* The Commission concludes that the rates proposed in the Stipulation are just and reasonable because, as discussed in detail above, the \$6.1 million revenue requirement agreed to in the Stipulation falls within a range of reasonableness. The Commission also concludes that the rate design and the class allocation in the Stipulation are reasonable. Together, the revenue requirement increase, the rate design, and the class allocation result in just and reasonable rates.

### **Order**

46. The Stipulation is APPROVED, and MDU is authorized to collect an additional \$6.1 million in annual revenue for electric delivery services rendered on or after October 1, 2023. MDU’s total revenue requirement shall be allocated across MDU’s customer classes as discussed in the Stipulation and this Order.

47. MDU shall adhere to the Stipulation and shall submit tariffs for each service addressed by this Stipulation by September 28, 2023.

DONE and DATED August 8, 2023, by the Montana Public Service Commission, by a vote of 3 to 2.

JAMES BROWN, President  
JENNIFER FIELDER, Vice President,  
TONY O’DONNELL, Commissioner, dissenting  
RANDY PINOCCI, Commissioner, dissenting  
DR. ANNIE BUKACEK, Commissioner

**CERTIFICATE OF SERVICE**

I certify that on the 21<sup>st</sup> day of September, 2023, a true and accurate copy of the foregoing document was served by email to the following:

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Notification of Montana Dakota Utility Filings  
Commission Orders

By: /s/ Tarin Slayton  
Tarin Slayton  
Montana Public Service Commission

**STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES**

**In the Matter of the Petition of  
Public Service Electric and Gas Company  
for Approval of an Increase in Electric and Gas  
Rate And for Changes in the Tariffs for  
Electric and Gas Service, B.P.U.N.J.  
No. 17 Electric and B.P.U.N.J. No. 17  
Gas, and for Changes in Depreciation Rates,  
Pursuant to N.J.S.A. 48:2-18,  
N.J.S.A. 48:2-21 and N.J.S.A. 48:2-21.1, and  
for Other Appropriate Relief**

**BPU Docket Nos. \_\_\_\_\_**

**DIRECT TESTIMONY  
OF  
ANN E. BULKLEY  
Submitted on Behalf  
of  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY**

**December 29, 2023**

**P-5**

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1                   **PUBLIC SERVICE ELECTRIC AND GAS COMPANY**  
2                   **DIRECT TESTIMONY**  
3                   **OF**  
4                   **ANN E. BULKLEY**  
5                   **PRINCIPAL, THE BRATTLE GROUP**  
6

7       **I.    INTRODUCTION**

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

9       A.    My name is Ann E. Bulkley. My business address is One Beacon Street, Suite 2600, Boston,  
10       Massachusetts 02108. I am employed by The Brattle Group (“Brattle”) as a Principal.

11       **Q.    On whose behalf are you submitting this Prepared Direct Testimony?**

12       A.    I am submitting this testimony before the New Jersey Board of Public Utilities (“BPU” or  
13       the “Board”) on behalf of Public Service Electric and Gas Company (“Public Service” or “the  
14       Company”), a wholly-owned subsidiary of Public Service Enterprise Group, Inc. (“PSEG”).

15       **Q.    Please describe your education and experience.**

16       A.    I hold a Bachelor’s degree in Economics and Finance from Simmons College and a Master’s  
17       degree in Economics from Boston University, with more than 25 years of experience consulting  
18       to the energy industry. I have advised numerous energy and utility clients on a wide range of  
19       financial and economic issues with primary concentrations in valuation and utility rate matters.  
20       Many of these assignments have included the determination of the cost of capital for valuation and  
21       ratemaking purposes. I have included my resume and a summary of testimony that I have filed in  
22       other proceedings as Schedule AEB-1.

1 **Q. Please describe the purpose of your testimony.**

2 A. The purpose of my Direct Testimony is to present evidence and provide a recommendation  
3 regarding the appropriate return on equity (“ROE”) for the Company and to assess the  
4 reasonableness of its proposed capital structure for ratemaking purposes.

5 **Q. Are you sponsoring any schedules in support of your Direct Testimony?**

6 A. Yes. My analysis and recommendations are supported by the data presented in Schedule  
7 AEB-2 through Schedule AEB-13, which were prepared by me or under my direction.

8 **Q. Please provide a brief overview of the analyses that led to your ROE recommendation.**

9 A. I estimated the Company’s Cost of Equity (“COE”) by applying several traditional COE  
10 estimation methodologies to a proxy group of comparable utilities, including Discounted Cash  
11 Flow (“DCF”), Capital Asset Pricing Model (“CAPM”), Empirical CAPM (“ECAPM”), and Bond  
12 Yield Risk Premium (“BYRP” or “Risk Premium”) analysis. My recommendation also takes into  
13 consideration: (1) the Company’s actual and anticipated capital expenditure requirements, and (2)  
14 the Company’s regulatory risk as compared with the proxy group. Finally, I considered the  
15 Company’s capital structure as compared with the capital structures of the proxy companies.<sup>1</sup>  
16 While I did not make any specific adjustments to the ROE recommendation for any of these factors  
17 individually, I did take them into consideration in aggregate when determining where the  
18 Company’s ROE falls within the range of analytical results.

---

<sup>1</sup> The selection and purpose of developing a group of comparable companies will be discussed in detail in Section V of my Direct Testimony.

1 **Q. How is the remainder of your Direct Testimony organized?**

2 A. Section II provides a summary of my analyses and conclusions. Section III reviews the  
3 regulatory guidelines pertinent to the development of the cost of capital. Section IV discusses  
4 current and projected capital market conditions and the effect of those conditions on the cost of  
5 equity. Section V explains the selection of a proxy group of combination electric and natural gas  
6 distribution utilities. Section VI describes the analyses and analytical basis for the recommendation  
7 of an appropriate ROE for Public Service. Section VII provides a discussion of specific regulatory,  
8 business and financial risks that directly affect the ROE to be authorized for the Company in this  
9 case. Section VIII addresses the Company's capital structure as compared with the capital  
10 structures of the utility operating company subsidiaries of the proxy group companies. Section IX  
11 presents my conclusions and recommendations.

12 **II. SUMMARY OF ANALYSIS AND CONCLUSIONS**

13 **Q. Please summarize the key factors considered in your analyses and upon which you base**  
14 **your recommended ROE.**

15 A. The key factors that I considered in my cost of equity analyses and recommended ROE for  
16 the Company in this proceeding are:

- 17 • The United States Supreme Court's *Hope* and *Bluefield* decisions<sup>2</sup> established the  
18 standards for determining a fair and reasonable authorized ROE for public utilities,  
19 including consistency of the allowed return with the returns of other businesses  
20 having similar risk, adequacy of the return to provide access to capital and support  
21 credit quality, and the requirement that the result lead to just and reasonable rates.
- 22 • The effect of current and projected capital market conditions on ROE estimation  
23 models and on investors' return requirements.
- 24 • The results of several analytical approaches that provide estimates of the  
25 Company's cost of equity. Because the Company's required COE should be a  
26 forward-looking estimate, these analyses rely on forward-looking inputs and  
27 assumptions (e.g., projected analyst growth rates in the DCF model, forecasted risk-  
28 free rate and market risk premium in the CAPM analysis)

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<sup>2</sup> *Hope*, 320 U.S. 591 (1944); *Bluefield*, 262 U.S. 679 (1923).

- The Company's regulatory, business, financial and regulatory risks relative to the proxy group of comparable companies, and the implications of those risks in determining an appropriate ROE for the Company over the period during which rates will be in effect.

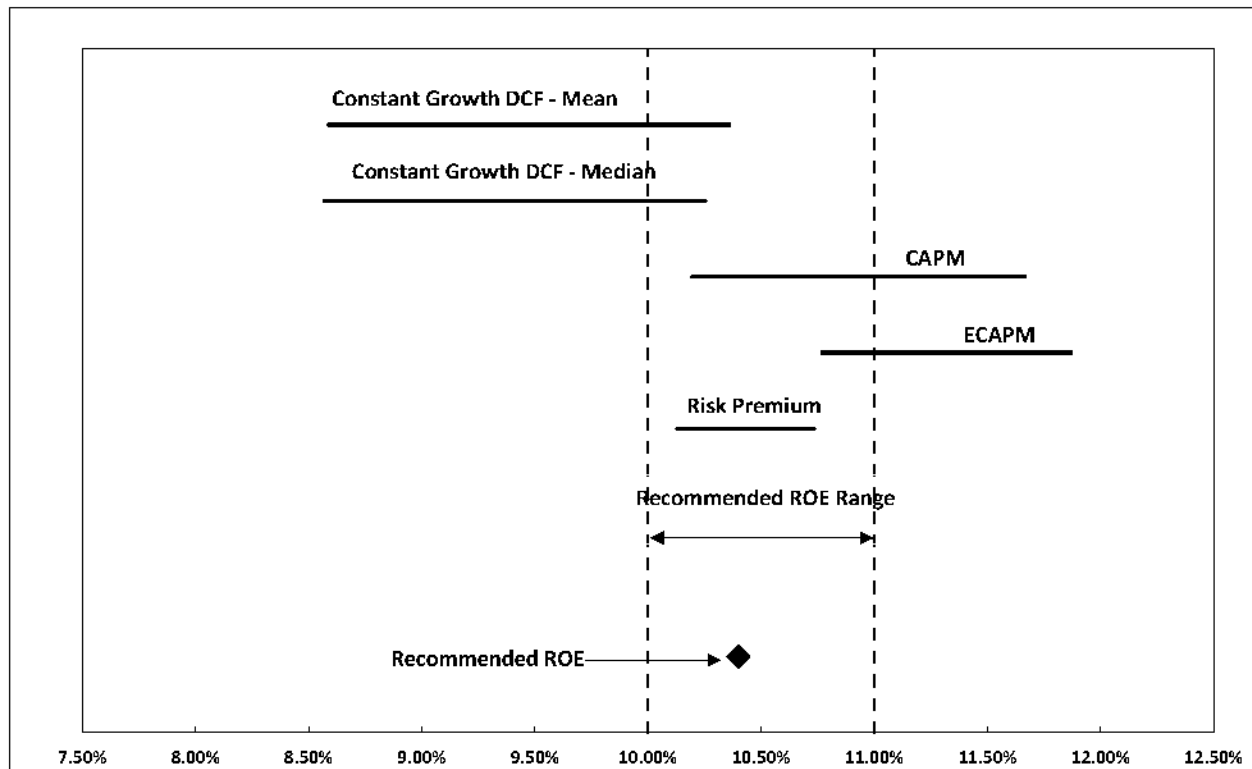
**Q. Please explain how you considered those factors.**

A. I relied on the range of results produced by the Constant Growth DCF model, the CAPM and ECAPM, and a Risk Premium analysis. As shown in Figure 1, these COE estimation models produce a wide range of results. My conclusion as to the appropriate ROE for Public Service within that range of results is based on the Company's business and financial risk relative to the proxy group and my assessment of market conditions. Although the companies in my proxy group are generally comparable to Public Service, each company is unique, and no two companies have the exact same business and financial risk profiles. Accordingly, I considered the Company's business, financial and regulatory risk in aggregate relative to that of the proxy group companies when determining where the Company's ROE should fall within the reasonable range of analytical results to appropriately account for any residual differences in risk.

**Q. Please summarize the results of the COE estimation models that you considered to establish the range of the COE for Public Service.**

A. Figure 1 summarizes the range of results produced by the Constant Growth DCF, CAPM, ECAPM, and Bond Yield Risk Premium analyses.

**Figure 1: Summary of Cost of Equity Analytical Results**



As shown in Figure 1 (and in Schedule AEB-2), the range of results produced by the COE estimation models is wide. While it is common to consider multiple models to estimate the cost of equity, it is particularly important when the range of results varies considerably across methodologies.

**Q. Are prospective capital market conditions expected to affect the results of the cost of equity for Public Service during the period in which the rates established in this proceeding will be in effect?**

A. Yes. Capital market conditions are expected to affect the results of the cost of equity estimation models. Specifically:

- Inflation is expected to persist over the near-term, which increases the operating risk of the utility during the period in which rates will be in effect.
- Long-term interest rates have increased substantially in the past year and are expected to remain relatively high at least over the next year in response to inflation.
- Over the past year, utilities have underperformed the broader market. For example, between January 1, 2023 and November 6, 2023, the S&P 500 Utilities Index

declined by 12.48 percent. During the same period, the S&P 500 Index increased by 13.71 percent. It is reasonable to expect this relationship to continue, as interest rates remain high or increase and investors have the option to invest in lower risk investments at similar returns offered on utility equity.

- Since utility dividend yields are less attractive than the risk-free rates of government bonds, and interest rates are expected to remain near current levels over the next year, it is likely that utility share prices will continue to decline.
- Similarly, equity analysts have noted the increased risk for the utility sector as a result of rising interest rates and expect the sector to underperform over the near-term.
- A decline in utility stock prices will increase the dividend yields and thus, all else equal, the cost of equity estimates produced by the DCF model.
- Consequently, the results of the DCF model, which relies on current utility share prices, is likely to understate the cost of equity during the period that the Company's rates will be in effect.
- Furthermore, expected market conditions warrant consideration of forward-looking cost of equity estimation models such as the CAPM and ECAPM, which, rely on interest rates as a direct input into the models and thus may better reflect the market conditions expected during the period that the Company's rates will be in effect.
- Rating agencies have cited increased risk in the utility sector due to increased interest rates, inflation and elevated capital expenditures.

It is appropriate to consider all of these factors when estimating a reasonable range

of the investor-required cost of equity and the recommended ROE for Public Service.

**Q. What is your conclusion regarding the appropriate authorized ROE for Public Service in this proceeding?**

A. Based on the analytical results presented in Figure 1, my assessment of current and anticipated capital market conditions, and the Company's business, financial and regulatory risk relative to proxy group companies, I conclude that a ROE in the range of 10.00 percent to 11.00 percent is reasonable. Considering underlying market conditions and the business, financial and regulatory risk factors facing Public Service, including the Company's significant capital expenditures, the Company's requested ROE of 10.40 percent is conservative.

1 **Q. Please summarize your analysis of the appropriate ratemaking capital structure for**  
2 **the Company.**

3 A. Based on the analysis presented in Section VIII of my testimony, I conclude that Public  
4 Service's proposed 55.50 percent common equity ratio is reasonable. To determine if the  
5 Company's requested capital structure was reasonable, I reviewed the capital structures of the  
6 utility subsidiaries of the proxy companies. As shown in Schedule AEB-13, the results of that  
7 analysis demonstrate that the eight quarter (i.e., Q3/2021 Q2/2023) average equity ratios for the  
8 utility operating companies of the proxy group range from 47.21 percent to 66.21 percent.  
9 Comparing the recommended equity ratio to the proxy group demonstrates that the Company's  
10 requested equity ratio is well within the range of equity ratios for the utility operating subsidiaries  
11 of the proxy group companies.

12 **III. REGULATORY GUIDELINES**

13 **Q. Please describe the guiding principles to be used in establishing the cost of equity for a**  
14 **regulated utility.**

15 A. The United States Supreme Court's precedent-setting *Hope and Bluefield* cases established  
16 the standards for determining the fairness or reasonableness of a utility's allowed ROE. Among  
17 the standards established by the Court in those cases are: (1) consistency with other businesses  
18 having similar or comparable risks; (2) adequacy of the return to support credit quality and access  
19 to capital; and (3) the principle that the result reached, as opposed to the methodology employed,  
20 is the controlling factor in arriving at just and reasonable rates.<sup>3</sup>

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<sup>3</sup> *Hope*, 320 U.S. 591 (1944); *Bluefield*, 262 U.S. 679 (1923).

1 **Q. Has the Board provided similar guidance in establishing the appropriate return on**  
2 **common equity?**

3 A. Yes. Section 48:2-21.25 of the 2022 New Jersey Revised Statutes states that a “Base rate  
4 case” is defined as a means of “determining the level of revenues necessary to afford the public  
5 utility an opportunity to earn a fair and reasonable rate of return on prudently incurred capital  
6 investment in the public utility's rate base.”<sup>4</sup> Furthermore, in its decision in Docket No.  
7 ER12111052 for Jersey Central Power and Light Company (“JCP&L”), the Board noted the  
8 following:

9 it is incumbent upon this Board to define a fair rate of return for JCP&L  
10 commensurate with risks faced by similar companies, sufficient to attract  
11 capital and maintain the financial integrity of the enterprise. As the New  
12 Jersey Supreme Court has recognized, a privately owned public utility is a  
13 complex mechanism that exists to serve a public need but to do so it must  
14 have investor appeal. It must be allowed a reasonable return on its  
15 investment so that it may have borrowing power at normal business rates to  
16 finance its day-to-day operations. See *Daaleman v. Elizabethtown Gas Co.*,  
17 77 N.J. 267, 272 (1978).<sup>5</sup>

18 **Q. Why is it important for a utility to be allowed the opportunity to earn an ROE that is**  
19 **adequate to attract capital at reasonable terms?**

20 A. An ROE that is adequate to attract capital at reasonable terms enables the Company to  
21 continue to provide safe, reliable electric and natural gas service while maintaining its financial  
22 integrity. That return should be commensurate with returns expected elsewhere in the market for  
23 investments of equivalent risk. If it is not, debt and equity investors will seek alternative investment  
24 opportunities for which the expected return reflects the perceived risks, thereby inhibiting the  
25 Company's ability to attract capital at reasonable cost.

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<sup>4</sup> 2022 New Jersey Revised Statutes, Section 48:2-21.25.

<sup>5</sup> BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Agenda Date March 12, 2015, at 71.



1 **Q. Is a utility's ability to attract capital also affected by the ROEs that are authorized for**  
2 **other utilities?**

3 A. Yes. Utilities compete directly for capital with other investments of similar risk, which  
4 include other natural gas and electric utilities. Therefore, the ROE awarded to a utility sends an  
5 important signal to investors regarding whether there is regulatory support for financial integrity,  
6 dividends, growth, and fair compensation for business and financial risk. The cost of capital  
7 represents an opportunity cost to investors. If higher returns are available for other investments of  
8 comparable risk, investors have an incentive to direct their capital to those investments. Thus, an  
9 authorized ROE that is not in line with authorized ROEs for other natural gas and electric utilities,  
10 on a risk adjusted basis, can inhibit the utility's ability to attract capital for investment in New  
11 Jersey.

12 **Q. Is the regulatory framework and the authorized ROE and equity ratio important to**  
13 **the financial community?**

14 A. Yes. The regulatory framework is one of the most important factors in debt and equity  
15 investors' assessments of risk. Specifically regarding debt investors, credit rating agencies  
16 consider the authorized ROE and equity ratio for regulated utilities to be very important for two  
17 reasons: (1) they help determine the cash flows and credit metrics of the regulated utility; and (2)  
18 they provide an indication of the degree of regulatory support for credit quality in the jurisdiction.  
19 To the extent that the authorized returns in a jurisdiction are lower than the returns that have been  
20 authorized more broadly, credit rating agencies will consider this in the overall risk assessment of  
21 the regulatory jurisdiction in which the company operates. Not only do credit ratings affect the  
22 overall cost of borrowing, they also act as a signal to equity investors about the risk of investing  
23 in the equity of a company.

1 **Q. Are you aware of any utilities that have experienced either a credit rating downgrade**  
2 **or negative market response related to the financial effects of a rate case decision?**

3 A. Yes. ALLETE, Inc.<sup>6</sup>, CenterPoint Energy Houston Electric<sup>7</sup>, and Pinnacle West Capital  
4 Corporation (“PNW”)<sup>8</sup> each received credit rating downgrades following a rate case decision for  
5 reasons that included a below average authorized ROE. In the case of PNW, the market had a  
6 strong negative response to the rate case decision for its operating subsidiary, Arizona Public  
7 Service Company (“APS”), which included an 8.70 percent ROE determination.<sup>9</sup>

8 **Q. What is the standard for setting the ROE in any jurisdiction?**

9 A. The stand-alone ratemaking principle is the foundation of jurisdictional ratemaking. This  
10 principle requires that the rates that are charged in any operating jurisdiction be for the costs  
11 incurred in that jurisdiction. The stand-alone ratemaking principle ensures that customers in each  
12 jurisdiction only pay for the costs of the service provided in that jurisdiction, which is not  
13 influenced by the business operations in other operating companies. In order to maintain this  
14 principle, the COE analysis is performed for an individual operating company as a stand-alone  
15 entity. As such, I have evaluated the investor-required return for Public Service’s electric and  
16 natural gas operations.

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<sup>6</sup> Moody’s Investors Service, “Credit Opinion: ALLETE, Inc. Update following downgrade,” at 3 (April 3, 2019).

<sup>7</sup> FitchRatings, “Fitch Downgrades CenterPoint Energy Houston Electric to BBB+; Affirms CNP; Outlooks Negative,” February 19, 2020.

<sup>8</sup> S&P Capital IQ Pro; FitchRatings, “Fitch Downgrades Pinnacle West Capital & Arizona Public Service to ‘BBB+’; Outlooks Remain Negative,” October 12, 2021; and Moody’s Investors Service, “Rating Actions: Moody’s downgrades Pinnacle West to Baal and Arizona Public Service to A3; outlook negative,” (Nov. 17, 2021).

<sup>9</sup> S&P Global Market Intelligence, “Pinnacle West shares tumble after regulators slash returns in rate case,” October 7, 2021.

1   **Q.   What are your conclusions regarding regulatory guidelines?**

2   A.   The ratemaking process is premised on the principle that, in order for investors and  
3   companies to commit the capital needed to provide safe and reliable utility services, a utility must  
4   have a reasonable opportunity to recover the return of, and the market-required return on, its  
5   invested capital. Accordingly, the Board's order in this proceeding should establish rates that  
6   provide the Company with a reasonable opportunity to earn a ROE that is: (1) adequate to attract  
7   capital at reasonable terms; (2) sufficient to ensure its financial integrity; and (3) commensurate  
8   with returns on investments in enterprises with similar risk. It is important for the ROE authorized  
9   in this proceeding to take into consideration current and projected capital market conditions, as  
10   well as investors' expectations and requirements for both risks and returns. Because utility  
11   operations are capital-intensive, regulatory decisions should enable the utility to attract capital at  
12   reasonable terms under a variety of economic and financial market conditions. Providing the  
13   opportunity to earn a market-based cost of capital supports the financial integrity of the Company,  
14   which is in the interest of both customers and shareholders.

15   **IV.   CAPITAL MARKET CONDITIONS**

16   **Q.   Why is it important to analyze capital market conditions?**

17   A.   The COE estimation models rely on market data that are either specific to the proxy group,  
18   in the case of the DCF model, or to the expectations of market risk, in the case of the CAPM. The  
19   results of the COE estimation models can be affected by prevailing market conditions at the time  
20   the analysis is performed. While the ROE that is established in a rate proceeding is intended to be  
21   forward-looking, the analyst uses current and projected market data, specifically stock prices,  
22   dividends, growth rates and interest rates, in the COE estimation models to estimate the required  
23   return for the subject company.

As a result, it is important to consider the effect of these conditions on the COE estimation models when determining the appropriate range and recommended ROE for a future period. If investors do not expect current market conditions to be sustained in the future, it is possible that the COE estimation models will not provide an accurate estimate of investors' required return during that rate period. Therefore, it is very important to consider projected market data to estimate the return for that forward-looking period.

**Q. What factors are affecting the cost of equity for regulated utilities in the current and prospective capital markets?**

A. The COE for regulated utility companies is being affected by several factors in the current and prospective capital markets, including: 1) relatively high inflation, 2) changes in monetary policy, and 3) increased interest rates that are expected to remain relatively high over the next few years. These factors affect the assumptions used in the COE estimation models. In this section, I discuss each of these factors and how they affect the models used to estimate the cost of equity for regulated utilities.

**Q. What effect do current and prospective market conditions have on the COE for Public Service?**

A. As is discussed in more detail in the remainder of this section, the combination of persistently high inflation, and the Federal Reserve's changes in monetary policy, contribute to an expectation of increased market risk and an increase in the cost of the investor-required return. It is essential that these factors be considered in setting a forward-looking ROE. Inflation has recently been at some of the highest levels seen in approximately 40 years, and while inflation has declined from these recent peaks, it remains relatively high. Interest rates, which have increased from the pandemic lows seen in 2020 are expected to remain elevated over the near term in direct response to the Federal Reserve's monetary policy. There is a strong historical inverse correlation

1 between interest rates (i.e., yields on long-term government bonds) and the share prices of utility  
2 stocks (i.e., as utility share prices decline, utility dividend yields increase). Since the yields on  
3 long-term government bonds currently exceed the dividend yields of utilities, and historically long-  
4 term government bond yields have been lower than the dividend yields of utilities, it is reasonable  
5 to expect that utility investors' cost of equity is increasing. Because the cost of equity in this  
6 proceeding is being estimated for the future period that the Company's rates will be in effect, and  
7 because the cost of equity is expected to increase over the near term for utilities, cost of equity  
8 estimates based in whole or in part on historical or current market conditions, as opposed to  
9 projected market conditions, will understate the cost of equity required by investors during the  
10 future period that the Company's rates determined in this proceeding will be in effect.

#### 11 **A. Inflationary Expectations in Current and Project Capital Market Conditions**

##### 12 **Q. Has inflation increased significantly over the past year?**

13 A. Yes. As shown in Figure 2, core inflation increased steadily beginning in early 2021, rising  
14 from 1.41 percent in January 2021 to a high of 6.64 percent in September 2022, which was the  
15 largest 12-month increase since 1982.<sup>10</sup> Since that time, while core inflation has declined in  
16 response to the Federal Reserve's monetary policy, core inflation continues to remain significantly  
17 above the Federal Reserve's target level of 2.0 percent.

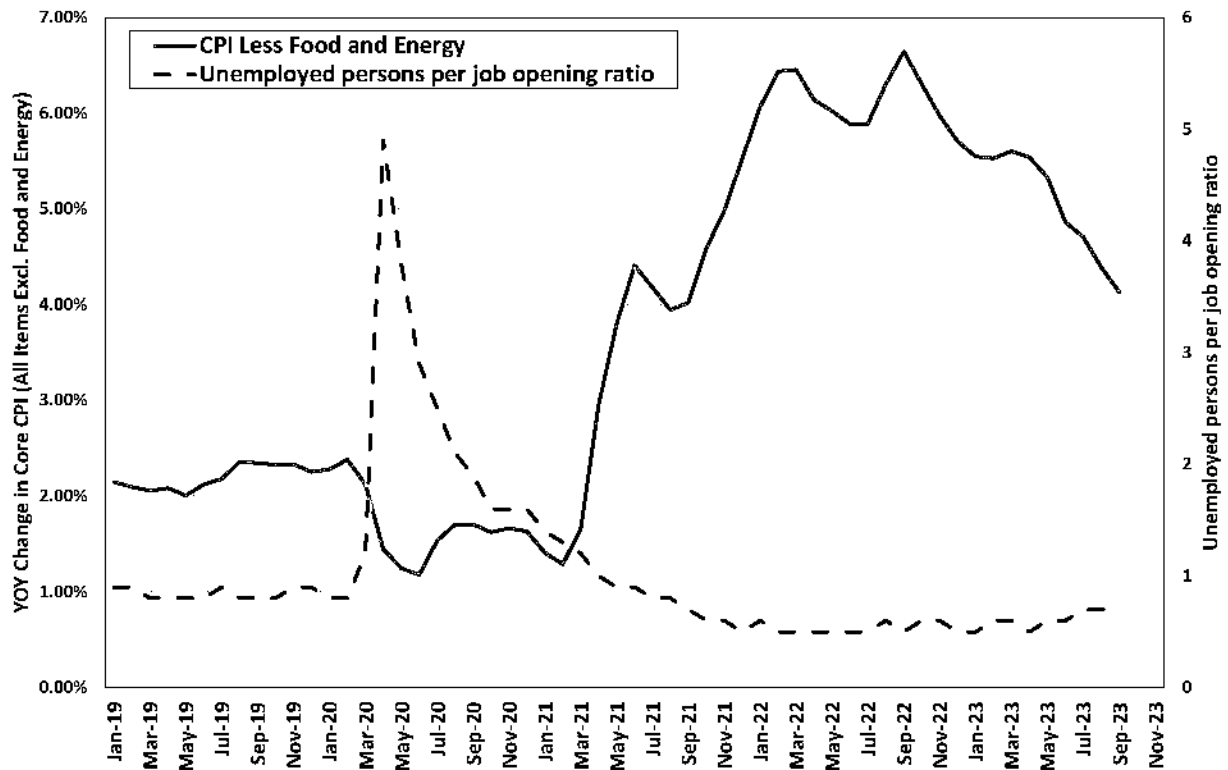
18 Finally, as shown in Figure 2, I also considered the ratio of unemployed persons per job  
19 opening, which is currently 0.7 and has been consistently below 1.0 since 2021, despite the Federal  
20 Reserve's accelerated policy normalization. This metric indicates sustained strength in the labor

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<sup>10</sup> Figure 2 presents the year-over-year ("YOY") change in core inflation, as measured by the Consumer Price Index ("CPI") excluding food and energy prices as published by the Bureau of Labor Statistics. I considered core inflation because it is the preferred inflation indicator of the Federal Reserve for determining the direction of monetary policy. Core inflation is preferred by the Federal Reserve because it removes the effect of food and energy prices, which can be highly volatile.

market. Given the Federal Reserve’s dual mandate of maximum employment and price stability, the continued increased levels of core inflation coupled with the strength in the labor market has resulted in the Federal Reserve’s sustained focus on the priority of reducing inflation.

**Figure 2: Core Inflation and Unemployed Persons-to-Job Openings, January 2019 to September 2023<sup>11</sup>**



**Q. What are the expectations for inflation over the near-term?**

A. Despite the declines from 40-year highs, the Federal Reserve has indicated that it expects inflation will remain above its target level over at least the next year and that monetary policy will remain restrictive in order to reduce inflation. For example, Federal Reserve Chair Powell observed at the Federal Open Market Committee (FOMC) meeting in September 2023 that while

<sup>11</sup> Source: Bureau of Labor Statistics.

1 inflation is down from its recent highs, it remains significantly above the Federal Reserve's long-  
2 term target:

3 Inflation remains well above our longer-run goal of 2 percent. Based on the  
4 Consumer Price Index, or CPI, and other data, we estimate that total  
5 (Personal Consumption Expenditures) PCE prices rose 3.4 percent over the  
6 12 months ending in August; and that, excluding the volatile food and  
7 energy categories, core PCE prices rose 3.9 percent. Inflation has  
8 moderated somewhat since the middle of last year, and longer-term inflation  
9 expectations appear to remain well anchored, as reflected in a broad range  
10 of surveys of households, businesses, and forecasters, as well as measures  
11 from financial markets. Nevertheless, the process of getting inflation  
12 sustainably down to 2 percent has a long way to go. The median projection  
13 in the SEP for total PCE inflation is 3.3 percent this year, falls to 2.5 percent  
14 next year, and reaches 2 percent in 2026.<sup>12</sup>

15 After the September 2023 and the November 2023 meetings, Chair Powell kept open the  
16 possibility of additional rate increases, considering even December this year, or thereafter if it is  
17 appropriate to do so. Further, at the September 2023 meeting, he noted that interest rates would  
18 likely remain positive for some time:

19 First of all, interest rates – real interest rates are, are positive now. They're  
20 meaningfully positive, and that's a good thing. We need policy to be  
21 restrictive so that we can get inflation down to target. Okay. And we need -  
22 we're going to need that to remain to be the case for some time. So I think,  
23 you know – remember that the – of course, the SEP [Summary of Economic  
24 Projections] is not a plan that is negotiated or discussed, really, as a plan.  
25 It's accumulation, really, and what you see are the medians. It's  
26 accumulation of individual forecasts from 19 people, and then what you're  
27 seeing are the medians. So I wouldn't want to, you know, bestow upon it the  
28 idea that, that it's really a plan. But what it reflects, though, is that economic  
29 activity's been stronger than we expected – stronger than I think everyone  
30 expected. And, so what you're – what you're seeing is, this is what people  
31 believe, as of now, will be appropriate to achieve what we're looking to  
32 achieve, which is progress toward our – toward our inflation goal, as you  
33 see in the SEP.<sup>13</sup>

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<sup>12</sup> Federal Reserve, Transcript of Chair Powell's Press Conference, September 20, 2023, p 2;  
<https://www.federalreserve.gov/mediacenter/files/FOMCpresconf20230920.pdf>

<sup>13</sup> *Id.*, at 6.

1 Similarly, he noted the following at the November 2023 meeting:

2 The fact is the committee is not thinking about rate cuts right now at all.  
3 We're not talking about rate cuts. We're still very focused on the first  
4 question, which is 'have we achieved a stance of monetary policy that's  
5 sufficiently restrictive to bring inflation down to 2% over time,  
6 sustainably?' That is the question we're focusing on.<sup>14</sup>

7 **B. The Use of Monetary Policy to Address Inflation**

8 **Q. What policy actions has the Federal Reserve enacted to respond to increased inflation?**

9 A. The dramatic increase in inflation has prompted the Federal Reserve to pursue an aggressive  
10 normalization of monetary policy, removing the accommodative policy programs used to mitigate  
11 the economic effects of COVID-19. Beginning in March 2022 and through May 3, 2023, the  
12 Federal Reserve increased the target federal funds rate through a series of increases from a range  
13 of 0.00 – 0.50 percent to a range of 5.00 percent to 5.25 percent.<sup>15</sup> Further, as noted above, while  
14 the Federal Reserve acknowledges that inflation has declined from its peak, it still is well above  
15 the Federal Reserve's target of 2 percent. Therefore, the Federal Reserve anticipates the continued  
16 need to maintain the federal funds rate at a restrictive level in order to achieve its goal of 2 percent  
17 inflation over the long-run.

18 **C. The Effect of Inflation and Monetary Policy on Interest Rates and the**  
19 **Investor-Required Return**

20 **Q. Have the yields on long-term government bonds increased in response to inflation and**  
21 **the Federal Reserve's normalization of monetary policy?**

22 A. Yes. As the Federal Reserve has substantially increased the federal funds rate and decreased  
23 its holdings of Treasury bonds and mortgage-backed securities in response to increased levels of

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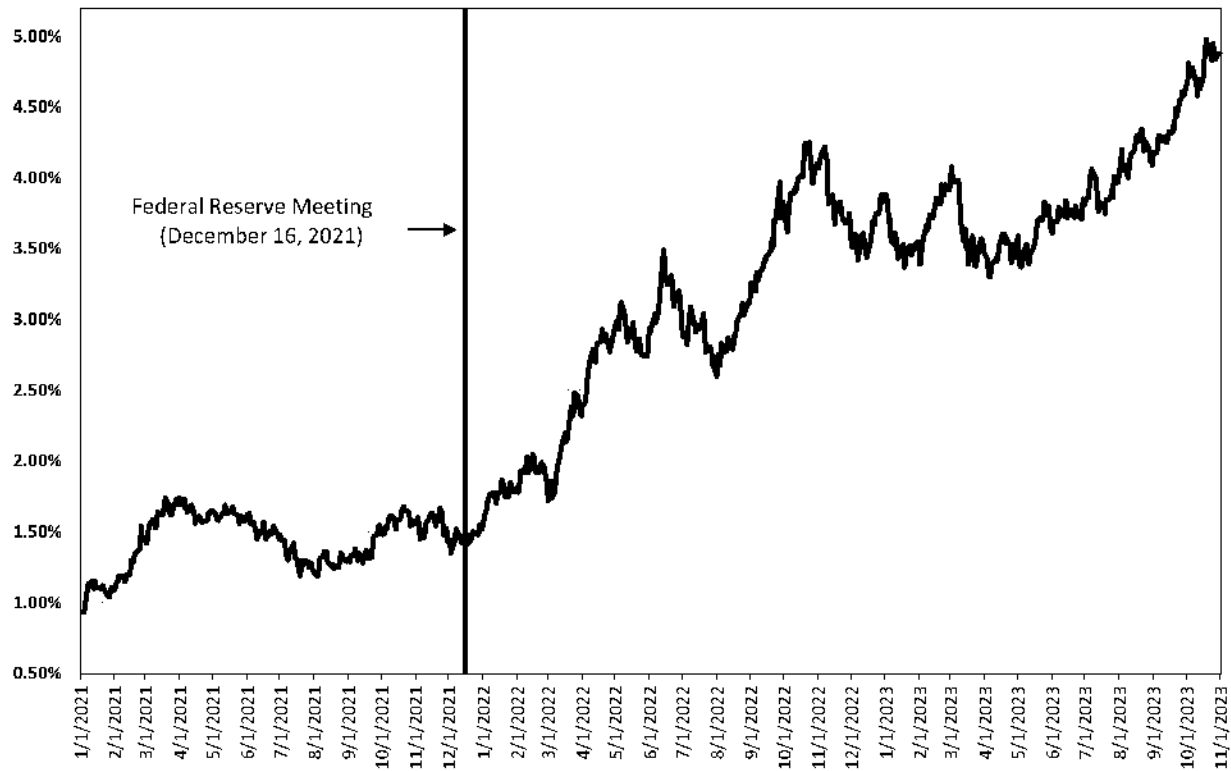
<sup>14</sup> CNBC "Full recap: Fed leaves rates unchanged, Powell discusses December decision", November 1, 2023.

<sup>15</sup> Federal Reserve, Press Releases, March 16, 2022, May 4, 2022, June 15, 2022, September 22, 2022, November 2, 2022, February 1, 2023, March 22, 2023 and May 3, 2023.



inflation that have persisted for longer than originally projected, longer term interest rates have also increased. As shown in Figure 3, since the Federal Reserve’s December 2021 meeting, the yield on 10-year Treasury bonds has more than tripled, increasing from 1.47 percent on December 15, 2021, to 4.88 percent at the end of October 2023.

**Figure 3: 10-Year Treasury Bond Yield—January 2021– October 2023<sup>16</sup>**



**Q. What have equity analysts said about long-term government bond yields?**

A. Leading equity analysts have noted that they expect the yields on long-term government bonds to remain elevated. For example, in the most recent Big Money poll released by *Barron's* in October 2023, which surveys money managers regarding the outlook for the next twelve months, two-thirds of the money managers surveyed expect the yield on the 10-year Treasury bond

<sup>16</sup> S&P Capital IQ Pro.

to be at least 4.50 percent in October 2024.<sup>17</sup> Similarly, according to the most recent *Blue Chip Financial Forecasts* report, the consensus estimate of the average yields on the 10-year and 30-year Treasury bonds are approximately 3.90 percent and 4.20 percent, respectively, through the first quarter of 2025.<sup>18</sup> Therefore, investors expect interest rates to remain elevated for at least the next 18 months. As a result, it is reasonable to expect that if government bond yields remain elevated, the COE will be increasing above the levels experienced in the 2020 and 2021 lower interest rate environment.

**Q. How have interest rates and inflation changed since the Company's last rate case?**

A. As shown in Figure 4, when the Board approved the settlement agreement and authorized an ROE of 9.60 percent in the Company's 2018 rate proceeding, interest rates (as measured by the 30-year Treasury bond yield) were 3.29 percent at the time of the Board decision, and core inflation was 2.13 percent. However, since the Company's last rate proceeding, long-term interest rates have increased approximately 155 basis points and inflation has increased approximately 200 basis points.

**Figure 4: Change in Market Conditions Since Company's Last Rate Case**

Docket	Decision Date	Federal Funds Rate	30-Day Average of 30-Year Treasury Bond Yield	Core Inflation Rate	Authorized ROE
ER18010029 & GR18010030	10/29/2018	2.20%	3.29%	2.13%	9.60%
Current	10/31/2023	5.33%	4.84%	4.13%	

<sup>17</sup> Jasinski, Nicholas, Big Money Pros Are Split on the Outlook for Stocks. But They Are Fans of Bonds", October 27, 2023. [https://www.barrons.com/articles/big-money-poll-stock-market-bonds-economy-outlook-375acbac?mod=hp\\_MAG](https://www.barrons.com/articles/big-money-poll-stock-market-bonds-economy-outlook-375acbac?mod=hp_MAG)

<sup>18</sup> *Blue Chip Financial Forecasts*, Vol. 42, No. 11, November 1, 2023, p. 2.

**D. Expected Performance of Utility Stocks and the Investor-Required Return on Utility Investments**

**Q. Are utility share prices correlated to changes in the yields on long-term government bonds?**

A. Yes. Interest rates and utility share prices are inversely correlated which means, for example, that an increase in interest rates will result in a decline in the share prices of utilities. For example, Goldman Sachs and Deutsche Bank examined the sensitivity of share prices of different industries to changes in interest rates over the past five years. Both Goldman Sachs and Deutsche Bank found that utilities had one of the strongest negative relationships with bond yields (i.e., increases in bond yields resulted in the decline of utility share prices).<sup>19</sup>

**Q. How do equity analysts expect the utilities sector to perform in an increasing interest rate environment?**

A. Equity analysts project that utilities will underperform the broader market given high inflation and the recent increases in interest rates. For example, Fidelity Investments classifies the utility sector as underweight<sup>20</sup> and Bank of America recently noted that they are “not so constructive on [u]tilities” given that the dividend yields for utilities are below both the yields available on long- and short-term treasury bonds.<sup>21</sup> Moreover, as referenced above, the professional investors surveyed by *Barron’s* in its most recent Big Money poll selected the utility sector as one of the four equity sectors that they liked the least over the next twelve months, indicating they are projecting that utilities will underperform the broader market in 2024.<sup>22</sup>

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<sup>19</sup> Lee, Justina. “Wall Street Is Rethinking the Treasury Threat to Big Tech Stocks.” Bloomberg.com, 11 Mar. 2021, [www.bloomberg.com/news/articles/2021-03-11/wall-street-is-rethinking-the-treasury-threat-to-big-tech-stocks](https://www.bloomberg.com/news/articles/2021-03-11/wall-street-is-rethinking-the-treasury-threat-to-big-tech-stocks).

<sup>20</sup> Fidelity Investments. “Fourth Quarter 2023 Investment Research Update.” October 19, 2023.

<sup>21</sup> Dumoulin-Smith, Julien, *et. al.* “US Electric Utilities & IPPs: As the leaves fall, preparing for Autumn utility outlook. Macro still has potholes.” BofA Securities, September 6, 2023.

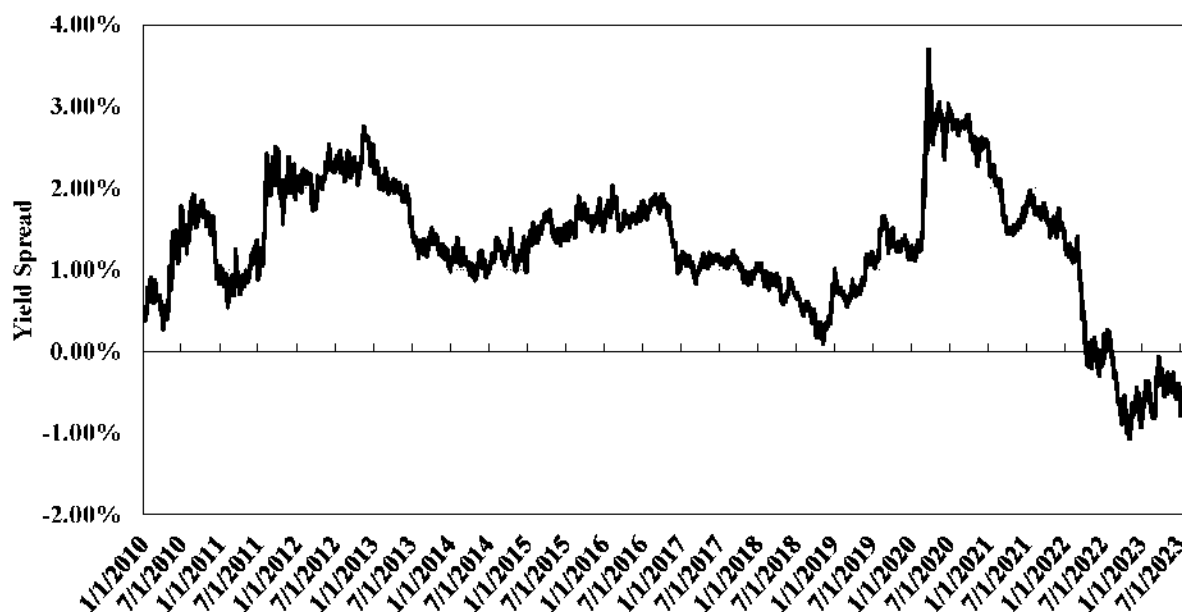
<sup>22</sup> Jasinski, Nicholas. “Big Money Pros Are Split on the Outlook for Stocks. But They Are Fans of Bonds”, October 27, 2023. [https://www.barrons.com/articles/big-money-poll-stock-market-bonds-economy-outlook-375aebae?mod=hp\\_MAG](https://www.barrons.com/articles/big-money-poll-stock-market-bonds-economy-outlook-375aebae?mod=hp_MAG)

1 **Q. Why do equity analysts expect the utility sector to underperform over the near-term?**

2 A. While interest rates have increased substantially over the past year, the valuations of utilities  
3 have remained elevated and have not fully reflected the effect of the recent increase in interest  
4 rates. To illustrate this point, I examined the difference between the dividend yields of utility  
5 stocks and the yields on long-term government bonds from January 2010 through October 2023  
6 (“yield spread”). I selected the dividend yield on the S&P Utilities Index as the measure of the  
7 dividend yields for the utility sector and the yield on the 10-year Treasury bond as the estimate of  
8 the yield on long-term government bonds.

9 As shown in Figure 5, the recent significant increase in long-term government bonds yields  
10 has resulted in the yield on long-term government bonds exceeding the dividend yields of utilities.  
11 The yield spread as of October 31, 2023 was negative 1.26 percent, meaning that the yield on the  
12 10-year Treasury bond exceeds the dividend yield for the S&P Utilities Index. However, the long-  
13 term average yield spread from 2010 to 2023 is 1.25 percent. Therefore, the current yield spread  
14 is well below the long-term average. Because of the fact that the yield spread is currently well  
15 below the long-term average, and the expectation that interest rates will remain relatively high  
16 through at least the next year, it is reasonable to conclude that the utility sector will most likely  
17 underperform over the near-term. This is because investors that purchased utility stocks as an  
18 alternative to the lower yields on long-term government bonds would otherwise be inclined to  
19 rotate back into government bonds, particularly as the yields on long-term government bonds  
20 remain elevated, thus resulting in a decrease in the share prices of utilities.

**Figure 5: Spread between the S&P Utilities Index Dividend Yield and the 10-year Treasury Bond Yield, January 2010 – October 2023<sup>23</sup>**



**Q. Do you have any further context as to how unlikely it is to have a negative yield spread of this magnitude?**

A. Yes. For further context as to how unlikely it is to have a yield spread of negative 1.26 percent, I calculated the z-score for the current yield spread, which measures the number of standard deviations from the mean. The current yield spread of negative 1.26 percent has a z-score of -2.95, indicating that a yield spread of negative 1.26 percent is over 2 standard deviations from the mean of 1.25 percent.<sup>24</sup> In other words, 95 percent of the daily yield spread observations from 2010 through October 2023 fall between -0.45 percent and 2.95 percent, with the current yield spread of negative 1.26 percent being outside of that range. Thus, the current yield spread is an outlier, which is why equity analysts do not expect this current level to hold.

<sup>23</sup> S&P Capital IQ Pro and Bloomberg Professional.

<sup>24</sup> The z-score is calculated as: (yield spread at October 31, 2023 minus average yield spread 2010 through October 2023)/standard deviation of yield spread from 2010 through October 2023. This equals: (-1.26 minus 1.25)/0.0085.

1 **Q. Have regulatory commissions acknowledged that the DCF model might understate the**  
2 **COE given the current capital market conditions of high inflation and increasing**  
3 **interest rates?**

4 A. Yes. For example, in its May 2022 decision in establishing the cost of equity for Aqua  
5 Pennsylvania, Inc., the Pennsylvania Public Utility Commission (“PPUC”) specifically concluded  
6 that the current capital market conditions of high inflation and increasing interest rates has resulted  
7 in the DCF model understating the utility cost of equity, and that weight should be placed on risk  
8 premium models, such as the CAPM, in the determination of the ROE:

9 To help control rising inflation, the Federal Open Market Committee has  
10 signaled that it is ending its policies designed to maintain low interest rates.  
11 Aqua Exc. at 9. Because the DCF model does not directly account for  
12 interest rates, consequently, it is slow to respond to interest rate changes.  
13 However, I&E’s CAPM model uses forecasted yields on ten-year Treasury  
14 bonds, and accordingly, its methodology captures forward looking changes  
15 in interest rates.

16 Therefore, our methodology for determining Aqua’s ROE shall utilize both  
17 I&E’s DCF and CAPM methodologies. As noted above, the Commission  
18 recognizes the importance of informed judgment and information provided  
19 by other ROE models. In the 2012 PPL Order, the Commission considered  
20 PPL’s CAPM and RP methods, tempered by informed judgment, instead of  
21 DCF-only results. We conclude that methodologies other than the DCF can  
22 be used as a check upon the reasonableness of the DCF derived ROE  
23 calculation. Historically, we have relied primarily upon the DCF  
24 methodology in arriving at ROE determinations and have utilized the results  
25 of the CAPM as a check upon the reasonableness of the DCF derived equity  
26 return. As such, where evidence based on other methods suggests that the  
27 DCF-only results may understate the utility’s ROE, we will consider those  
28 other methods, to some degree, in determining the appropriate range of  
29 reasonableness for our equity return determination. In light of the above, we  
30 shall determine an appropriate ROE for Aqua using informed judgement  
31 based on I&E’s DCF and CAPM methodologies.<sup>25</sup>

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<sup>25</sup> Penn. Pub. Util. Comm’n et.al. v, Aqua Penn. Wastewater Inc., Pennsylvania Public Utility Commission, Docket Nos. R-2021-3027385 and R-2021-3027386, Opinion and Order, May 12, 2022, pp. 154–155.

1 Similarly, the Massachusetts Department of Public Utilities (“MDPU”) in a recent rate case  
2 for NSTAR Electric Company concluded that given the recent increase in interest rates there was  
3 “greater certainty” the results of the DCF model were understating the cost of equity for NSTAR  
4 Electric Company.<sup>26</sup>

#### 5 E. Conclusion

6 **Q. What are your conclusions regarding the effect of current market conditions on the**  
7 **cost of equity for the Company?**

8 A. Investors expect long-term interest rates to remain relatively high through at least 2024, in  
9 response to continued elevated levels of inflation and the Federal Reserve’s normalization of  
10 monetary policy. Because the share prices of utilities are inversely correlated to interest rates, and  
11 government bond yields are already substantially greater than utility stock dividend yields, the  
12 share prices of utilities will likely decline, which is the reason a number of equity analysts have  
13 classified the sector as either underperform or underweight. The expected underperformance of  
14 utilities means that DCF models using recent historical data likely underestimate investors’  
15 required return over the period that rates will be in effect. Therefore, this expected change in  
16 market conditions supports consideration of the higher end of the range of cost of equity results  
17 produced by the DCF models. Moreover, prospective market conditions warrant consideration of  
18 forward-looking cost of equity estimation models such as the CAPM and ECAPM, which better  
19 reflect expected market conditions.

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<sup>26</sup> The Commonwealth of Massachusetts Department of Public Utilities, D.P.U. 22-22, Petition of NSTAR Electric Company, doing business as Eversource Energy, pursuant to G.L. c. 164, § 94 and 220 CMR 5.00, for Approval of a General Increase in Base Distribution Rates for Electric Service and a Performance Based Ratemaking Plan, November 30, 2022, p. 385-386.

1     **V.     PROXY GROUP SELECTION**

2     **Q.     Please provide a brief profile of Public Service.**

3     A.     Public Service is a wholly-owned subsidiary of PSEG that provides electric transmission  
4     and distribution services to approximately 2.3 million retail customers and gas distribution service  
5     to approximately 1.9 million retail customers in New Jersey, including the six largest cities.<sup>27</sup> For  
6     the year ended December 31, 2022, Public Service had revenue of \$7.9 billion.<sup>28</sup> Public Service's  
7     current long-term issuer ratings are: (1) S&P A- (Outlook: Stable); and (2) Moody's Investor's  
8     Service A3 (Outlook: Stable).<sup>29</sup>

9     **Q.     Why have you used a group of proxy companies to estimate the cost of equity for the**  
10    **Company?**

11    A.     In this proceeding, I focus on estimating the cost of equity for Public Service, a rate-  
12    regulated subsidiary of PSEG. Because the cost of equity is a market-based concept and because  
13    Public Service's operations do not make up the entirety of a publicly traded entity, it is necessary  
14    to establish a group of companies that is both publicly traded and comparable to the Company in  
15    certain fundamental business and financial respects to serve as its "proxy" in the ROE estimation  
16    process.

17           Even if Public Service was a publicly traded entity, it is possible that transitory events could  
18    bias its market value over a given period. A significant benefit of using a proxy group is that it  
19    moderates the effects of unusual events that may be associated with any one company. The proxy  
20    companies used in my analyses all possess a set of operating and risk characteristics that are

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<sup>27</sup> Source: Public Service Enterprise Group, Inc., 2022 SEC Form 10-K, at 3.

<sup>28</sup> Source: Public Service Enterprise Group, Inc., 2022 SEC Form 10-K, at 66.

<sup>29</sup> Source: S&P Capital IQ Pro and Moody's Investor's Service (accessed November 7, 2023).



1 substantially comparable to the Company's, and thus provide a reasonable basis to derive and  
2 estimate the appropriate ROE for the Company.

3 **Q. How did you select the companies included in your proxy group?**

4 A. I began with the group of 36 publicly traded companies that Value Line classifies as Electric  
5 Utilities and applied the following screening criteria to select a group of risk-comparable  
6 companies that:

- 7 • pay consistent quarterly cash dividends that have not been reduced in the last three  
8 years, since companies that do not meet this criteria cannot be analyzed using the  
9 constant growth DCF model;
- 10 • have investment grade long-term issuer ratings from both S&P and Moody's;
- 11 • are covered by more than one utility industry analyst;
- 12 • have positive long-term earnings growth forecasts from at least two equity analysts;
- 13 • derive at least 70 percent of the company's total operating income from regulated  
14 operations;
- 15 • derive at least 10 percent of the company's total regulated operating income from  
16 gas distribution operations; and
- 17 • were not party to a merger or transformative transaction during the analytical period  
18 considered.

19 **Q. What is the composition of your proxy group?**

20 A. The screening criteria discussed above resulted in a proxy group consisting of the companies  
21 shown in Figure 6 below.

**Figure 6: Proxy Group**

<b>Company</b>	<b>Ticker</b>
Ameren Corporation	AEE
Avista Corporation	AVA
Black Hills Corporation	BKH
CenterPoint Energy, Inc.	CNP
CMS Energy Corporation	CMS
Consolidated Edison, Inc.	ED
Eversource Energy	ES
MGE Energy, Inc.	MGEE
NorthWestern Corporation	NWE
Sempra Energy	SRE
Southern Company	SO
Wisconsin Energy Corporation	WEC
Xcel Energy Inc.	XEL

**Q. Do your screening criteria result in a proxy group that is risk comparable to Public Service?**

A. Yes, they do. The overall purpose of developing a set of screening criteria is to select a proxy group of companies that align with the financial and operational characteristics of Public Service and that investors would view as comparable to the Company. I developed the screens and thresholds for each screen based on judgment with the intention of balancing the need to maintain a proxy group that is of sufficient size with establishing a proxy group of companies that are comparable in business and financial risk to Public Service. The Company operates as a combination electric and gas utility and is viewed by investors as a combination company. The Company raises capital as a combination company, and does not issue separate debt or equity for electric and gas operations. Thus, a proxy group consisting combination electric and gas utilities is most risk comparable to Public Service and resulted in the group of 13 companies shown in Figure 6.

1    **VI.    COST OF EQUITY ESTIMATION**

2    **Q.    Please briefly discuss the ROE in the context of the regulated rate of return (“ROR”).**

3    A.    The ROE is the cost rate applied to the equity capital in the ROR. The ROR for a regulated  
4    utility is the weighted average cost of capital, in which the costs of the individual sources of capital  
5    are weighted by their respective proportion (i.e. book values) in the utility’s capital structure.  
6    While the costs of debt and preferred stock can be directly observed, the COE is market-based and,  
7    therefore, must be estimated based on observable market data.

8    **Q.    How is the required COE determined?**

9    A.    The required COE is estimated by using analytical techniques that rely on market-based  
10   data to quantify investor expectations regarding equity returns, adjusted for certain incremental  
11   costs and risks. Informed judgment is then applied to determine where the company’s COE falls  
12   within the range of results produced by multiple analytical techniques. The key consideration in  
13   determining the COE is to ensure that the methodologies employed reasonably reflect investors’  
14   views of the financial markets in general, as well as the subject company (in the context of the  
15   proxy group), in particular.

16   **Q.    What methods did you use to establish your recommended ROE in this proceeding?**

17   A.    I considered the results of the Constant Growth DCF model, the CAPM, the ECAPM, and  
18   a Bond Yield Plus Risk Premium analysis. As discussed in more detail below, a reasonable ROE  
19   estimate appropriately considers alternative methodologies and the reasonableness of their  
20   individual and collective results.

1 **Q. Why is it important to use more than one analytical approach?**

2 A. Because the COE is not directly observable, it must be estimated based on both quantitative  
3 and qualitative information. When faced with the task of estimating the COE, analysts and  
4 investors are inclined to gather and evaluate as much relevant data as reasonably can be analyzed.  
5 Several models have been developed to estimate the COE, and I use multiple approaches to  
6 estimate the COE. As a practical matter, however, all the models available for estimating the COE  
7 are subject to limiting assumptions or other methodological constraints. Consequently, many well-  
8 regarded finance texts recommend using multiple approaches when estimating the COE. For  
9 example, Copeland, Koller, and Murrin<sup>30</sup> suggest using the CAPM and Arbitrage Pricing Theory  
10 model, while Brigham and Gapenski<sup>31</sup> recommend the CAPM, DCF, and Bond Yield Plus Risk  
11 Premium approaches.

12 **Q. Do current market conditions increase the importance of using more than one**  
13 **analytical approach?**

14 A. Yes. As discussed previously, interest rates have increased substantially over the past year  
15 and are expected to remain elevated over at least the next year from the lows seen during the  
16 COVID-19 pandemic. While the share prices of utilities have declined, the negative yield spread  
17 noted above is an indication that the share prices have not declined sufficiently to account for the  
18 recent rise in interest rates. As a result, equity analysts expect the utility sector to continue to  
19 underperform over the next year. Given the expected underperformance, it is reasonable to  
20 conclude that the DCF model is likely understating the forward-looking cost of equity because the

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<sup>30</sup> Tom Copeland, Tim Koller and Jack Murrin, *Valuation: Measuring and Managing the Value of Companies*, 3rd Ed. (New York: McKinsey & Company, Inc., 2000), at 214.

<sup>31</sup> Eugene Brigham, Louis Gapenski, *Financial Management: Theory and Practice*, 7th Ed. (Orlando: Dryden Press, 1994), at 341.

1 model relies on historical share prices. The CAPM, ECAPM, and Bond Yield Plus Risk Premium  
2 analyses offer some balance through the use of interest rates as a direct input into the models and  
3 therefore may better reflect the market conditions expected when the Company's rates are in effect.  
4 These recent changes in market conditions highlight the benefit of using multiple models since  
5 each model relies on different assumptions, certain of which may better reflect current and  
6 projected market conditions at different times. Therefore, it is important to use multiple analytical  
7 approaches to ensure that the cost of equity results reflect market conditions that are expected  
8 during the period that the Company's rates will be in effect.

9 **Q. Has the Board made similar findings regarding the reliance on multiple models?**

10 A. Yes. It is my understanding that in its order in Docket No. ER12111052 for Jersey Central  
11 Power and Light Company, the Board noted that rate of return experts use a number of models  
12 including the DCF, CAPM, Risk Premium and Comparable Earnings to estimate the return  
13 required by investors. Specifically, the Board noted:

14 In determining the cost of equity capital for a regulated utility, rate of return  
15 experts typically use a variety of financial models to simulate the returns  
16 assertedly required by investors. These include Discounted Cash Flow  
17 (DCF) models, Risk Premium models, Capital Asset Pricing Models  
18 (CAPM), Comparable Earnings models and variations thereof. However, it  
19 is widely acknowledged that these economic models constitute estimates,  
20 which, although probative, are not necessarily precise. The imprecision in  
21 the estimates provided by these models is more pronounced as a result of  
22 the current economic environment still recovering from the Great  
23 Recession, characterized by some as the worst economy since the Great  
24 Depression.<sup>32</sup>

25 In the order, the Board accepted an ROE of 9.75 percent for JCP&L which was  
26 supported by the ALJ and ultimately recommended by Staff based on a review of each of

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<sup>32</sup> BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Order Adopting Initial Decision with Modifications and Clarifications, March 18, 2015, at 71.

1 the model results presented by the witnesses in the case and recently authorized ROEs in  
2 other jurisdictions.<sup>33</sup> In supporting the recommendation of Staff, the ALJ concluded that  
3 the results of each model are affected by multiple factors including current market conditions.  
4 Specifically, the ALJ concluded that:

5 [e]ach method has multiple factors, and the parties have offered numerous  
6 criticisms of the choices made by opposing expert witnesses. A key  
7 consideration concerns the time period used by the experts in selecting a  
8 dividend yield under the DCF model or the risk-free rate under the CAPM  
9 method due to the fact that interest rates have been at historic lows in recent  
10 years. For example, with the CAPM method, Ms. Ahern used interest rates  
11 on thirty-year Treasury bonds going as far back as 1926 producing an  
12 average of 5.32 percent, which led to a risk free rate of 4.17 percent. As Mr.  
13 Kahal points out, rates on thirty-year Treasury bonds have been closer to  
14 3.00 percent in recent years. In contrast, Mr. Kahal based the dividend yield  
15 under his DCF analysis on results from the six months ending April 2013.  
16 Development of the dividend yield from data during a period of historically  
17 low interest rates may produce a result which is lower than will prevail when  
18 the new rates are in effect. Mr. O'Donnell's analysis in this respect is similar  
19 to that of Mr. Kahal.<sup>34</sup>

20 Thus, the Board, an ALJ, and Board Staff have all recognized the importance of  
21 considering the results of each model presented in the rate case because market conditions  
22 can have an effect on the results produced by each of the ROE estimation models.

### 23 A. CAPM Analysis

#### 24 Q. Please briefly describe the CAPM.

25 A. The CAPM is a risk premium approach that estimates the COE for a given security as a  
26 function of a risk-free return plus a risk premium to compensate investors for the non-diversifiable,  
27 systematic risk of that security. Systematic risk is the risk inherent in the entire market or market

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<sup>33</sup> *Id.*, at 10.

<sup>34</sup> BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Initial Decision, January 8, 2015, at 27.

segment—which cannot be diversified away using a portfolio of assets. Unsystematic risk is the risk of a specific company that can, theoretically, be mitigated through portfolio diversification.

The CAPM is defined by four components, each of which must theoretically be a forward-looking estimate:

$$K_e = r_f + \beta(r_m - r_f) \quad [1]$$

Where:

$K_e$  = the required market COE;

$\beta$  = Beta coefficient of an individual security;

$r_f$  = the risk-free rate of return; and

$r_m$  = the required return on the market.

In this specification, the term  $(r_m - r_f)$  represents the market risk premium. According to the theory underlying the CAPM, because unsystematic risk can be diversified away, investors should only be concerned with systematic or non-diversifiable risk. Systematic risk is measured by Beta. Beta is a measure of the volatility of a security as compared to the market as a whole. Beta is defined as:

$$\beta = \frac{\text{Covariance}(r_e, r_m)}{\text{Variance}(r_m)} \quad [2]$$

The variance of the market return (i.e.,  $\text{Variance}(r_m)$ ) is a measure of the uncertainty of the general market, and the covariance between the return on a specific security and the general market (i.e.,  $\text{Covariance}(r_e, r_m)$ ) reflects the extent to which the return on that security will respond to a given change in the general market return. Thus, Beta represents the risk of the security relative to the general market.

1 **Q. What risk-free rate did you use in your CAPM analysis?**

2 A. I relied on three sources for my estimate of the risk-free rate: (1) the current 30-day average  
3 yield on 30-year U.S. Treasury bonds, which is 4.84 percent;<sup>35</sup> (2) the average projected 30-year  
4 U.S. Treasury bond yield for the first quarter of 2024 through the first quarter of 2025, which is  
5 4.44 percent;<sup>36</sup> and (3) the average projected 30-year U.S. Treasury bond yield for 2025 through  
6 2029, which is 3.80 percent.<sup>37</sup>

7 **Q. What Beta coefficients did you use in your CAPM analysis?**

8 A. As shown Schedule AEB-5, I used the Beta coefficients for the proxy group companies as  
9 reported by Bloomberg and Value Line. The Beta coefficients reported by Bloomberg were  
10 calculated using ten years of weekly returns relative to the S&P 500 Index. Value Line's  
11 calculation is based on five years of weekly returns relative to the New York Stock Exchange  
12 Composite Index.

13 As shown in Schedule AEB-5, I also considered an additional CAPM analysis that relies on  
14 the long-term average utility Beta coefficient for the companies in my proxy group. As shown in  
15 Schedule AEB-6, the long-term average utility Beta coefficient was calculated as an average of  
16 the Value Line Beta coefficients for the companies in my proxy group from 2013 through 2022.

17 **Q. How did you estimate the market risk premium in the CAPM?**

18 A. I estimated the Market Risk Premium ("MRP") as the difference between the implied  
19 expected equity market return and the risk-free rate. As shown in Schedule AEB-7, the expected  
20 market return is calculated using the constant growth DCF model discussed below as applied to

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<sup>35</sup> Bloomberg Professional as of October 31, 2023.

<sup>36</sup> Blue Chip Financial Forecasts, Vol. 42, No. 11, at 2 (November 1, 2023).

<sup>37</sup> Blue Chip Financial Forecasts, Vol. 41, No. 6, at 14 (June 1, 2023).

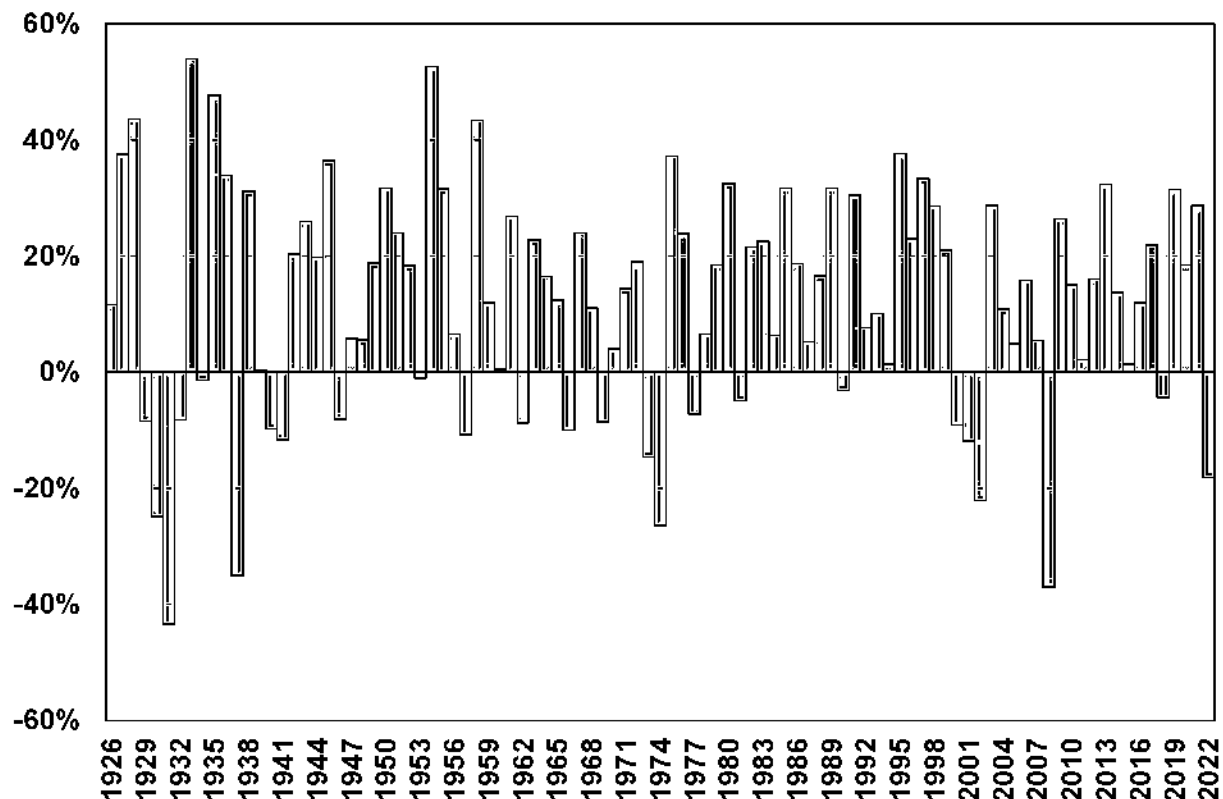


the companies in the S&P 500 Index. Based on an estimated market capitalization-weighted dividend yield of 1.88 percent and a weighted long-term growth rate of 10.51 percent, the estimated required market return for the S&P 500 Index as of October 31, 2023 is 12.49 percent.

**Q. How does the current expected market return of 12.49 percent compare to observed historical market returns?**

A. Given the range of annual equity returns that have been observed over the past century (shown in Figure 7), a current expected return of 12.49 percent is not unreasonable. In 50 out of the past 97 years (or roughly 52 percent of observations), the realized equity return was at least 12.49 percent or greater.

**Figure 7: Realized U.S. equity market returns (1926-2022)** <sup>38</sup>



<sup>38</sup> Depicts total annual returns on large company stocks, as reported in the 2022 *Kroll S&P 500* Yearbook.

1 **Q. Did you consider another form of the CAPM in your analysis?**

2 A. Yes. I have also considered the results of an ECAPM or alternatively referred to as the Zero-  
3 Beta CAPM<sup>39</sup> in estimating the COE for Public Service. The ECAPM calculates the product of  
4 the adjusted Beta coefficient and the market risk premium and applies a weight of 75.00 percent  
5 to that result. The model then applies a 25.00 percent weight to the market risk premium, without  
6 any effect from the Beta coefficient. The results of the two calculations are summed, along with  
7 the risk-free rate, to produce the ECAPM result, as noted in Equation [3] below:

$$k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f) \quad [3]$$

9 Where:

10  $k_e$  – the required market COE;

11  $\beta$  – Adjusted Beta coefficient of an individual security;

12  $r_f$  – the risk-free rate of return; and

13  $r_m$  = the required return on the market as a whole.

14 In essence, the Empirical form of the CAPM addresses the tendency of the “traditional”  
15 CAPM to underestimate the cost of equity for companies with low Beta coefficients such as  
16 regulated utilities. In that regard, the ECAPM is not redundant to the use of adjusted Betas; rather,  
17 it recognizes the results of academic research indicating that the risk-return relationship is different  
18 (in essence, flatter) than estimated by the CAPM, and that the CAPM underestimates the “alpha,”  
19 or the constant return term.<sup>40</sup>

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<sup>39</sup> See Roger A. Morin, New Regulatory Finance at 189, Public Utilities Reports, Inc. (2006).

<sup>40</sup> *Id.*, at 191.

As with the CAPM, my application of the ECAPM uses the forward-looking market risk premium estimates, the three yields on 30-year Treasury securities noted earlier as the risk-free rate, and the Bloomberg, Value Line, and long-term average Beta coefficients.

**Q. What are the results of your CAPM analyses?**

A. As shown in Figure 8 (see also Schedule AEB-5), my traditional CAPM analysis produces a range of returns from 10.20 percent to 11.66 percent. The ECAPM analysis results range from 10.77 percent to 11.87 percent.

**Figure 8: CAPM and ECAPM Results**

	<b>Current Risk-Free Rate (4.84%)</b>	<b>Q1 2024 – Q1 2025 Projected Risk-Free Rate (4.44%)</b>	<b>2025-2029 Projected Risk-Free Rate (3.80%)</b>
<i><b>CAPM</b></i>			
Value Line Beta	11.66%	11.62%	11.55%
Bloomberg Beta	10.84%	10.75%	10.61%
Long-term Avg. Beta	10.47%	10.37%	10.20%
<i><b>ECAPM</b></i>			
Value Line Beta	11.87%	11.84%	11.79%
Bloomberg Beta	11.25%	11.18%	11.08%
Long-term Avg. Beta	10.98%	10.90%	10.77%

**B. Constant Growth DCF Model**

**Q. Please describe the DCF approach.**

A. The DCF approach is based on the theory that a stock's current price represents the present value of all expected future cash flows. In its most general form, the DCF model is expressed as follows:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_\infty}{(1+k)^\infty} \quad [4]$$

Where  $P_0$  represents the current stock price,  $D_1 \dots D_\infty$  are all expected future dividends, and  $k$  is the discount rate, or required ROE. Equation [4] is a standard present value calculation that can be simplified and rearranged into the following form:

$$k = \frac{D_0(1+g)}{P_0} + g \quad [5]$$

Equation [5] is often referred to as the Constant Growth DCF model in which the first term is the expected dividend yield and the second term is the expected long-term growth rate.

**Q. What assumptions are required for the Constant Growth DCF model?**

A. The Constant Growth DCF model requires the following four assumptions: (1) a constant growth rate for earnings and dividends; (2) a stable dividend payout ratio; (3) a constant price-to-earnings (“P/E”) ratio; and (4) a discount rate greater than the expected growth rate. To the extent that any of these assumptions are violated, considered judgment and/or specific adjustments should be applied to the results.

**Q. What market data did you use to calculate the dividend yield in your Constant Growth DCF model?**

A. The dividend yield in my Constant Growth DCF model is based on the proxy companies’ current annualized dividend and average closing stock prices over the 30-, 90-, and 180-trading days ended October 31, 2023.

**Q. Why did you use 30-, 90-, and 180-day averaging periods?**

A. I use an average of recent trading days to calculate the term  $P_0$  in the DCF model to reflect current market data while also ensuring that the result of the model is not skewed by anomalous events that may affect stock prices on any given trading day.

1 **Q. Did you make any adjustments to the dividend yield to account for periodic growth in**  
2 **dividends?**

3 A. Yes, I did. Because utility companies tend to increase their quarterly dividends at different  
4 times throughout the year, it is reasonable to assume that dividend increases will be evenly  
5 distributed over calendar quarters. Given that assumption, it is reasonable to apply one-half of the  
6 expected annual dividend growth rate for purposes of calculating the expected dividend yield  
7 component of the DCF model. This adjustment ensures that the expected first-year dividend yield  
8 is, on average, representative of the coming twelve-month period, and does not overstate the  
9 aggregated dividends to be paid during that time.

10 **Q. Why is it important to select appropriate measures of long-term growth in applying**  
11 **the DCF model?**

12 A. In its Constant Growth form, the DCF model (*i.e.*, Equation [2]) assumes a single growth  
13 estimate in perpetuity. To reduce the long-term growth rate to a single measure, one must assume  
14 that the payout ratio remains constant and that earnings per share, dividends per share and book  
15 value per share all grow at the same constant rate. Over the long run, however, dividend growth  
16 can only be sustained by earnings growth. Therefore, it is important to incorporate a variety of  
17 sources of long-term earnings growth rates into the Constant Growth DCF model.

18 **Q. Which sources of long-term earnings growth rates did you use?**

19 A. My Constant Growth DCF model incorporates three commonly referenced sources of long-  
20 term earnings growth rates: (1) Zacks Investment Research; (2) Yahoo! Finance; and (3) Value  
21 Line Investment Survey.

1 **Q. How did you calculate the range of results for the Constant Growth DCF Models?**

2 A. I calculated the low result for my DCF model using the minimum growth rate (*i.e.*, the  
3 lowest of the Value Line, Yahoo! Finance, and Zacks earnings growth rates) for each of the proxy  
4 group companies. Thus, the low result reflects the minimum DCF result for the proxy group. I  
5 used a similar approach to calculate the high results, using the highest growth rate for each proxy  
6 group company. The mean results were calculated using the average growth rate from all three  
7 sources for each proxy group company.

8 **Q. What were the results of your Constant Growth DCF analyses?**

9 A. Figure 9 (see also Schedule AEB-2 and 4) summarizes the results of my DCF analyses. As  
10 shown in Figure 9, the median and mean DCF results range from 9.32 percent to 9.84 percent, and  
11 the median high and mean high results are in the range of 10.05 percent to 10.55 percent. While I  
12 also summarize the low DCF results, given the expected underperformance of utility stocks and  
13 thus the likelihood that the DCF model is understating the COE, I do not believe it is appropriate  
14 to consider the low DCF results at this time.

**Figure 9: Constant Growth Discounted Cash Flow Results**

<i>Constant Growth DCF - Mean</i>			
	<b>Min Growth Rate</b>	<b>Mean Growth Rate</b>	<b>Max Growth Rate</b>
30-Day Average	8.78%	9.69%	10.55%
90-Day Average	8.57%	9.47%	10.34%
180-Day Average	8.42%	9.32%	10.19%
<i>Constant Growth DCF - Median</i>			
	<b>Min Growth Rate</b>	<b>Mean Growth Rate</b>	<b>Max Growth Rate</b>
30-Day Average	8.87%	9.84%	10.44%
90-Day Average	8.53%	9.60%	10.27%
180-Day Average	8.31%	9.48%	10.05%

**Q. What are your conclusions about the results of the DCF models?**

A. As discussed previously, one primary assumption of the Constant Growth DCF model is a constant P/E ratio. That assumption is heavily influenced by the market price of utility stocks. Since utility stocks are expected to underperform the broader market over the near-term as interest rates increase, it is important to consider the results of the DCF models with caution. This means that the results of the current DCF models are below where they would otherwise be under more normal market conditions. Therefore, while I have given weight to the results of the Constant Growth DCF model, my recommendation also gives weight to the results of other COE estimation models.

1                   **C. Bond Yield Plus Risk Premium Analysis**

2   **Q.    Please describe the Bond Yield Plus Risk Premium approach.**

3    A.    In general terms, this approach is based on the fundamental principle that equity investors  
4    bear the residual risk associated with equity ownership and therefore require a premium over the  
5    return they would have earned as a bondholder. That is, because returns to equity holders have  
6    greater risk than returns to bondholders, equity investors must be compensated to bear that risk.  
7    Risk premium approaches, therefore, estimate the COE as the sum of the equity risk premium and  
8    the yield on a particular class of bonds. In my analysis, I used actual authorized returns for electric  
9    utilities as the historical measure of the COE to determine the risk premium.

10 **Q.    Are there other considerations that should be addressed in conducting this analysis?**

11 A.    Yes, there are. It is important to recognize both academic literature and market evidence  
12 indicating that the equity risk premium (as used in this approach) is inversely related to the level  
13 of interest rates. That is, as interest rates increase, the equity risk premium decreases, and vice  
14 versa. Consequently, it is important to develop an analysis that: (1) reflects the inverse relationship  
15 between interest rates and the equity risk premium; and (2) relies on recent and expected market  
16 conditions. Such an analysis can be developed based on a regression of the risk premium as a  
17 function of U.S. Treasury bond yields. If we let authorized ROEs for electric utilities serve as the  
18 measure of required equity returns and define the yield on the long-term U.S. Treasury bond as the



relevant measure of interest rates, the risk premium simply would be the difference between those two points.<sup>41</sup>

**Q. Is the Bond Yield Plus Risk Premium analysis relevant to investors?**

A. Yes, it is. Investors are aware of ROE awards in other jurisdictions, and they consider those awards as a benchmark for a reasonable level of equity returns for utilities of comparable risk operating in other jurisdictions. Because my Bond Yield Plus Risk Premium analysis is based on authorized ROEs for utility companies relative to corresponding Treasury yields, it provides relevant information to assess the return expectations of investors in the current interest rate environment.

**Q. What did your Bond Yield Plus Risk Premium analysis reveal?**

A. As shown in Figure 10 below, from 1980 through October 2023, there was a strong negative relationship between risk premia and interest rates. To estimate that relationship, I conducted a regression analysis using the following equation:

$$RP = a + b(T) \text{ [6]}$$

Where:

RP = Risk Premium (difference between allowed ROEs and the yield on 30-year U.S. Treasury bonds)

a = intercept term

b = slope term

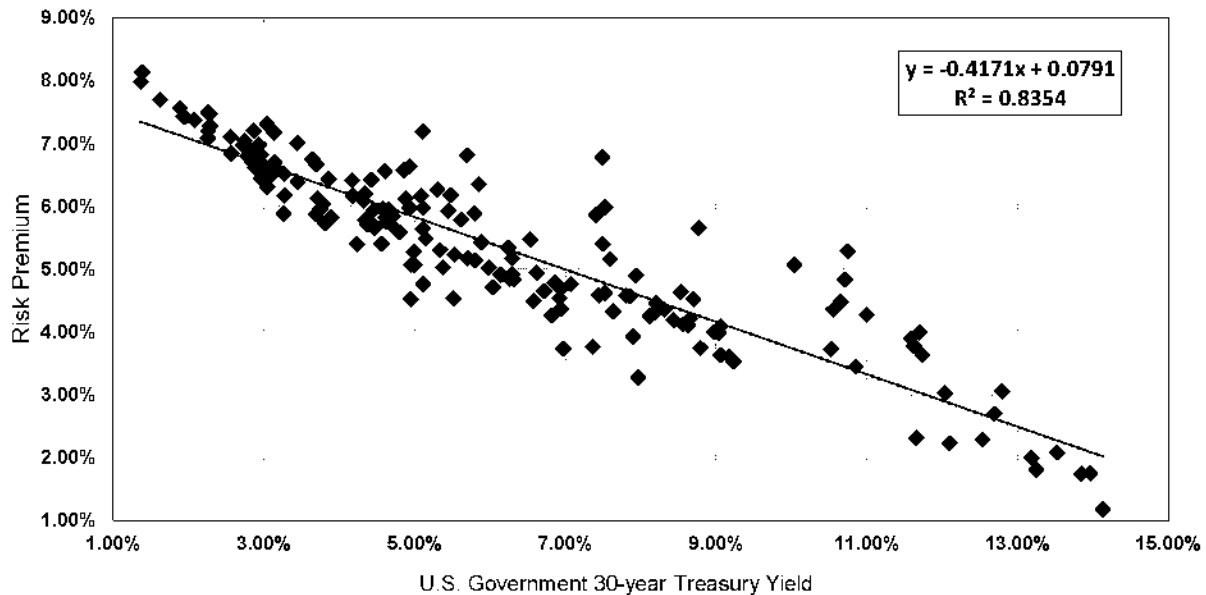
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<sup>41</sup> See S. Keith Berry, Interest Rate Risk and Utility Risk Premia during 1982-93, Managerial and Decision Economics, Vol. 19, No. 2 (March, 1998), in which the author used a methodology similar to the regression approach described below, including using allowed ROEs as the relevant data source, and came to similar conclusions regarding the inverse relationship between risk premia and interest rates. See also Robert S. Harris, Using Analysts' Growth Forecasts to Estimate Shareholders Required Rates of Return at 66, Financial Management (Spring 1986).

T = 30-year U.S. Treasury bond yield

Data regarding allowed ROEs were derived from all of electric utility rate cases from 1980 through October 2023 as reported by Regulatory Research Associates (“RRA”).<sup>42</sup> This equation’s coefficients were statistically significant at the 99.00 percent level.

**Figure 10: Risk Premium Results**



As shown in Schedule AEB-8, based on the current 30-day average of the 30-year U.S. Treasury bond yield (i.e., 4.84 percent), the risk premium would be 5.89 percent, resulting in an estimated ROE of 10.74 percent. Based on the near-term (Q1 2024 – Q1 2025) projections of the 30-year U.S. Treasury bond yield (i.e., 4.44 percent), the risk premium would be 6.06 percent, resulting in an estimated ROE of 10.50 percent. Based on longer-term (2025 – 2029) projections of the 30-year U.S. Treasury bond yield (i.e., 3.80 percent), the risk premium would be 6.33 percent, resulting in an estimated ROE of 10.13 percent.

<sup>42</sup> This analysis began with a total of 2,379 cases and was screened to eliminate limited issue rider cases, transmission-only cases, and cases that were silent with respect to the authorized ROE. After applying those screening criteria, the analysis was based on data for 1,747 cases.

1 **Q. How did the results of the Bond Yield Risk Premium inform your recommended ROE**  
2 **for the Company?**

3 A. I have considered the results of the Bond Yield Risk Premium analysis in setting my  
4 recommended ROE for Public Service. As noted above, investors consider the ROE award of a  
5 company when assessing the risk of that company as compared to utilities of comparable risk  
6 operating in other jurisdictions.

7 **VII. REGULATORY AND BUSINESS RISKS**

8 **Q. Taken alone, do the results from the COE estimation models for the proxy group**  
9 **provide an appropriate estimate of the COE for the Company?**

10 A. No. These analyses provide only a range of the appropriate estimate of the Company's cost  
11 of equity. There are several additional factors that must be taken into consideration when  
12 determining where the Company's cost of equity falls within the range of results. These factors,  
13 which are discussed below, should be considered with respect to their overall effect on the  
14 Company's risk profile.

15 **A. Management Performance Recognition**

16 **Q. Why is management performance important to consider in determining the ROE of a**  
17 **company?**

18 A. Regulatory commission decisions can influence the overall operations of the utilities that  
19 are under its regulation. In rate proceedings, the regulatory commissions review all costs to  
20 determine the reasonableness of the overall operating cost of the Company for the benefits of  
21 customers. In addition to the actual costs incurred, it is important that the regulatory commission  
22 consider the overall management performance and service quality that is derived from those costs.  
23 Regulation that is constructive and supportive of management's ability to achieve low costs and  
24 high overall service quality plays an important role in utility regulation and the continued success  
25 of top performing companies.

1 **Q. Has Public Service conducted any analysis of its management performance as**  
2 **compared with a benchmark group?**

3 A. Yes. The Direct Testimony of Public Service witness Mr. Adams describes in detail the  
4 performance benchmarking analysis that was undertaken and summarizes the results for Public  
5 Service as compared with national, regional, as well as a New Jersey specific regional  
6 benchmarking group and the proxy group that I relied on in setting the ROE. Mr. Adams  
7 benchmarks Public Service's performance on the basis of electric and natural gas distribution  
8 operating and administrative costs as well as reliability and customer satisfaction.

9 **Q. Please summarize the results of that analysis.**

10 A. Mr. Adams's analysis demonstrates that that Public Service's electric and gas operating  
11 costs are significantly lower than the peer group. In addition, Public Service's reliability and  
12 customer satisfaction ratings are consistently higher than the peer group.<sup>43</sup> The combination of  
13 these metrics indicates a well-managed company that is focused on controlling costs and providing  
14 high levels of reliability and customer satisfaction.

15 **Q. Is the Company required to maintain a minimum level of reliability for its electric**  
16 **distribution system?**

17 A. Yes. As discussed in the Panel Testimony of Public Service Witnesses Mr. Schmid and Mr.  
18 Fonseca, the Board sets annual reliability performance level targets for the electric utilities in New  
19 Jersey based on the average reliability level for an individual utility over the last five years. Given  
20 that Public Service's reliability ratings have been consistently higher than other electric utilities in  
21 New Jersey, Public Service's required reliability targets are also higher than the other electric  
22 utilities in New Jersey. As a result, absent the Commission's consideration of the Company's

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<sup>43</sup> Reliability metrics measure the number and duration of interruptions. Therefore, lower metrics in these areas, as discussed by Mr. Adams, reflect stronger performance.

1 management performance in determining the authorized ROE in this proceeding, the Company  
2 would be held to higher reliability standard than its peers; however, the Company's ROE has  
3 historically been set at a level comparable to peers which are subject to lower reliability targets. It  
4 is therefore important that the Commission consider the Company's excellent management  
5 performance which has resulted in lower costs and higher reliability relative to its peers in  
6 determining the authorized ROE for Public Service.

7 **Q. How does the benchmarking analysis affect your view of the authorized ROE for Public**  
8 **Service?**

9 A. Based on the results of the benchmarking analysis, Public Service's electric and gas  
10 distribution customers have benefitted significantly from the Company's efficiency and cost  
11 containment efforts. In addition, while providing service at a lower cost than the peer group, Public  
12 Service's reliability metrics are stronger than the peer group average. Finally, the Company's  
13 customer service is strong and continually improving over the analytical period relied on by Mr.  
14 Adams. In my view, the benchmarking analysis demonstrates that Public Service's management  
15 performance has provided its customers with significantly lower cost and more reliable service  
16 than other similar electric and gas utilities and therefore supports an ROE that is above the mean  
17 of the proxy group results. Continued demonstrated management excellence that provides tangible  
18 benefits to customers such as lower overall costs and higher reliability metrics should be  
19 considered by the Board and supported through constructive regulation.

1                    **B. Capital Expenditures**

2    **Q.    Please summarize the capital expenditure requirements for Public Service’s electric**  
3       **and natural gas distribution operations.**

4    A.    The Company’s current projections for 2023 through 2027 include approximately \$17  
5    billion in capital investments for the period.<sup>44</sup> Based on the Company’s net utility plant of  
6    approximately \$32.83 billion plus the Energy Efficiency regulatory asset of \$0.4 billion as of  
7    December 31, 2022,<sup>45</sup> the projected capital expenditures are approximately 51.15 percent of Public  
8    Service’s net utility investment balance as of December 31, 2022.

9    **Q.    How is the Company’s risk profile affected by its substantial capital expenditures**  
10       **requirements?**

11   A.    As with any utility faced with substantial capital expenditure requirements, the Company’s  
12   risk profile may be adversely affected in two significant and related ways: (1) the heightened level  
13   of investment increases the risk of under-recovery or delayed recovery of the invested capital; and  
14   (2) an inadequate return would put downward pressure on key credit metrics.

15   **Q.    Do credit rating agencies recognize the risks associated with elevated levels of capital**  
16       **expenditures?**

17   A.    Yes, they do. From a credit perspective, the additional pressure on cash flows associated  
18   with high levels of capital expenditures exerts corresponding pressure on credit metrics and,  
19   therefore, credit ratings. To that point, S&P explains the importance of regulatory support for large  
20   capital projects:

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<sup>44</sup> PSEG December 2023 Investor Update, approximate mid-point of PSE&G capital spending range 2023-2027 \$16.0-\$18.5B.

<sup>45</sup> From the PSEG 2022 10K. Net utility plant is from the PSE&G Consolidated Balance Sheet, page 68, Net Property, Plant and Equipment (December 31, 2022 balance is \$32,830 million); the Energy Efficiency regulatory asset is from the Financial Statement Note 7, page 88 (Green Program Recovery Charges (GPRC), December 31, 2022 non-current asset balance is \$447 million).

1 When applicable, a jurisdiction's willingness to support large capital  
2 projects with cash during construction is an important aspect of our analysis.  
3 This is especially true when the project represents a major addition to rate  
4 base and entails long lead times and technological risks that make it  
5 susceptible to construction delays. Broad support for all capital spending is  
6 the most credit-sustaining. Support for only specific types of capital  
7 spending, such as specific environmental projects or system integrity plans,  
8 is less so, but still favorable for creditors. Allowance of a cash return on  
9 construction work-in-progress or similar ratemaking methods historically  
10 were extraordinary measures for use in unusual circumstances, but when  
11 construction costs are rising, cash flow support could be crucial to maintain  
12 credit quality through the spending program. Even more favorable are those  
13 jurisdictions that present an opportunity for a higher return on capital  
14 projects as an incentive to investors.<sup>46</sup>

15 Therefore, to the extent that Public Service's rates do not permit the opportunity to earn an  
16 appropriate return and recover its capital investments on a regular and timely basis, the Company  
17 will face increased recovery risk and thus increased pressure on its credit metrics.

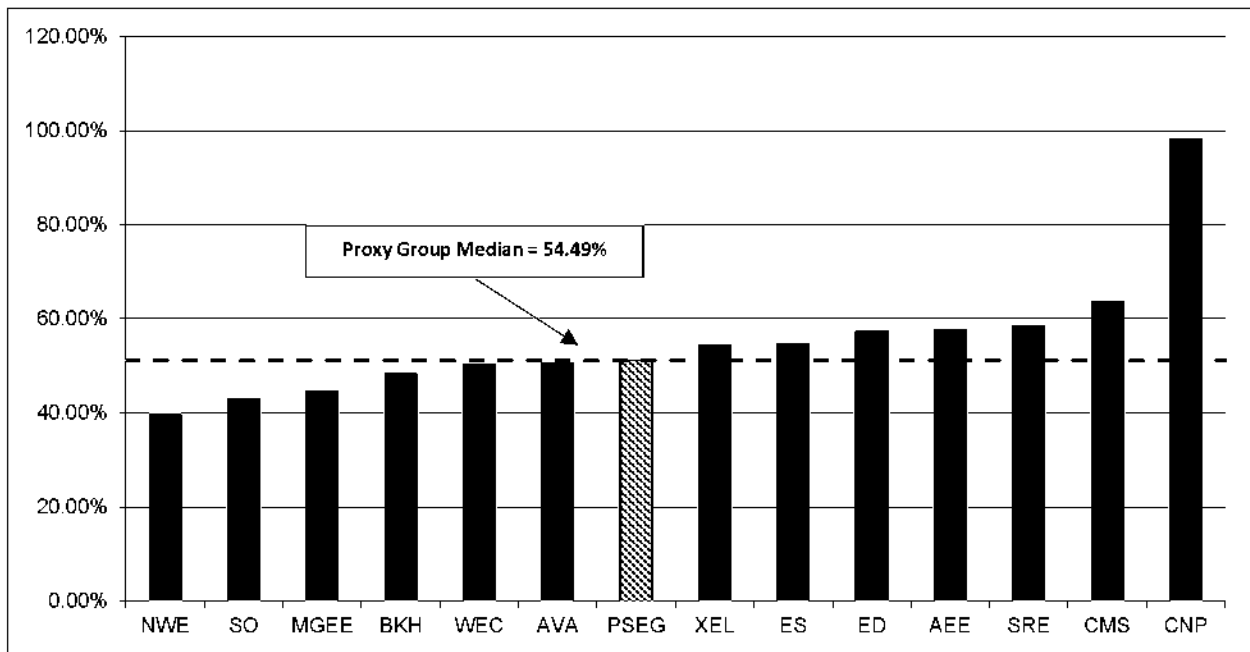
18 **Q. How do Public Service's capital expenditure requirements compare to those of the**  
19 **proxy group companies?**

20 A. As shown in Schedule AEB-9, I calculated the ratio of expected capital expenditures to net  
21 utility plant for the Company and each of the companies in the proxy group by dividing each  
22 company's projected capital expenditures for the period from 2024-2028 by its total net utility  
23 plant as of December 31, 2022. As shown in Schedule AEB-9 (see also Figure 11 below), the  
24 Company's ratio of capital expenditures as a percentage of net utility plant is 56.15 percent, which  
25 is similar to the median for the proxy group companies of 54.49 percent.

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<sup>46</sup> S&P Global Ratings, "Assessing U.S. Investor-Owned Utility Regulatory Environments," August 10, 2016, at 7.

**Figure 11: Comparison of Capital Expenditures**



**Q. Does Public Service have a capital tracking mechanism to recover the costs associated with its capital expenditures plan between rate cases?**

A. Partially. N.J.A.C. 14:3-2A, Infrastructure Investment Program (“IIP”), allows for a utility to obtain Board approval for the accelerated recovery of qualifying capital investments between rate cases. Public Service has periodic rate adjustments, on a lag, for a portion of its investments of specific Board-approved programs, for a portion of the Company’s electric and natural gas operations. This allows Public Service to recover a portion of certain investments in the construction, installation and rehabilitation of certain non-revenue producing utility plant and facilities that meet safety, reliability or resiliency standards. For example, through the IIP, Public Service recovers a portion of the capital costs associated with the Company’s Energy Strong II program, Infrastructure Advancement Program, and Gas System Modernization II Program (“GSMP”), albeit on a lag. In addition, the Company is able to recover capital costs associated with its Clean Energy Future – Energy Efficiency, other Energy Efficiency, and several solar



1 programs through the Green Programs Recovery Charge, which is available to both Public  
2 Service's electric and gas operations.

3 **Q. Does the existence of these ratemaking mechanisms reduce the Company's level of risk**  
4 **vis a vis the companies in the proxy group?**

5 A. No. A significant portion of the Company's future spending will require a base rate case  
6 filing for recovery. Further, the presence of these mechanisms is certainly a positive aspect of New  
7 Jersey regulation, but they have become quite commonplace in utility regulation. In fact, as shown  
8 in Schedule AEB-10 approximately 63 percent of the companies in the proxy group have  
9 implemented infrastructure replacement recovery mechanisms. In addition, approximately 48  
10 percent of the proxy group companies set rates based on forecasted test years. Consequently the  
11 presence of the IIP mechanism and Green Programs charge, while positive regulatory mechanisms,  
12 do not reduce the Company's risk vis-à-vis that of the proxy group.

13 **Q. What are your conclusions regarding the effect of Public Service's capital spending**  
14 **program on its risk profile and cost of capital?**

15 A. The Company's capital expenditure requirements as a percentage of net utility plant are  
16 significant and will continue over the next few years. Additionally, similar to a number of the  
17 operating subsidiaries of the proxy group, Public Service does have capital tracking mechanisms  
18 to recover some of the Company's projected capital expenditures.

### 19 **C. Regulatory Risk**

20 **Q. How does the regulatory environment affect investors' risk assessments?**

21 A. The ratemaking process is premised on the principle that, for investors and companies to  
22 commit the capital needed to provide safe and reliable utility service, the subject utility must have  
23 the opportunity to recover the return of, and the market-required return on, invested capital.  
24 Regulatory authorities recognize that because utility operations are capital intensive, regulatory

1 decisions should enable the utility to attract capital at reasonable terms; doing so balances the long-  
2 term interests of investors and customers. To achieve this balance, the Company must be able to  
3 finance its operations assuming a reasonable opportunity to earn an appropriate return on invested  
4 capital to maintain an acceptable financial profile. In that respect, the regulatory environment is  
5 one of the most important factors considered in both debt and equity investors' risk assessments.

6 From the perspective of debt investors, the authorized return should enable the Company to  
7 generate the cash flow needed to meet its near-term financial obligations, make the capital  
8 investments needed to maintain and expand its systems, and maintain the necessary levels of  
9 liquidity to fund unexpected events. This financial liquidity must be derived not only from  
10 internally generated funds, but also by efficient access to capital markets. Moreover, because fixed  
11 income investors have many investment alternatives, even within a given market sector, the  
12 Company's financial profile must be adequate on a relative basis to ensure its ability to attract  
13 capital under a variety of economic and financial market conditions.

14 Equity investors, on the other hand, require that the authorized return be adequate to provide  
15 a risk-comparable return on the equity portion of the Company's capital investments. Because  
16 equity investors are the residual claimants on the Company's cash flows (which is to say that the  
17 equity return is subordinate to interest payments), they are particularly concerned with the strength  
18 of regulatory support and its effect on future cash flows.

19 **Q. How do credit rating agencies consider regulatory risk in establishing a company's**  
20 **credit rating?**

21 A. Both S&P and Moody's consider the overall regulatory framework in establishing credit  
22 ratings. Moody's establishes credit ratings based on four key factors: (1) regulatory framework;  
23 (2) the ability to recover costs and earn returns; (3) diversification; and (4) financial strength,

1 liquidity, and key financial metrics. Of these criteria, regulatory framework, and the ability to  
2 recover costs and earn returns are each given a broad rating factor of 25.00 percent. Therefore,  
3 Moody's assigns regulatory risk a 50.00 percent weighting in the overall assessment of business  
4 and financial risk for regulated utilities.<sup>47</sup>

5 S&P also identifies the regulatory framework as an important factor in credit ratings for  
6 regulated utilities, stating: "One significant aspect of regulatory risk that influences credit quality  
7 is the regulatory environment in the jurisdictions in which a utility operates."<sup>48</sup> S&P identifies four  
8 specific factors that it uses to assess the credit implications of the regulatory jurisdictions of  
9 investor-owned regulated utilities: (1) regulatory stability; (2) tariff-setting procedures and design;  
10 (3) financial stability; and (4) regulatory independence and insulation.<sup>49</sup>

11 **Q. How does the regulatory environment in which a utility operates affect its access to and**  
12 **cost of capital?**

13 A. The regulatory environment can significantly affect both the access to, and cost of capital  
14 in several ways. First, the proportion and cost of debt capital available to utility companies are  
15 influenced by the rating agencies' assessment of the regulatory environment. As noted by  
16 Moody's, "[f]or rate regulated utilities, which typically operate as a monopoly, the regulatory  
17 environment and how the utility adapts to that environment are the most important credit  
18 considerations."<sup>50</sup> Moody's further highlighted the relevance of a stable and predictable regulatory  
19 environment to a utility's credit quality, noting: "[b]roadly speaking, the Regulatory Framework  
20 is the foundation for how all the decisions that affect utilities are made (including the setting of

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<sup>47</sup> Moody's Investors Service, Rating Methodology: Regulated Electric and Gas Utilities, June 23, 2017, at 4.

<sup>48</sup> Standard & Poor's Global Ratings, Ratings Direct, "Assessing U.S. Investor-Owned Utility Regulatory Environments," August 10, 2016, at 2.

<sup>49</sup> *Id.*

<sup>50</sup> Moody's Investors Service, Rating Methodology: Regulated Electric and Gas Utilities, June 23, 2017, at 6.

rates), as well as the predictability and consistency of decision-making provided by that foundation.”<sup>51</sup>

**Q. Have you conducted any analysis of the risk associated with the regulatory framework in New Jersey relative to the jurisdictions in which the utility operating subsidiaries of the companies in your proxy group operate?**

A. Yes. I have evaluated the regulatory framework in New Jersey on three factors that are important in terms of providing a regulated utility a reasonable opportunity to earn its authorized ROE: (1) test year convention (i.e., forecast vs. historical); (2) use of rate design or other mechanisms that mitigate volumetric risk and stabilize revenue; and (3) prevalence of capital cost recovery between rate cases. The results of this regulatory risk assessment are shown in Schedule AEB-10 and are summarized as follows:

Test Year Convention: The Company uses partially forecast test year, which will be fully historical by the time a rate decision is issued in the current proceeding. However, approximately 44.30 percent of the utility operating subsidiaries of the companies in the proxy group use a fully forecasted test year, which will not be historical by the time of the rate decision.

Revenue Stabilization / Volumetric Risk: The Company does have partial protection against volumetric risk in New Jersey for its electric and natural gas operations. Public Service has a Conservation Incentive Program (“CIP”) surcharge which allows for the recovery of lost sales revenue from the reduction in usage associated with energy efficiency programs and the recovery/refund of other deviations in sales due to, for example, variations in weather. As shown in Schedule AEB-10, approximately 57.0 percent of the operating companies held by the proxy group have some form of revenue stabilization either through straight fixed variable rate design, a formula rate plan, or other mechanisms.

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<sup>51</sup> *Id.*