Recent Applications of Regulatory Finance

MSU-Institute of Public Utilities

IPU's 66th Annual Regulatory Studies Program

FUNDAMENTALS COURSE

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Regulatory Reserves Network

Madison, Wisconsin

Topics

- Practical Applications of Regulatory Finance in Rate Cases
  - Case Study: Newfoundland Power Rate Case
- Perspectives on Regulatory Finance in Rate Cases
  - Case Study: California 2023 Test Year Cost of Capital Docket
  - Case Study: High Level Overview of Models in an On-going Case
- Useful Data Sources

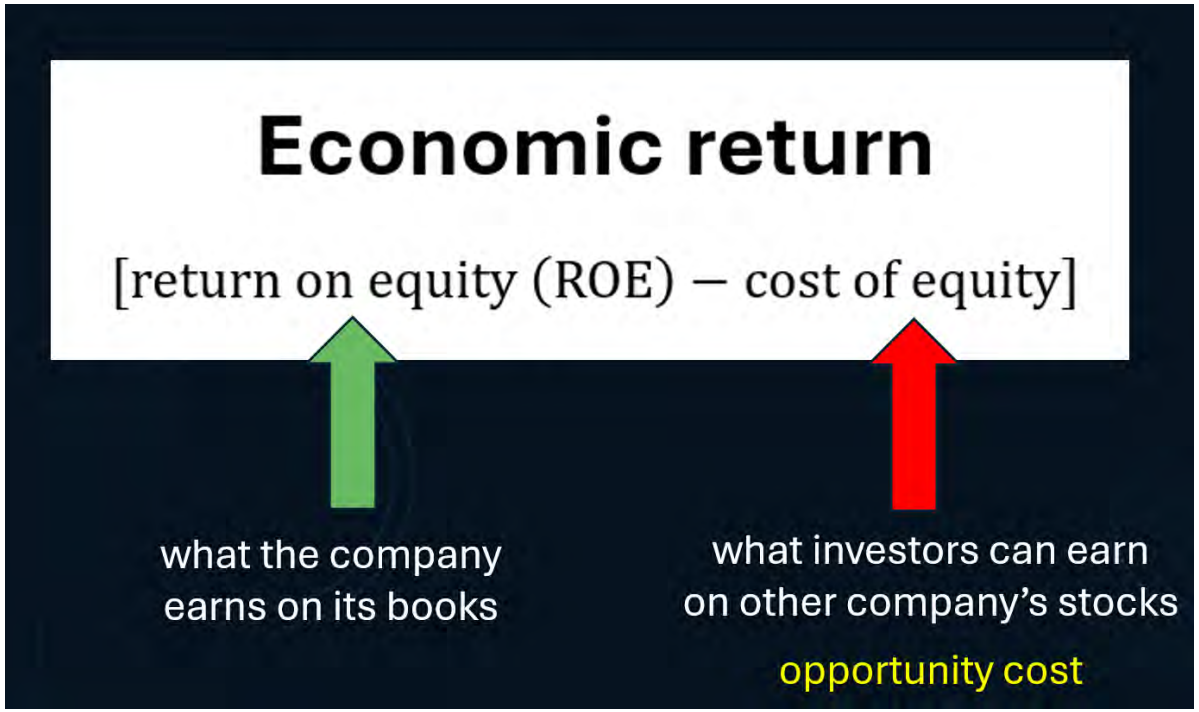
Practical Applications of Regulatory Finance in Rate Cases

Authorized Return on Equity - Background

Return on Equity is the investors' current opportunity cost of investing in the equity of a utility.

(Source: NARUC "The Interface between Utility Regulation and Financial Markets", by Branko Terzic, November 5, 2018. This is a citation to "Regulatory Finance: Utilities' Cost of Capital", by Rodger A. Morin.)

Authorized Return on Equity - Background



Cost of Equity is the investors' current opportunity cost of investing in any equity security of similar risk.

(Source: Steve Kihm's Presentation in this course.)

Authorized Return on Equity - Background

- *Bluefield Water Works & Improvement Company v. Public Service Commission of West Virginia*

(262 U.S. 679, 693 (1923))

- The Supreme Court said:

"The return should be **reasonably sufficient to assure confidence in the financial soundness** of the utility and should be **adequate**, **under efficient and economical management**, **to maintain and support the credit** and **enable it to raise the money necessary** for the proper discharge of its public duties. A rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally."

Authorized Return on Equity - Background

- *Federal Power Commission v. Hope Natural Gas Company*

  (320 U.S. 591, 603 (1944))

- The Supreme Court said:

"From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock.... By that standard the **return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks**. That return, moreover, should be ***sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital***."

Authorized Return on Equity - Estimation

(Source: NARUC "The Interface between Utility Regulation and Financial Markets", by Branko Terzic, November 5, 2018. Appendix A)

Models are based on the "Efficient Market Hypothesis" which postulates all relevant and knowable information is included in the price of a stock.

1) Discounted Cash Flow Models
2) Capital Asset Pricing Models
3) Risk Premium Models

Authorized Return on Equity - Estimation

Discounted Cash Flow Models ("DCF") are based on the "dividend discount model" of financial theory where the value (price) of a security is the discounted present value of all future cash flows. The DCF method inputs stock price and future dividends and solves for the discount.

(Source: NARUC "The Interface between Utility Regulation and Financial Markets", by Branko Terzic, November 5, 2018. Appendix A)

Authorized Return on Equity - Estimation

"The explanation of how this is happening begins with a fundamental truth: With unimportant exceptions, such as bankruptcies in which some of a company's losses are borne by creditors, ***the most that owners in aggregate can earn between now and Judgment Day is what their businesses in aggregate earn (emphasis added)***. True, by buying and selling that is clever or lucky, investor A may take more than his share of the pie at the expense of investor B. And, yes, all investors feel richer when stocks soar. But an owner can exit only by having someone take his place. If one investor sells high, another must buy high. For owners as a whole, there is simply no magic – no shower of money from outer space – that will enable them to extract wealth from their companies beyond that created by the companies themselves."

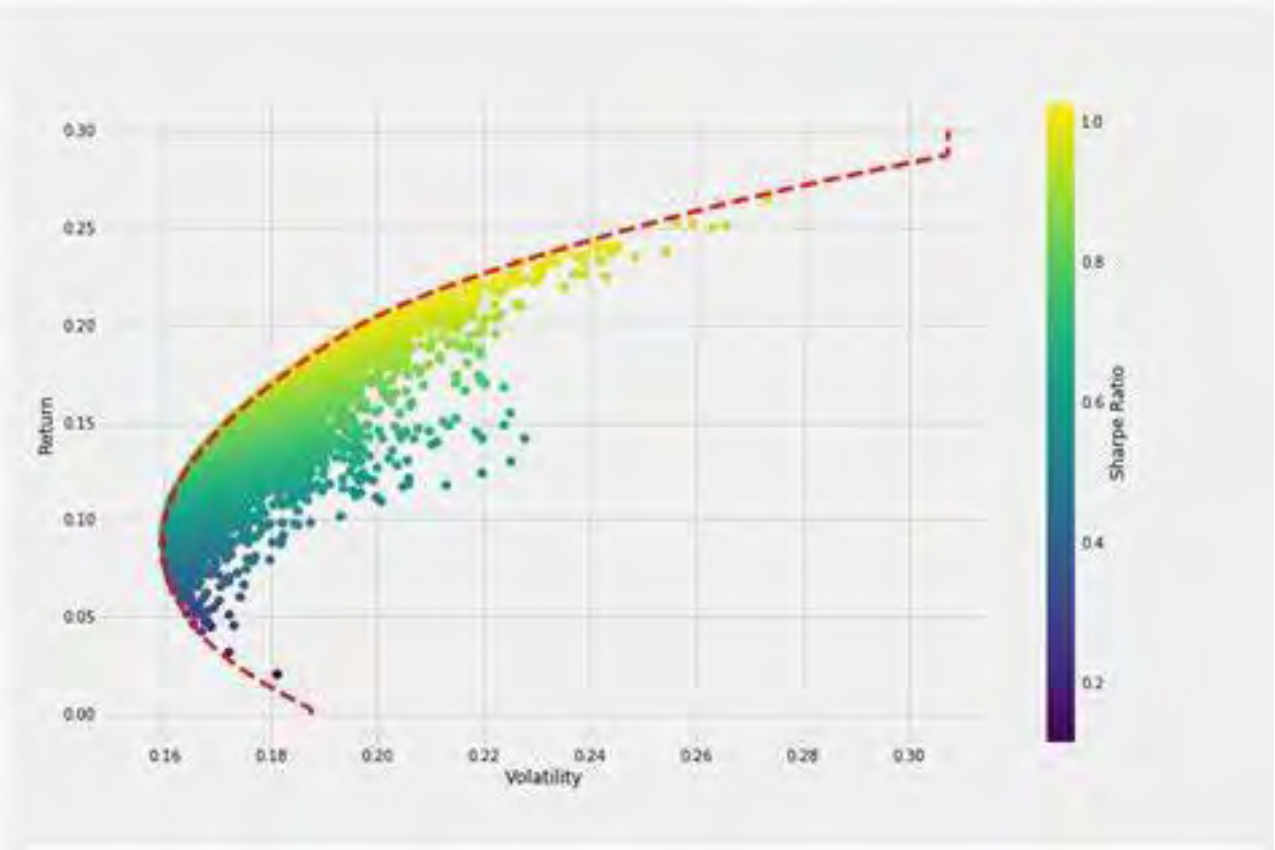
BERKSHIRE HATHAWAY INC.

$$P = \frac{D_0(1+g)^1}{(1+r)^1} + \frac{D_1(1+g)^2}{(1+r)^2} + \cdots + \frac{D_{n-1}(1+g)^n}{(1+r)^n}$$

(Source: Berkshire Hathaway Annual Letter to Shareholders for 2005 page 17)

Authorized Return on Equity - Estimation

Capital Asset Pricing Models ("CAPM") describe the relationship between a security's investment risk and its market rate of return to estimate a return comparable with market returns by securities that have similar risk.



(Source: NARUC "The Interface between Utility Regulation and Financial Markets", by Branko Terzic, November 5, 2018. Appendix A)

Authorized Return on Equity - Estimation

Traditional CAPM

$$r_s = R_f + [\beta \times (\overbrace{r_m - R_f}^{\text{risk premium}})]$$

OR

Fama/French Three Factor CAPM

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{i,m}(RPM_t) + \beta_{i,sml}(SML_t) + \beta_{i,hml}(HML_t) + \varepsilon_{i,t}$$

Source: Fama, Eugene F. and French, Kenneth R., The Capital Asset Pricing Model: Theory and Evidence (August 2003). Available at SSRN: https://ssrn.com/abstract=440920

Authorized Return on Equity - Estimation

Risk Premium Models ("RPM")

Are based on the proposition that common stocks are more risky than debt and that cost of equity is the cost of debt plus a risk premium.

$$k_e = k_d + (R_e - R_d)$$

*(Source: NARUC "*Cost of Capital and Capital Markets: A Primer for Utility Regulators *, by John D. Quackenbush, December 2019)*

Newfoundland Power – Case Study

Public Utilities Board
NEWFOUNDLAND & LABRADOR

Newfoundland Power ("NP") requested an average increase in customer rates of approximately 5.5% effective July 1, 2025, to recover its 2025 and 2026 revenue requirements on December 12, 2023. Based on a requested ROE of 9.85%..

Source: NP Application, Section 1, Page 1-4, Lines 3 and 4 and Page 3-1, Line 14

Newfoundland Power – DCF Model

Step 1: Select a Proxy Group for DCF Model

Figure 21: North American Electric Proxy Group

Company	Ticker
Algonquin Power & Utilities Corp	AQN
Canadian Utilities Limitedtd.	CU
Emera Inc.	EMA
Hydro One, Ltd.	H
Alliant Energy Corp.	LNT
American Electric Power Company	AEP
Duke Energy Corporation	DUK
Entergy Corporation	ETR
Evergy Inc.	EVRG
Eversource Energy	ES
NextEra Energy Inc.	NEE
OGE Energy Corp.	OGE
Pinnacle West Capital Corp.	PNW
Portland General Electric Company	POR

Figure 18: Canadian Proxy Group

Company	Ticker
Algonquin Power and Utilities Corp.	AQN
AltaGas Inc.	ALA
Canadian Utilities Limited	CU
Emera Inc.	EMA
Enbridge Inc.	ENB
Hydro One, Ltd.	H

Figure 20: U.S. Electric Proxy Group

Company	Ticker
Alliant Energy Corp.	LNT
American Electric Power Company	AEP
Duke Energy Corporation	DUK
Entergy Corporation	ETR
Evergy Inc.	EVRG
Eversource Energy	ES
NextEra Energy Inc.	NEE
OGE Energy Corp.	OGE
Pinnacle West Capital Corp.	PNW
Portland General Electric Company	POR

Source: NP Cost of Capital Report, Pages 29, 31, and 32.

Newfoundland Power – DCF Model

Step 2: Calculate Single Stage DCF for Proxies

90-DAY CONSTANT GROWTH DCF -- NORTH AMERICAN ELECTRIC PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Zacks EPS Growth	SNL EPS Growth	Value Line EPS Growth	First Call Growth	Average Growth Rate	Low DCF ROE	Mean DCF ROE	High DCF ROE
Algonquin Power & Utilities Corp.	AQN	$0.43	$8.17	5.31%	5.36%	3.00%	Negative	n/a	0.41%	1.71%	5.73%	7.06%	8.39%
Canadian Utilities Limited	CU	$1.79	$35.04	5.12%	5.16%	n/a	1.00%	n/a	1.92%	1.46%	6.15%	6.62%	7.09%
Emera Inc.	EMA	$2.76	$54.61	5.05%	5.23%	n/a	4.10%	13.00%	3.49%	6.86%	8.63%	12.09%	18.38%
Hydro One Ltd.	H	$1.19	$37.73	3.14%	3.23%	n/a	5.80%	n/a	5.33%	5.57%	8.56%	8.80%	9.03%
Alliant Energy Corporation	LNT	$1.81	$52.86	3.42%	3.54%	6.50%	6.00%	6.50%	7.00%	6.50%	9.53%	10.04%	10.54%
American Electric Power Company, Inc.	AEP	$3.32	$84.88	3.91%	4.02%	5.60%	6.00%	6.00%	5.20%	5.70%	9.21%	9.72%	10.03%
Duke Energy Corporation	DUK	$4.10	$92.45	4.43%	4.56%	6.10%	6.09%	5.00%	5.95%	5.79%	9.55%	10.35%	10.67%
Entergy Corporation	ETR	$4.28	$100.24	4.27%	4.37%	5.70%	6.90%	0.50%	6.60%	4.93%	4.78%	9.30%	11.32%
Evergy, Inc.	EVRG	$2.45	$59.17	4.14%	4.25%	5.20%	5.40%	7.50%	2.67%	5.19%	6.87%	9.44%	11.80%
Eversource Energy	ES	$2.70	$70.98	3.80%	3.92%	5.70%	6.05%	6.50%	6.70%	6.24%	9.61%	10.16%	10.63%
NextEra Energy Inc.	NEE	$1.87	$72.90	2.57%	2.68%	8.40%	8.75%	9.50%	8.80%	8.86%	11.07%	11.54%	12.19%
OGE Corp.	OGE	$1.66	$35.88	4.63%	4.73%	3.70%	2.80%	6.50%	negative	4.33%	7.49%	9.06%	11.28%
Pinnacle West Capital Corporation	PNW	$3.46	$80.17	4.32%	4.43%	6.50%	6.48%	2.50%	6.10%	5.40%	6.87%	9.83%	10.96%
Portland General Electric Company	POR	$1.90	$47.87	3.97%	4.09%	6.00%	6.80%	5.00%	5.90%	5.93%	9.07%	10.01%	10.90%
MEAN				4.15%	4.25%	5.67%	5.55%	6.23%	5.08%	5.32%	8.08%	9.57%	10.94%
Flotation Costs [13]											0.50%	0.50%	0.50%
											8.58%	10.07%	11.44%

Source: NP Cost of Capital Report, Exhibit JMC-4, Page 3 of 3.

Newfoundland Power – DCF Model

Step 4: Determine Nominal GDP Forecast for Multistage DCF Model

Figure 23: Estimates of Nominal GDP Growth[49]

Source	Canada	U.S.
Real GDP Growth	1.9%	1.8%
Inflation	2.1%	2.3%
Nominal GDP Growth	**4.04%**	**4.14%**

Source: NP Cost of Capital Report, Page 40

Newfoundland Power – DCF Model

Step 4: Calculate Multi- Stage DCF for Proxies

90-DAY MULTI-STAGE DCF -- NORTH AMERICAN ELECTRIC PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Company	Ticker	Annualized Dividend	Stock Price	Growth Rate, Years 1-5	Year 6	Year 7	Year 8	Year 9	Year 10	GDP Growth (perpetuity)	ROE
Algonquin Power & Utilities Corp.	AQN	$0.43	$8.17	1.71%	2.09%	2.48%	2.87%	3.26%	3.65%	4.04%	9.03%
Canadian Utilities Limited	CU	$1.79	$35.04	1.46%	1.89%	2.32%	2.75%	3.18%	3.61%	4.04%	8.76%
Emera Inc.	EMA	$2.76	$54.61	6.86%	6.39%	5.92%	5.45%	4.98%	4.51%	4.04%	10.56%
Hydro One Ltd.	H	$1.19	$37.73	5.57%	5.31%	5.06%	4.80%	4.55%	4.29%	4.04%	7.77%
Alliant Energy Corporation	LNT	$1.81	$52.86	6.50%	6.11%	5.71%	5.32%	4.93%	4.53%	4.14%	8.44%
American Electric Power Company, Inc.	AEP	$3.32	$84.88	5.70%	5.44%	5.18%	4.92%	4.66%	4.40%	4.14%	8.82%
Duke Energy Corporation	DUK	$4.10	$92.45	5.79%	5.51%	5.24%	4.96%	4.69%	4.42%	4.14%	9.48%
Entergy Corporation	ETR	$4.28	$100.24	4.93%	4.79%	4.66%	4.53%	4.40%	4.27%	4.14%	9.01%
Evergy, Inc.	EVRG	$2.45	$59.17	5.19%	5.02%	4.84%	4.67%	4.49%	4.32%	4.14%	8.94%
Eversource Energy	ES	$2.70	$70.98	6.24%	5.89%	5.54%	5.19%	4.84%	4.49%	4.14%	8.84%
NextEra Energy Inc.	NEE	$1.87	$72.90	8.86%	8.08%	7.29%	6.50%	5.72%	4.93%	4.14%	7.88%
OGE Corp.	OGE	$1.66	$35.88	4.33%	4.30%	4.27%	4.24%	4.21%	4.17%	4.14%	9.23%
Pinnacle West Capital Corporation	PNW	$3.46	$80.17	5.40%	5.19%	4.98%	4.77%	4.56%	4.35%	4.14%	9.21%
Portland General Electric Company	POR	$1.90	$47.87	5.93%	5.63%	5.33%	5.03%	4.74%	4.44%	4.14%	8.95%
MEAN				5.32%	5.12%	4.92%	4.72%	4.51%	4.31%	4.11%	8.92%
Flotation Costs [11]											0.50%
											9.42%

Source: NP Cost of Capital Report, Exhibit JMC-5, Page 3 of 3.

Newfoundland Power – DCF Model

Step 5: Compare DCF Model Results

Figure 24: 90-day Average DCF Results (including adjustment for flotation costs and financial flexibility)

Proxy Group	Constant Growth	Multi-Stage	Average
Canadian Utility	10.03%	10.18%	10.1%
U.S. Electric Utility	10.44%	9.38%	9.9%
North American Electric Utility	10.07%	9.42%	9.7%

Source: NP Cost of Capital Report, Page 41

Newfoundland Power – CAPM Model

Step 1: Calculate the Risk-Free Rate

Figure 25: Long-term Forecast for 10-Year Government Bond Yields 2024-2026[51]

	2024	2025	2026	Average
Canada	3.0%	3.2%	3.2%	**3.13%**
U.S.	3.5%	3.4%	3.4%	**3.43%**

Figure 26: Risk Free Rate

30-Year Risk Free Yield	Canada	U.S.
April 2023 Consensus Forecast Average 2024-2026 Forecasts	3.13%	3.43%
Average Daily Spread between 10-year and 30-year government bonds (2013-2023)	0.38%	0.54%
Sum	**3.52%**	**3.98%**

Source: NP Cost of Capital Report, Page 43

Newfoundland Power – CAPM Model

Step 2: Select Beta Coefficients for the Model

Figure 27: Value Line and Bloomberg Betas

	Value Line	Bloomberg
Canadian Group	0.78	0.87
U.S. Electric Utility Group	0.89	0.89
North American Electric Group	0.87	0.86

Source: NP Cost of Capital Report, Page 44

Newfoundland Power – CAPM Model

Step 3: Calculate Market Risk Premium Estimates

Figure 28: Market Risk Premia – Canada and U.S.

	Canadian MRP	U.S. MRP
Historical	5.62%	7.17%
Forward-Looking	4.85%	10.33%
Average	6.99%	

U.S. Market DCF Calculation as of August 31, 2023

	[1] Dividend Yield	[2] Dividend Yield x (1 + 0.50g)	[3] Expected Growth Rate (g)	[4] Secondary Market Investor Required Return	[13] Forecast US Government 30 Year Yield	[14] Equity Risk Premium
S&P 500 INDEX	1.93%	2.04%	12.26%	14.31%	3.98%	10.33%

Source: NP Cost of Capital Report, Page 46 and Exhibit JMC-7, Page 11 of 11.

Newfoundland Power – CAPM Model

Step 4: Calculate the CAPM Model for the Proxy Group

Capital Asset Pricing Model - Average MRP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
North American Electric Proxy Group	Ticker	Bloomberg	Value Line	Average Beta	Risk Free Rate	Average Market Risk Premium	Basic CAPM Calculation	Flotation Cost	Total CAPM
Algonquin Power & Utilities Corp.	AQN	0.99	n/a	0.99	3.52%	6.99%	10.44%	0.50%	10.94%
Canadian Utilities Limited	CU	0.84	n/a	0.84	3.52%	6.99%	9.39%	0.50%	9.89%
Emera Inc.	EMA	0.70	0.70	0.70	3.52%	6.99%	8.39%	0.50%	8.89%
HydroOne Inc.	H	0.66	n/a	0.66	3.52%	6.99%	8.15%	0.50%	8.65%
Alliant Energy Corporation	LNT	0.87	0.85	0.86	3.98%	6.99%	9.99%	0.50%	10.49%
American Electric Power Company, Inc.	AEP	0.83	0.75	0.79	3.98%	6.99%	9.48%	0.50%	9.98%
Duke Energy Corporation	DUK	0.81	0.85	0.83	3.98%	6.99%	9.77%	0.50%	10.27%
Entergy Corporation	ETR	0.94	0.90	0.92	3.98%	6.99%	10.42%	0.50%	10.92%
Evergy, Inc.	EVRG	0.87	0.90	0.88	3.98%	6.99%	10.15%	0.50%	10.65%
Eversource Energy	ES	0.88	0.90	0.89	3.98%	6.99%	10.20%	0.50%	10.70%
NextEra Energy Inc.	NEE	0.89	0.95	0.92	3.98%	6.99%	10.41%	0.50%	10.91%
OGE Corp	OGE	1.00	1.00	1.00	3.98%	6.99%	10.95%	0.50%	11.45%
Pinnacle West Capital Corporation	PNW	0.92	0.90	0.91	3.98%	6.99%	10.34%	0.50%	10.84%
Portland General Electric Company	POR	0.86	0.90	0.88	3.98%	6.99%	10.12%	0.50%	10.62%
MEAN		0.86	0.87	0.86			9.87%		10.37%

Source: NP Cost of Capital Report, JMC-8.1, Page 2 of 2

Newfoundland Power – CAPM Model

Step 5: Compare CAPM Model Results

Figure 29: CAPM Results

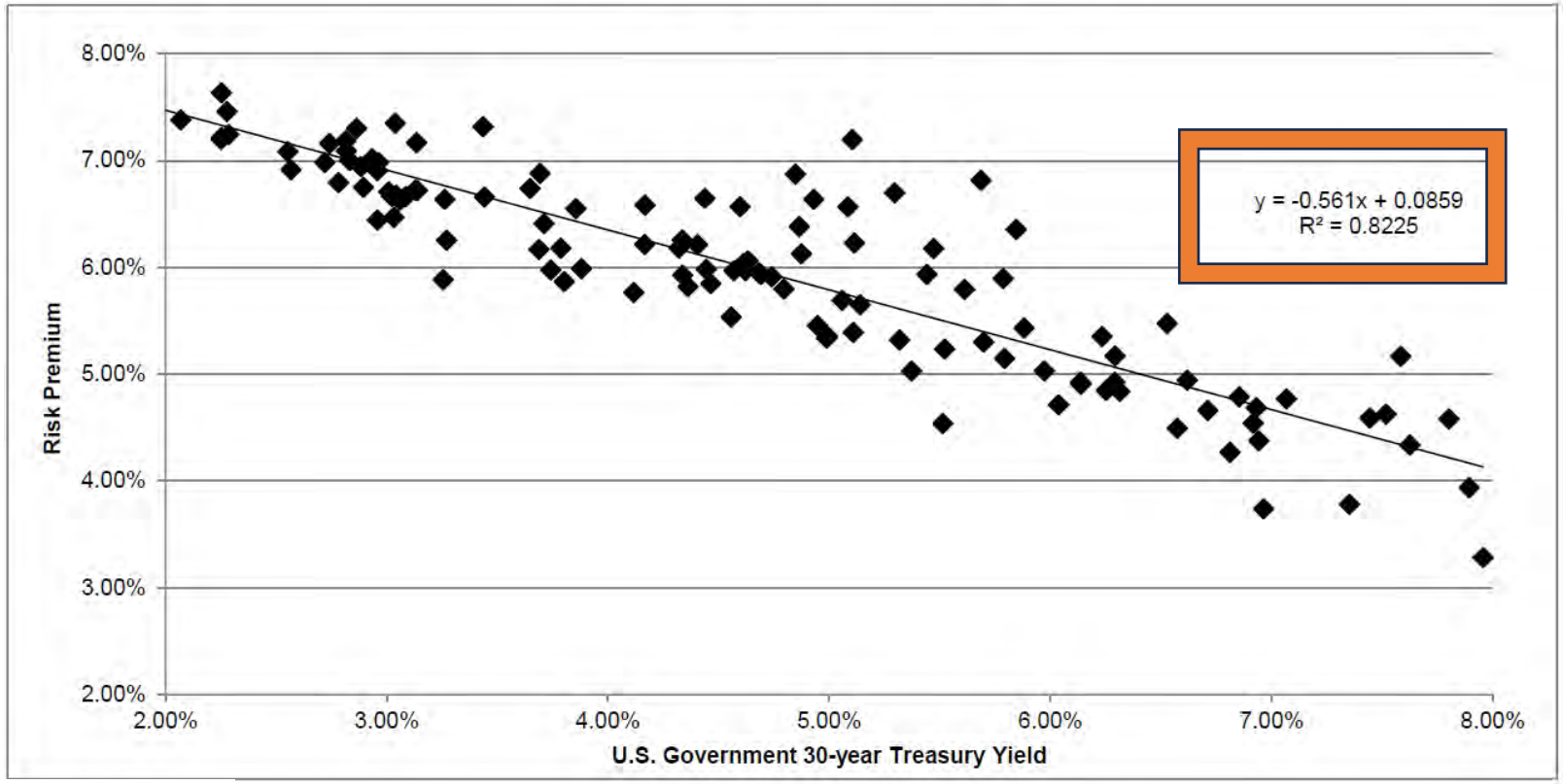
	Average MRP	Historical MRP
Canadian Utilities	10.09%	9.57%
U.S. Electric Utilities	10.68%	10.15%
North American Electric Utilities	10.37%	9.86%

Source: NP Cost of Capital Report, Page 47

Newfoundland Power – Risk Premium Model

Step 1: Calculate the relationship between historically authorized ROEs and Long-Term US Treasury Bond Yields.

Figure 30: Risk Premium Results



Source: NP Cost of Capital Report, Page 49

Newfoundland Power – Risk Premium Model

Step 2: Use Line Estimate with US Treasury Yield forecasts to derive RPM results

Figure 31: Risk Premium Results Using 30-Year Treasury Yield

	Using 30-Day Average Yield on 30-Year Treasury Bond	Using Q4 2023–Q4 2024 Forecast for Yield on 30-Year Treasury Bond[59]	Using 2025-2029 Forecast for Yield 30-Year Treasury Bond[60]
Yield	4.21%	4.04%	3.80%
Risk Premium	6.23%	6.33%	6.46%
Resulting ROE	10.44%	10.37%	10.26%

$y = -0.561x + 0.0859$

$R^2 = 0.8225$

Source: NP Cost of Capital Report, Page 50

Newfoundland Power – ROE Recommendation

NP requested an ROE of 9.85%

Figure 43: Summary of Alternative Results

	CANADIAN UTILITY PROXY GROUP	U.S. ELECTRIC PROXY GROUP	NORTH AMERICAN ELECTRIC PROXY GROUP
MULTI-STAGE DCF	10.17%	9.38%	9.42%
HISTORICAL CAPM	9.57%	10.15%	9.86%
RISK PREMIUM		10.26%	10.26%
AVERAGE	**9.87%**	**9.93%**	**9.85%**

Figure 42: Summary of Results[117]

	CANADIAN UTILITY PROXY GROUP	U.S. ELECTRIC PROXY GROUP	NORTH AMERICAN ELECTRIC PROXY GROUP
CONSTANT GROWTH DCF	10.03%	10.44%	10.07%
MULTI-STAGE DCF	10.17%	9.38%	9.42%
AVERAGE CAPM	10.09%	10.68%	10.37%
RISK PREMIUM		10.26%	10.26%
AVERAGE	**10.10%**	**10.19%**	**10.03%**

Source: NP Cost of Capital Report, Page 85 and 86

Office of the Consumer Advocate – NP Case Study

Public Utilities Board
NEWFOUNDLAND & LABRADOR

Newfoundland
Labrador

The Office of the Consumer Advocate of Newfoundland and Labrador ("OCA") intervened in NP's 2025/2026 general rate case proceeding. On April 14, 2024, the OCA filed testimony recommending an ROE of 7.70%.

Source: OCA Finance Expert Witness Testimony, Appendix E, Page 14

Newfoundland Power – OCA DCF Model

Step 1: Select a Proxy Group for DCF Model

Duke Energy
Allele Inc.,
Eversource
OGE Energy
Pinnacle West
Evergy
Alliant
American Electric
Exelon
Entergy
Southern
POR
Nextera

Source: OCA Finance Expert Witness Testimony, Schedule 13 and Appendix A.

Newfoundland Power – OCA DCF Model

Step 2: Calculate DCF for Proxies

	5 year Growth Past	Future	#Analysts	Yield	K (Estg)	ROE	Retention	SUSTG	K	PBR	DPS	EPS	Beta
Duke Energy	2.41	6.81	13	4.48	***11.60***	8.48	0.24	2.04	***6.62***	1.48	4.06	5.35	0.48
Allele Inc.,	2.49	8.1	7	4.82	***13.31***	5.3	0.37	1.96	***6.87***	1.15	2.71	4.3	0.77
Eversource	7.31	3.25	12	4.68	***8.08***	-2.9	3.13	-9.07	***-4.81***	1.42	2.7	-1.27	0.58
OGE Energy	0.14	-12.34	10	5.06	***-7.90***	9.34	0.20	1.85	***7.00***	1.46	1.66	2.07	0.72
Pinnacle West	16.1	5.9	15	4.99	***8.90***	7.7	0.34	2.59	***7.71***	1.23	2.78	4.19	0.48
Evergy	14.68	2.5	8	4.95	***7.57***	7.315	0.17	1.26	***6.27***	1.17	2.45	2.96	0.56
Alliant	6.95	6.55	6	3.82	***10.72***	11 .41	0.35	3.94	***7.91***	1.79	1.82	2.78	0.55
American Electric	6.43	4.2	18	3.52	***7.87***	8.96	0.19	1.73	***5.31***	1.68	3.52	4.36	0.5
Exelon	-6.82	4.2	16	4.04	***8.41***	9.22	0.38	3.55	***7.73***	1.38	1.44	2.34	0.6
Entergy	3.12	6.8	16	4.34	***11.44***	16.69	0.61	10.16	***14.95***	1.85	4.34	11.1	0.71
Southern	3.48	1.39	8	4.2	***5.65***	11.03	0.23	2.56	***6.87***	2.3	2.78	3.62	0.5
POR	1.38	12.5	7	4.68	***17.77***	7.48	0.19	1.44	***6.19***	1.22	1.88	2.33	0.6
Nextera	9.57	7.81	13	3.39	***11.46***	11.58	0.48	5.56	***9.14***	2.38	1.87	3.6	0.52
Average	5.17	4.44	11.46	4.38	8.84	8.59	0.53	2.28	6.75	1.58	2.62	3.67	0.58
Median	3.48	5.90	12.00	4.48	8.90	8.96	0.34	2.04	6.87	1.46	2.70	3.60	0.56

All day based on Yahoo (Feb 27, 2024) which sources its data from S&P
based on Morningstar forecast not S&P

Source: OCA Finance Expert Witness Testimony, Schedule 13.

Newfoundland Power – OCA DCF Model

Step 3: Determine DCF Model Results

Using the DCF model to estimate the market's required return on equity (equity cost) would indicate a value of 8.10 to 8.75% for Canada and the 6.8-9.6% for the US. These numbers look more accurate than they really are but considering the high-end values and a 2% long run inflation forecast imply long run real equity returns of 6.6-7.4% broadly consistent with long run experience since 1871 in the US.

DCF & Other return estimates:

Canadian DCF equity market return:	8.10-8.75%
US DCF Equity market return:	6.84-9.6%
Average Canada ROE since 1980:	9.97%
Asset Manager long run equity returns:	7.00-9.00%
DCF Equity cost U.S electric utilities	6.8-6.9%

Source: OCA Finance Expert Witness Testimony, page 72 and Appendix D, Page 12

Newfoundland Power – OCA CAPM Model

Step 1: Calculate the Risk-Free Rate

The latest RBC forecast (March 2024) is below.

Interest rate outlook

Policy rates and government bond yields, end of period

	Q1-I3	Q2-2I	QI-23	Q4-23	Q1-I4	Q2-I4	Q1-I4	Qi-24	01-25	Q2-25	QI-25	Q4-2S
Canada												
Overnight rate	4.50	4.75	5.00	5.00	5.00	4.75	4.25	4.00	3.75	3.25	3.00	3.00
Three-month	4.34	4.90	5.07	5.04	4.95	4.65	4.10	395	3.60	3.20	3.00	3.00
Two-year	J.74	4.58	4.87	3.88	4.20	3.80	3.50	3.25	2.90	2.75	2.90	3.00
five-year	J.02	3.68	4.25	3.17	3.45	3.30	J.10	3.00	2.85	290	2.90	J.00
10-year	2.90	3.26	4.03	3.10	3.40	3.25	3.10	3.00	2.90	2.95	3.00	3.10
JO-year	3.02	3.09	3.81	3.02	3.35	3.25	3.15	3.05	3.00	1.05	J.10	3.15
United States												
Fed funds midpoint	4.88	5.13	5.38	5.38	5.38	5.U	4,88	4.63	4.63	4.38	4.38	4.13
Three-month	4.85	5.43	5.55	5,40	5.33	5.01	4.78	4.53	4.58	4.33	4.31	4.08
Two-year	4.06	4.87	5.03	4.23	4.60	4.50	4.35	4.30	4.25	4.20	4.20	4.25
fiv year	3.60	4.H	4.60	3.84	4.15	4.05	3.95	3.95	3.95	4.00	4.10	4.20
10-year	3.48	3.81	4.59	3.88	4.15	4.05	3.95	4.00	4.05	4.10	4.20	4.30
30-year	3.67	3.85	4.73	4.03	4,30	4.20	4.15	4.20	4.25	4.30	4.35	4.40

The OCA witness utilized a 3.8% long-term bond yield as a minimum and the RBC forecast was lower than this estimate through 2025.

Source: OCA Finance Expert Witness Testimony, Appendix E, Page 14

Newfoundland Power – OCA CAPM Model

Step 2: Select Beta Coefficient for the Model

From this type of analysis, I have generally set the generic risk assessment for a Canadian utility in a beta range of 0.45-0.55. The high end of this range is slightly less than the recent value for CU one of the "purest" Canadian utilities, while the low end is a generous estimate based on the impact of the return on the long Canada bond on beta estimates for the TSX utility index. Given the marginal increases in the betas, particularly for some US electric UHCs I would tend to be conservative and increase my normal range to 0.50-0.60 with a mid-point of 0.55 which has historically been slightly about the grand mean of the utility betas of 0.52 as estimated in 2001 before the NEB.

Source: OCA Finance Expert Witness Testimony, Appendix C, Page 17 and 18

Newfoundland Power – OCA CAPM Model

Step 3: Calculate Market Risk Premium Estimates

All else constant, this swing of over 1.0% in the Canadian bond yield versus that in the US would raise the estimate of the Canadian equity market risk premium simply because it is now over a lower Canadian bond yield. *As a result, although my direct estimate of the Canadian market risk premium is 4.87% from 1926, I judge it reasonable to adjust this upwards for the changes in the long Canada bond yield relative to that in the US and these other changes. I therefore judge a reasonable range for the historic market risk premium to be 5.5-6.0%.*

Booth historic range: 5.5%-6.0% mid point:	5.75%
Duff and Phelps/Kroll (US):	5.5%
Damodaran (US):	4.6%
Fernandes survey:	5.7-6.0%
Credit Suisse:	4.7%

Source: OCA Finance Expert Witness Testimony, Appendix B, Pages 10 and 14.

Newfoundland Power – OCA CAPM Model

Step 5: Compare CAPM Model Results

Risk Premium

	Low	High
Forecast long Canada bond yield	3.80	3.80
Credit risk adjustment	0.23	0.23
Utility risk premium	2.75	3.60
Adjustment to ROE	0.50	0.50
Estimate	***7.28***	***8.13***

Note: The "Utility risk premium" is the MRP low and high scaled by the low and high estimates of beta.

Source: OCA Finance Expert Witness Testimony, page 72

Newfoundland Power – OCA ROE Recommendation

Consistent with the above data, I recommend a fair return for a ***generic*** Canadian utility to be 7.70%.

Source: OCA Finance Expert Witness Testimony, page 72

Authorized Equity Layer - Background

All sources of investor-supplied capital are typically included in the **capital structure**. Investor-supplied capital includes long-term debt, short-term debt, preferred stock, and common equity. Typically, most utilities have long-term debt and common equity outstanding, while only some utilities have short-term debt and preferred stock outstanding.

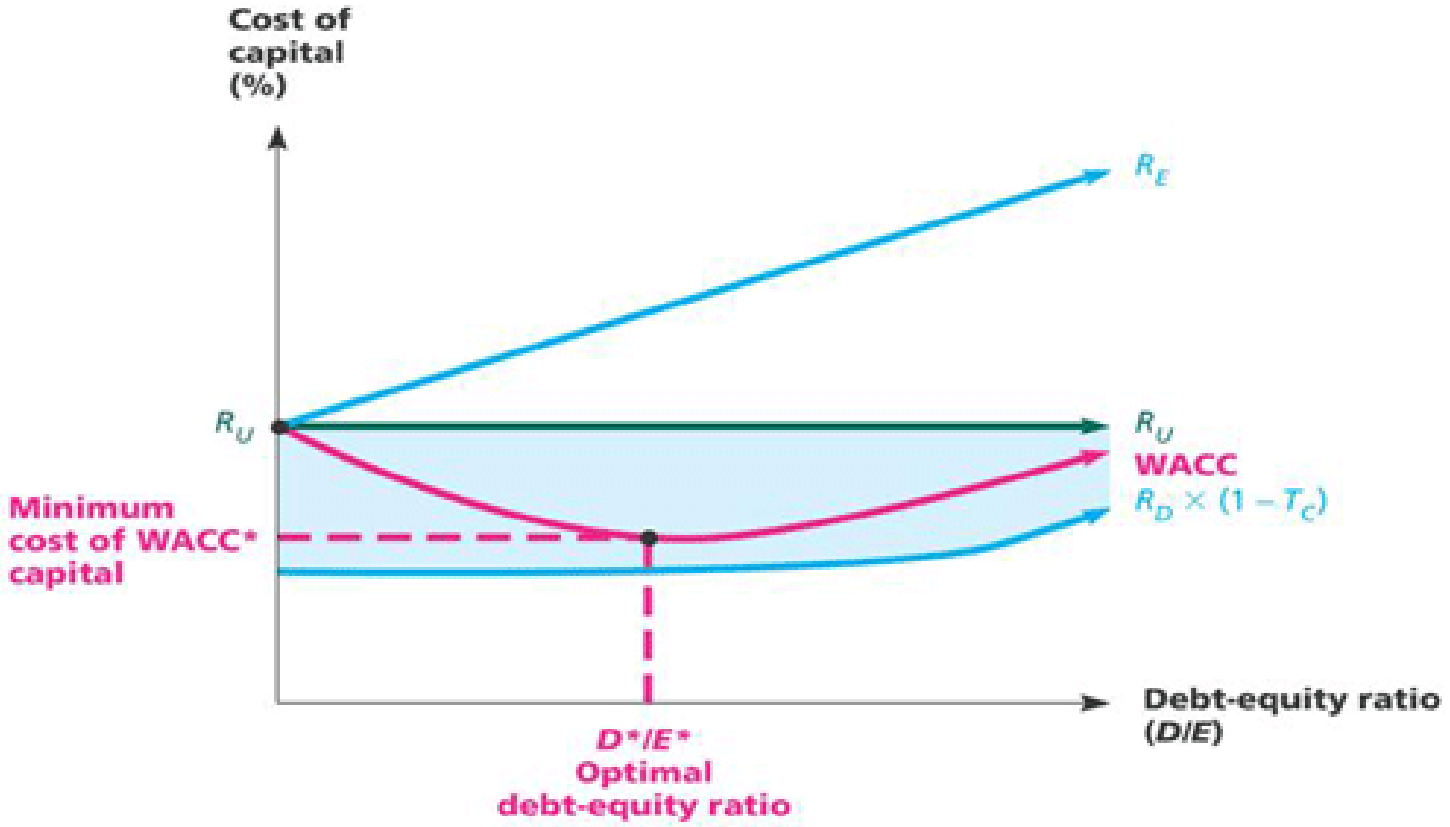
*(Source: NARUC "*Cost of Capital and Capital Markets: A Primer for Utility Regulators *, by John D. Quackenbush, December 2019.)*

Authorized Equity Layer - Background

- Actual capital structure ratios are generally used for a utility that has market-traded stock and/or debt directly issued to investors.
- Parent companies may have significant non-utility operations of different risk that may render the use of the parent company capital structure inappropriate.
- Hypothetical capital structures can be useful if the utility and/or the parent does not have an interface with the capital marketplace or the capital structure ratios are difficult to determine or significantly deviate from standards of comparison.

*(Source: NARUC "*Cost of Capital and Capital Markets: A Primer for Utility Regulators *, by John D. Quackenbush, December 2019.)*

Authorized Equity Layer - Background



Utility management's goal is to manage the capital structure such that the **WACC is minimized**. Financial theory indicates that an optimal capital structure range exists that will minimize the WACC, but, in practice, it is very difficult to pinpoint optimal capital structure ratios with any degree of accuracy.

*(Source: NARUC "*Cost of Capital and Capital Markets: A Primer for Utility Regulators *, by John D. Quackenbush, December 2019.)*

Authorized Equity Layer - Background

Capital Structure is about leverage and risk.

- Can the business meet its future obligations?
- How much can assets fall in value before common equity is impaired?

Newfoundland Power – Case Study

Public Utilities Board
NEWFOUNDLAND & LABRADOR

Newfoundland Power ("NP") requested an average increase in customer rates of approximately 5.5% effective July 1, 2025, to recover its 2025 and 2026 revenue requirements on December 12, 2023. Based on a requested an Equity Layer of 45%.

Source: NP Application, Section 1, Page 1-4, Lines 3 and 4 and Page 3-1, Line 14

Newfoundland Power – Business Risks

Risk 1: NP is a relatively small utility company

Figure 36: Small Size of Newfoundland Power 2022 Retail Electric Customers

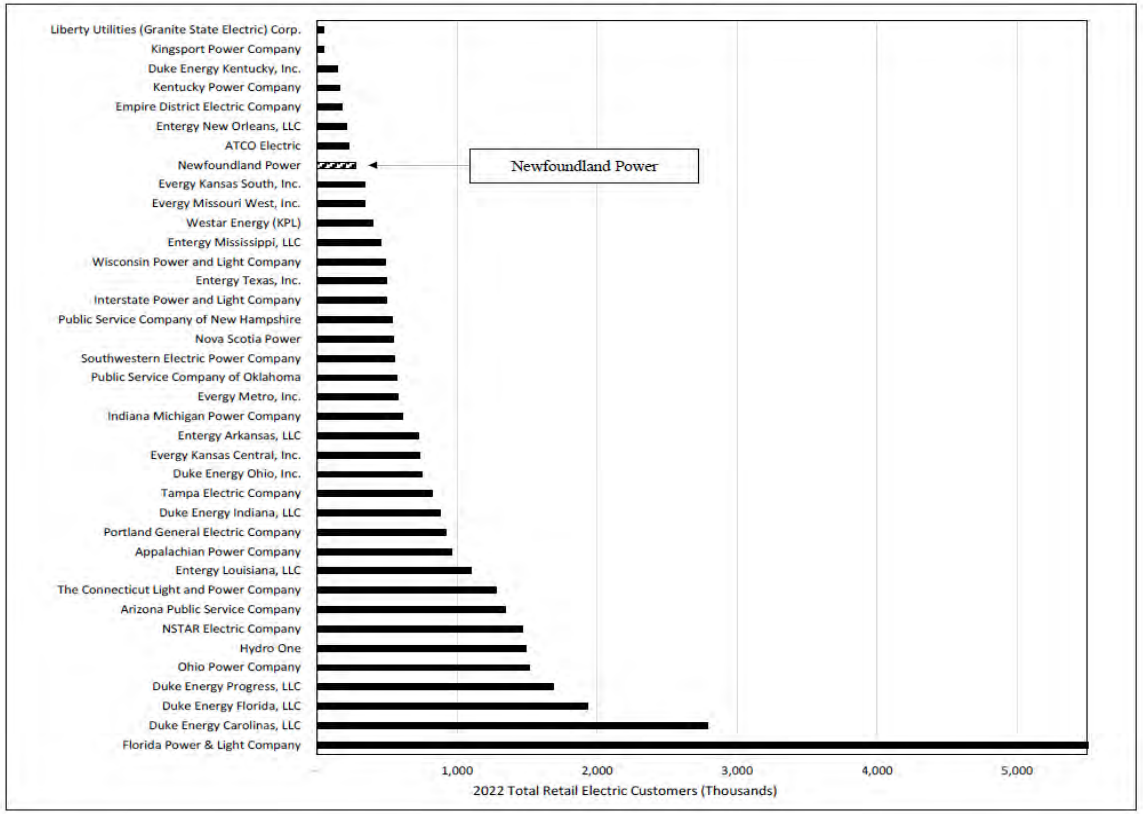
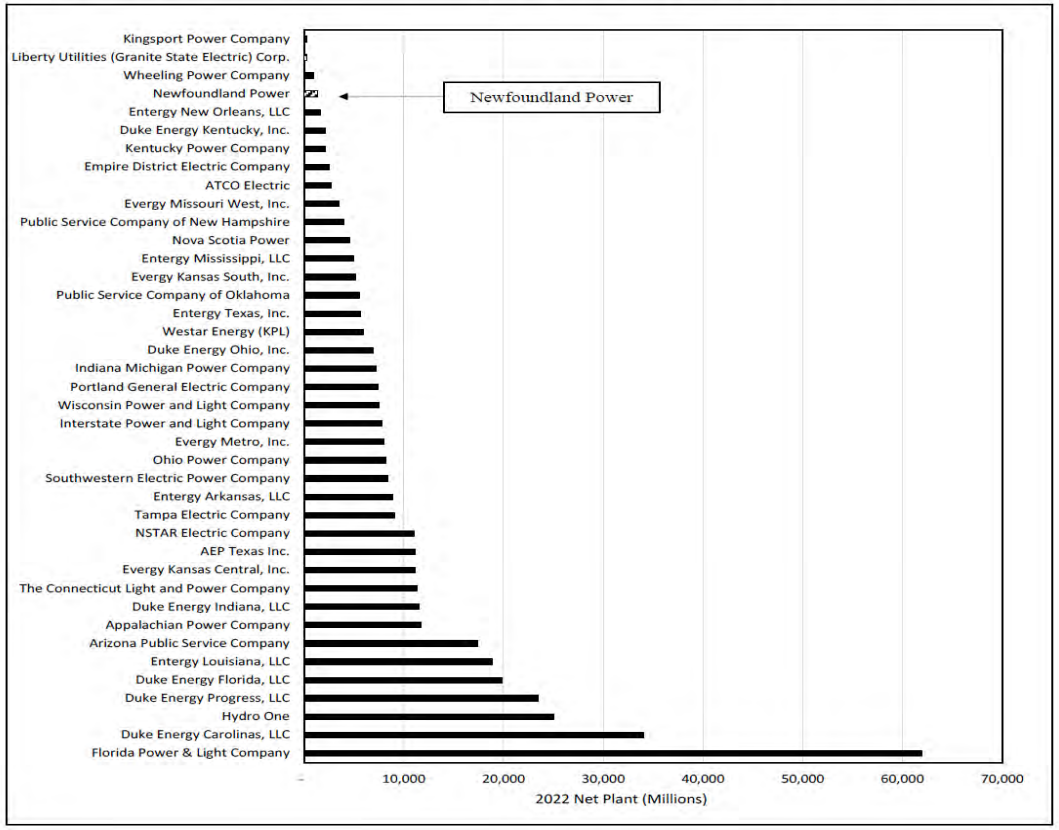


Figure 37: Small Size of Newfoundland Power 2022 Net Property, Plant and Equipment

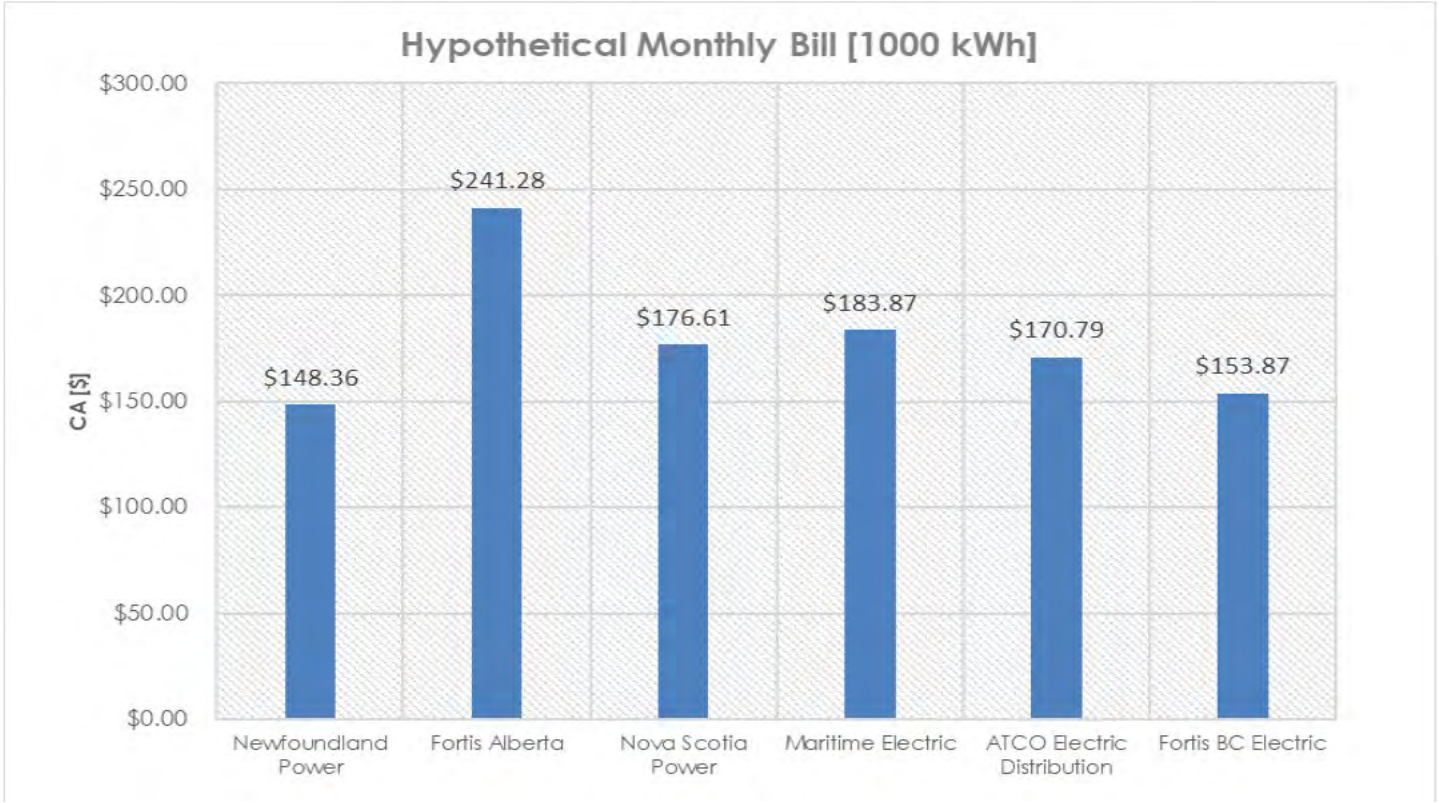


Source: NP Cost of Capital Report, Pages 61, 62, and 83.

Newfoundland Power – Business Risks

Risk 2: Increasing power supply costs and upward pressure on customer bills

Figure 39: Residential Electricity Rate Comparison



Source: NP Cost of Capital Report, Pages 72 and 73.

Newfoundland Power – Business Risks

Risk 3: Service territory macroeconomic and demographic trends

7

Figure 40: Key Economic Indicators – NL and Other Provinces[105]

	NL	ALB	BC	NS	ONT	PEI	QC
GDP Growth	1.0%	2.0%	2.0%	1.5%	1.9%	1.7%	1.5%
Labour Force	(0.7%)	1.4%	1.1%	0.6%	1.0%	1.0%	0.3%
Employment	(0.6%)	1.4%	1.1%	0.6%	1.0%	1.0%	0.3%
Disposable Inc.	1.3%	3.7%	3.5%	2.9%	3.2%	3.6%	2.2%
Retail Sales	2.4%	2.7%	3.4%	2.3%	1.9%	2.1%	2.7%
Housing Starts	(11.7%)	(0.5%)	(1.8%)	(6.6%)	(0.9%)	(3.0%)	(9.6%)

Source: NP Cost of Capital Report, Pages 74 and 75.

Newfoundland Power – Financial Risks

NP notes that its financial risks with the requested 45 percent equity layer to the North American Proxy group.

Figure 35: 2022 Moody's Credit Metrics Comparison

Credit Metric	NPI	Canadian	U.S. Electric
Debt to Capitalization	48.5%	56.0%	53.2%
CFO pre W/C + Interest / Interest	4.40	3.65	6.79
CFO pre W/C / Debt	17.4%	10.1%	15.2%
CFO pre W/C – dividends / Debt	13.2%	6.3%	10.8%

Source: NP Cost of Capital Report, Pages 57 and 83.

Office of the Consumer Advocate – NP Case Study

Public Utilities Board
NEWFOUNDLAND & LABRADOR

Newfoundland Labrador

The Office of the Consumer Advocate of Newfoundland and Labrador ("OCA") intervened in NP's 2025/2026 general rate case proceeding. On April 14, 2024, the OCA filed testimony recommending an Equity Layer of 40%.

Source: OCA Finance Expert Witness Testimony, Appendix E, Page 14

Newfoundland Power – OCA Business Risks

The OCA explains that a 40% equity layer for NP is reasonable because utilities have **very low business risk** for the following reasons:

1) Reserve borrowing power by being able to return to the regulator for rate adjustments.
2) Minuscule bankruptcy/ distress costs.
3) Hard tangible assets that are easy to borrow against.

Source: OCA Finance Expert Witness Testimony, Page 108.

Newfoundland Power – OCA Financial Risks

The OCA explains that table 11 (right) reflects that Alberta Utilities can maintain a 2.1x EBIT Coverage Ratio at a 30% equity layer.

Based on the chart, a 2.1x EBIT Coverage Ratio satisfies the new issue coverage ratio in NP's trust deed to issue first mortgage bonds.

At a 45% equity layer, the NP 3.2x EBIT Coverage Ratio would exceed normal levels for a Canadian utility.

Table 11. Credit metrics compared to equity ratios – Commission calculations – distribution utilities – income tax rate of 23 per cent (27 per cent for 2018 GCOC decision)

	EBIT coverage		FFO coverage		FFO/debt (%)	
Equity ratio (%)	2023 GCOC decision	2018 GCOC decision	2023 GCOC decision	2018 GCOC decision	2023 GCOC decision	2018 GCOC decision
30	2.1	2.0	3.8	3.4	11.9	11.6
31	2.2	2.0	3.9	3.5	12.2	11.9
32	2.2	2.1	4.0	3.6	12.5	12.2
33	2.3	2.2	4.0	3.6	12.8	12.5
34	2.4	2.2	4.1	3.7	13.2	12.8
35	2.4	2.3	4.2	3.8	13.5	13.2
36	2.5	2.3	4.3	3.8	13.8	13.5
37	2.6	2.4	4.4	3.9	14.2	13.8
38	2.6	2.4	4.4	4.0	14.6	14.2
39	2.7	2.5	4.5	4.1	15.0	14.6
40	2.8	2.6	4.6	4.1	15.4	14.9
41	2.9	2.6	4.7	4.2	15.8	15.3
42	2.9	2.7	4.8	4.3	16.2	15.7
43	3.0	2.8	4.9	4.4	16.6	16.2
44	3.1	2.9	5.0	4.5	17.1	16.6
45	3.2	2.9	5.1	4.6	17.5	17.0

Source: OCA Finance Expert Witness Testimony, Page 115 and Schedule 13.

Newfoundland Power – What Happened

Public Utilities Board
NEWFOUNDLAND & LABRADOR

The NP rate case is pending a decision from the Public Utilities Board, as of this writing. There appears to be a partial settlement of issues in this case; however, ROE and Capital Structure do not appear to be part of the settlement agreement.

Source: NP Application, Section 1, Page 1-4, Lines 3 and 4 and Page 3-1, Line 14

Perspectives on Regulatory Finance in Rate Cases

Perspectives on Regulatory Finance in Rate Cases

Typical Parties in a contested proceeding:

1) The Applicant
2) Consumer Advocates
3) Industrial Customer Groups
4) Environmental Advocacy Groups
5) *Commission Staff

Perspectives on Regulatory Finance in Rate Cases

Applicant Seeking Rate Relief:

1) Company Specific Shareholder Association
2) State or Jurisdiction Specific Shareholder Associations

Perspectives on Regulatory Finance in Rate Cases

Consumer Advocate Examples:

1) Citizens Utility Board
2) Attorney General
    1) Office of Consumer Council
    2) Office of Consumer Advocate
3) Group Specific Advocacy Groups
    1) Age related
    2) Geographic Specific

Perspectives on Regulatory Finance in Rate Cases

Industrial Customer Groups:

1) State-wide Industrial Customer Advocates
2) Government Agencies
3) Universities
4) Large, energy-intensive individual corporate customers
5) Municipality-related Associations (e.g. public schools)

Perspectives on Regulatory Finance in Rate Cases

Environmental Advocacy Groups:

1) National Advocacy Groups
2) State-wide Advocacy Groups
3) Local Advocacy Groups

Perspectives on Regulatory Finance in Rate Cases

Commission Staff

1) Working on behalf of the Commission
2) Isn't always a "party" to the case
3) Working to ensure a well-developed and accurate record for the Decision Makers

Regulatory Finance Perspectives – CA Case Study

CALIFORNIA

Public Utilities Commission

This proceeding addresses PG&E's, SCE's, SoCalGas's, and SDG&E's test year 2023 cost of capital. The following issues impacting the four Applicants are in scope before the Commission:

- The appropriate capital structure;
- The appropriate cost of long term debt;
- The appropriate cost of preferred stock;
- The appropriate cost of common equity;
- The appropriate rate of return on the utility rate base; and
- Additional issues not discussed herein.

Source: CPUC Decision 22-12-031 December 15, 2022

Regulatory Finance Perspectives – CA Case Study

The return on equity (ROE) and the cost of equity…

Alternative Rate or Return Concepts and Their Implications for Utility Regulation

Author(s): Ezra Solomon

Source: *The Bell Journal of Economics and Management Science*, Spring, 1970, Vol. 1, No. 1 (Spring, 1970), pp. 65-81

Published by: RAND Corporation

Stable URL: https://www.jstor.org/stable/3003023

(Source: Steve Kihm's Presentation in this course.)

California 2023 Test Year Cost of Capital – DCF Models

	PG&E	SCE	SoCalGas	SDG&E
Utility	7.50% - 10.20%	9.30% - 10.80%	8.80%	8.81%
FEA	8.25% – 9.25%	8.50% - 9.50%		8.50% - 9.50%
Cal Advocates	8.75%-8.90%	8.90%	8.75%	8.75%-8.90%
Wild Tree	7.92% - 8.02%	7.92% - 8.02%		7.92% - 8.02%
PCF			5.83%	5.98%
EDF[48]	7.50% - 8.40%	8.40%	8.80%	9.76%
EPUC/IS/TURN	9.20%	9.20%	9.20%	9.20%
UCAN				9.34% - 9.39%

Each party utilized different subjective inputs into their various DCF models. The table above summarizes the simple average result of different versions of the DCF model calculated by the individual parties using subjective inputs.

Source: CPUC Decision 22-12-031 December 15, 2022, Page 21.

California 2023 Test Year Cost of Capital – DCF Model

Proxy Group Arguments:

In the record of this proceeding, there tends to be a high level of overlap between the proxy groups proposed by the applicants and the proxy groups put forth by the intervenors.

- SoCalGas's witness employed an analysis of six investment grade gas holding companies
  - EPUC/IS/TURN and PCF both adopted the proxy group put forth by SoCalGas's witness

Source: CPUC Decision 22-12-031 December 15, 2022, Pages 15-18.

California 2023 Test Year Cost of Capital – DCF Model

Proxy Group Arguments (continued):

- PG&E's witness analyzed regulated electric utilities, regulated gas local distribution companies and water companies, and a combination of all companies in the three industries
- SCE's witness considered two subgroups composed of companies focused on the provision of electricity to end users and companies focused on the provision of natural gas or water utility services to end customers
- SDG&E's witness employed an analysis of 20 investment-grade, dividend-paying electric and combination electric/gas utilities' parent companies

Source: CPUC Decision 22-12-031 December 15, 2022, Pages 15-18.

California 2023 Test Year Cost of Capital – DCF Model

Proxy Group Arguments (continued):

- Cal Advocates' witness developed his own proxy group that consists of nine natural gas utilities with different selection criteria
  - Chesapeake Utilities Corporation failed SoCalGas's witness's criteria because it did not have an investment grade credit or bond rating
  - South Jersey Industries Incorporated and Southwest Gas Corporation, gas companies engaged in recent acquisition transaction activity

- Cal Advocates' electric proxy group includes twenty-three companies.

Source: CPUC Decision 22-12-031 December 15, 2022, Pages 15-18.

California 2023 Test Year Cost of Capital – DCF Model

Proxy Group Arguments (continued):

- EPUC/IS/TURN relied on the same electric and gas/water proxy groups as those developed by SCE's witness, with some noted exceptions
  - Excluded from this witness's analysis were Chesapeake Utilities Corporation, Artesian Resources Corp., Global Water Resources, York Water Company, American Electric Power Company, Inc., MGE Energy, Inc., PPL Corporation, and Sempra

Source: CPUC Decision 22-12-031 December 15, 2022, Pages 15-18.

California 2023 Test Year Cost of Capital – DCF Model

Proxy Group Arguments (continued):

- EDF criticized PG&E's selection of a proxy group for not sufficiently reflecting the combination gas/electric nature of PG&E's operations.
- EDF criticized SoCalGas's selection of proxy companies as being an insufficiently small sample of proxy companies.
- UCAN's witness advanced a proxy group of utilities that utilize various screens resulting in a proxy group of 19 utilities.

Source: CPUC Decision 22-12-031 December 15, 2022, Pages 15-18.

California 2023 Test Year Cost of Capital – CAPM Models

	PG&E	SCE	SDG&E	SoCalGas
Utility	10.30%- 11.20%	10.30% - 11.20%	13.99% - 14.13%	13.43% - 13.63%
FEA	8.25% - 9.25%	6.25% - 8.25%	6.25% - 8.25%	
Cal Advocates	7.40% - 7.70%	7.70%	7.40%	7.40% - 7.70%
Wild Tree[45]	7.10% - 8.59%	7.10% - 8.59%	7.10% - 8.59%	
PCF			4.90%	4.90%
EPUC/IS/TURN	9.84%	9.85%	9.80%	9.80%
UCAN			11.30% - 11.45%	

Each party utilized different subjective inputs into their CAPM. The table above summarizes the simple average result of the CAPM variations calculated by the individual parties using subjective inputs.

Source: CPUC Decision 22-12-031 December 15, 2022, Page 20.

California 2023 Test Year Cost of Capital – RPM Models

	PG&E	SCE	SDG&E	SoCalGas
Utility	10.10%	10.10%	9.47% - 9.99%	9.50 – 10.00 %
EPUC/IS/TURN	9.30%	9.30%	9.20%	9.30%
UCAN			9.84%	

Each party utilized different subjective inputs into their RPM. The table above summarizes the simple average result of the RPM variations calculated by the individual parties using subjective inputs.

Source: CPUC Decision 22-12-031 December 15, 2022, Page 20.

California 2023 Test Year Cost of Capital – ROE Decision

The test year 2023 authorized costs of long-term debt, costs of common equity, costs of preferred equity, and authorized rates of return are as follows.

	PG&E	SCE	SoCalGas	SDG&E
Cost of long-term debt	4.31%	4.39%	4.07%	4.05%
Cost of preferred equity	5.52%	6.50%	6.00%	6.22%[1]
Cost of common equity	10.00%	10.05%	9.80%	9.95%
Rate of Return	7.27%	7.44%	7.10%	7.18%

Source: CPUC Decision 22-12-031 December 15, 2022, Page 1.

California 2023 Test Year Cost of Capital – ROE Decision

"... are not different estimates of the *same* thing but are estimates of *different* things."

Alternative Rate or Return Concepts and Their Implications for Utility Regulation

Author(s): Ezra Solomon

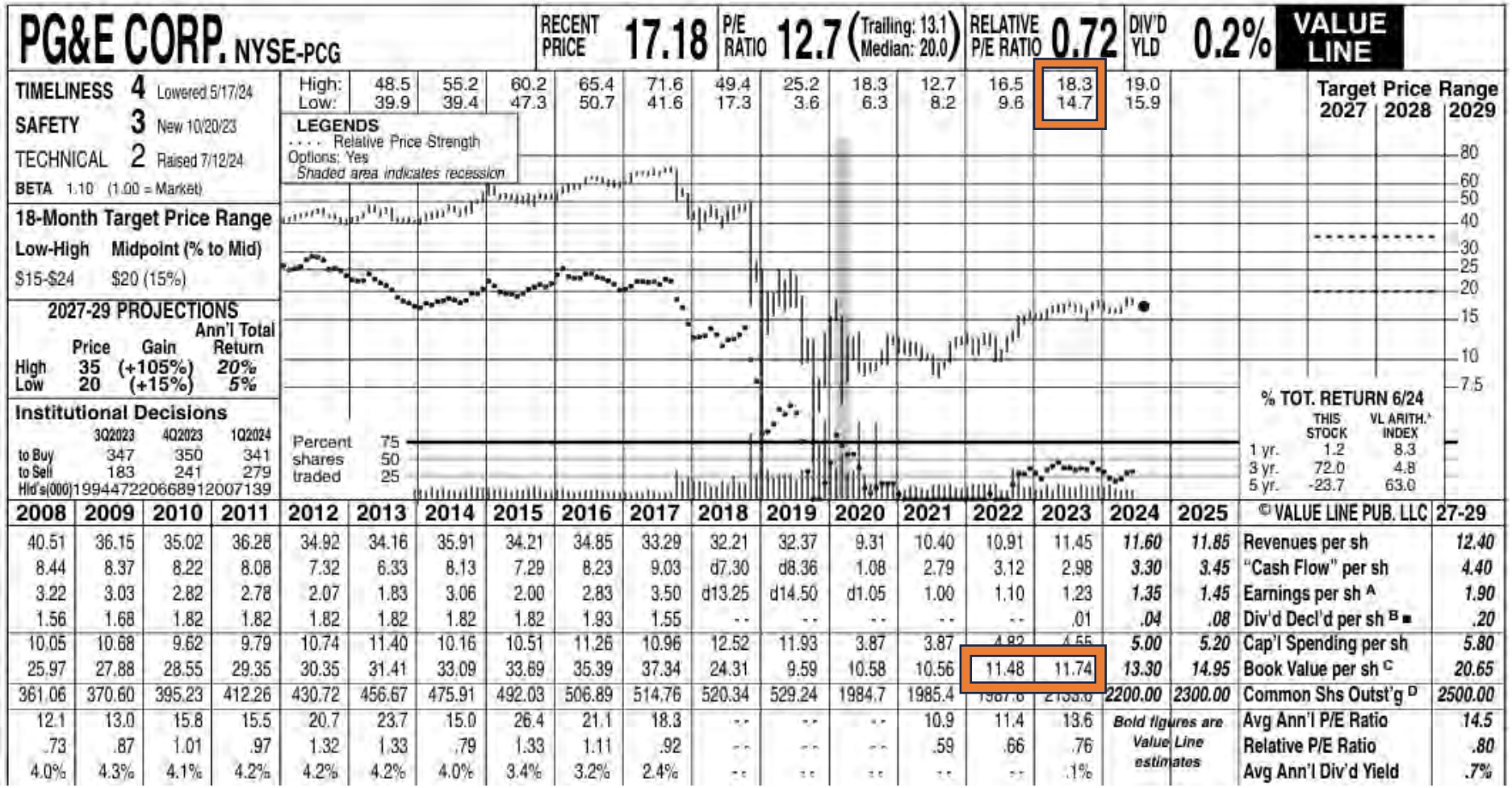
Source: *The Bell Journal of Economics and Management Science*, Spring, 1970, Vol. 1, No. 1 (Spring, 1970), pp. 65-81

Published by: RAND Corporation

Stable URL: https://www.jstor.org/stable/3003023

(Source: Steve Kihm's Presentation in this course.)

California 2023 Test Year Cost of Capital – ROE Decision



PG&E CORP. NYSE-PCG

RECENT PRICE 17.18 | P/E RATIO 12.7 (Trailing: 13.1 Median: 20.0) | RELATIVE P/E RATIO 0.72 | DIV'D YLD 0.2% | VALUE LINE

TIMELINESS 4 Lowered 5/17/24
SAFETY 3 New 10/20/23
TECHNICAL 2 Raised 7/12/24
BETA 1.10 (1.00 = Market)

18-Month Target Price Range
Low-High Midpoint (% to Mid)
$15-$24 $20 (15%)

2027-29 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	35	(+105%)	20%
Low	20	(+15%)	5%

Institutional Decisions

	3Q2023	4Q2023	1Q2024
to Buy	347	350	341
to Sell	183	241	279
Hld's(000)	199447	220668	912007139

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	© VALUE LINE PUB. LLC	27-29
High:	48.5	55.2	60.2	65.4	71.6	49.4	25.2	18.3	12.7	16.5	18.3	19.0								
Low:	39.9	39.4	47.3	50.7	41.6	17.3	3.6	6.3	8.2	9.6	14.7	15.9								
	40.51	36.15	35.02	36.28	34.92	34.16	35.91	34.21	34.85	33.29	32.21	32.37	9.31	10.40	10.91	11.45	*11.60*	*11.85*	Revenues per sh	*12.40*
	8.44	8.37	8.22	8.08	7.32	6.33	8.13	7.29	8.23	9.03	d7.30	d8.36	1.08	2.79	3.12	2.98	*3.30*	*3.45*	"Cash Flow" per sh	*4.40*
	3.22	3.03	2.82	2.78	2.07	1.83	3.06	2.00	2.83	3.50	d13.25	d14.50	d1.05	1.00	1.10	1.23	*1.35*	*1.45*	Earnings per sh [A]	*1.90*
	1.56	1.68	1.82	1.82	1.82	1.82	1.82	1.82	1.93	1.55	--	--	--	--	--	.01	*.04*	*.08*	Div'd Decl'd per sh [B] ■	*.20*
	10.05	10.68	9.62	9.79	10.74	11.40	10.16	10.51	11.26	10.96	12.52	11.93	3.87	3.87	4.82	4.55	*5.00*	*5.20*	Cap'l Spending per sh	*5.80*
	25.97	27.88	28.55	29.35	30.35	31.41	33.09	33.69	35.39	37.34	24.31	9.59	10.58	10.56	11.48	11.74	*13.30*	*14.95*	Book Value per sh [C]	*20.65*
	361.06	370.60	395.23	412.26	430.72	456.67	475.91	492.03	506.89	514.76	520.34	529.24	1984.7	1985.4	1987.6	2153.6	*2200.00*	*2300.00*	Common Shs Outst'g [D]	*2500.00*
	12.1	13.0	15.8	15.5	20.7	23.7	15.0	26.4	21.1	18.3	--	--	--	10.9	11.4	13.6	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*14.5*
	.73	.87	1.01	.97	1.32	1.33	.79	1.33	1.11	.92	--	--	--	.59	.66	.76			Relative P/E Ratio	*.80*
	4.0%	4.3%	4.1%	4.2%	4.2%	4.2%	4.0%	3.4%	3.2%	2.4%	--	--	--	--	--	.1%			Avg Ann'l Div'd Yield	*.7%*

% TOT. RETURN 6/24

	THIS STOCK	VL ARITH.* INDEX
1 yr.	1.2	8.3
3 yr.	72.0	4.8
5 yr.	-23.7	63.0

7/19/24 Value Line Report

California 2023 Test Year Cost of Capital – Equity Layer

PG&E Requested an Equity Layer of 52.00%:

- Only Wild Tree Foundation contested PG&E's capital structure proposal, seeking to reduce the common equity authorization from 52.00% to 45.45% or even lower

Source: CPUC Decision 22-12-031 December 15, 2022, Page 5.

California 2023 Test Year Cost of Capital – Equity Layer

SCE Requested an Equity Layer of 52.00%:

- Wild Tree advocates that the Commission should authorize a common equity ratio of no higher than 45.40%

- FEA argues that SCE's authorized capital structure should have a lower preferred equity authorization with a commensurate increase in the authorization for long-term debt
  - FEA argues that SCE's authorized capital structure should be 48.00% long-term debt and 52.00% common equity

Source: CPUC Decision 22-12-031 December 15, 2022, Pages 6 to 8.

California 2023 Test Year Cost of Capital – Equity Layer

SoCalGas Requested an Equity Layer of 54.00%:

- EPUC, IS, TURN, and Cal Advocates all argue that SoCalGas's authorized capital structure should included 52.00% common equity
  - An increase in the common equity proportion of SoCalGas's capital structure would result in marginal additional costs to ratepayers without marginal additional benefit, resulting in unjustified costs for ratepayer.
  - The existing authorized common equity proportion has allowed SoCalGas to support an investment grade bond rating

Source: CPUC Decision 22-12-031 December 15, 2022, Pages 8 to 10.

California 2023 Test Year Cost of Capital – Equity Layer

SDG&E Requested an Equity Layer of 54.00%:

- EPUC, IS, TURN, Wild Tree, and FEA oppose SDG&E's request to increase its common equity proportion above 52.00%
  - SDG&E has failed to demonstrate that a 54.00% common equity ratio is a reasonable cost for ratepayers
  - The requested ratio of 54.00% common equity is excessive when compared to national averages

- PCF argues that the Commission should not adopt a proposed capital structure that matches the existing actual capital structure of a regulated utility rather than analyzing what capital structure would be most in the public interest

Source: CPUC Decision 22-12-031 December 15, 2022, Pages 10 to 12.

California 2023 Test Year Cost of Capital – Equity Decision

The test year 2023 authorized capital structures for the four applicants are as follows.

	PG&E	SCE	SoCalGas	SDG&E
Long-term debt	47.50%	43.00%	45.60%	45.25%
Preferred equity	0.50%	5.00%	2.40%	2.75%
Common equity	52.00%	52.00%	52.00%	52.00%
Total	100.00%	100.00%	100.00%	100.00%

Source: CPUC Decision 22-12-031 December 15, 2022, Page 1.

On-going US Case – ROE Case Study

The following brief case study is of an on-going case for public utility company in the United States; however, the specifics of the parties to the case have been removed as the case is still in active litigation.

On-going US Case – Company ROE Position

Utility Company Proxy Group

The Utility Company's proxy group of comparable companies was challenged because it included:

- Non-utility companies
- Utility companies with less than 80% regulated net income (the applicant has 100% regulated distribution activity)

Electric Group Regulated %

Company Name	% Regulated Net Income
Alliant Energy	100%
Ameren Corp.	76%
American Electric Power	73%
Black Hills Corp.	100%
CenterPoint Energy	100%
CMS Energy Corp.	93%
Dominion Energy	95%
DTE Energy Co.	69%
Duke Energy Corp.	100%
Entergy Corp.	100%
Evergy Inc.	100%
Eversource Energy	57%
Exelon Corp.	100%
NextEra Energy, Inc.	64%
OGE Energy Corp.	100%
Pinnacle West Capital	100%
Portland General Elec.	100%
PPL Corp.	100%
Public Service Enterprise Grp.	59%
Sempra Energy	63%
Southern Company	79%
WEC Energy Group	90%
Xcel Energy Inc.	100%

On-going US Case – Company ROE Position

Utility Company Risk Profile Comparison to Proxy Groups

	Value Line			Credit Ratings	
	Safety Rank	Financial Strength	Beta	S&P	Moody's
Company Witness Direct					
Non-Utility	1	A+	0.79	A-	A3
Electric Group	2	A	0.9	BBB+	Baa2
Applicant	2	B++	N/A	A-	Baa1
Revised					
Non-Utility	1	A+	0.68	A	A2
Electric Group	2	A	0.9	BBB+	Baa2

On-going US Case – Company ROE Position

Utility Company Model Outputs – Range 8.9% to 11.3%

Cost of Equity Model	Indicated Cost of Equity
	23 companies
DCF	
Value Line	9.60%
IBES	10.00%
Zacks	9.50%
Internal *br* + *sv*	8.90%
Average DCF	9.50%
CAPM	11.10%
ECAPM	11.30%
Utility Risk Premium	10.60%
Expected Earnings	11.30%

On-going US Case – Parties ROE Positions

Intervenor#1 Model Outputs – Range from 8.40% to 10.70%

ROE Model	Results			Revised Proxy Group	
	Average		Median	Average	Median
DCF	**9.20%**			**9.30%**	
Constant Growth – Analysts' Growth	10.24%		10.21%	10.50%	10.70%
Constant Growth – Sustainable Gr.	8.93%		8.88%	8.54%	8.40%
Multi-Stage DCF Model	8.59%		8.53%	8.79%	8.90%
Risk Premium	9.90%				
Projected Treasury Yield	9.72%				
13-Week Yields – A-Rated Utility Bonds	10.16%				
13-Week Yields – Baa-Rated Utility Bonds	10.45%				
26-Week Yields – A-Rated Utility Bonds	9.93%				
26-Week Yields – Baa-Rated Utility Bonds	10.25%				
CAPM	9.80%				
	Beta				
	Current Value Line	Historic Value Line	Current Market Intelligence		
D&P Normalized Method	9.64%	8.82%	9.24%		
Risk Premium Method	10.82%	9.70%	10.27%		
FERC DCF	11.23%	10.05%	10.65%		
Recommended Range	**9.20% - 9.90%**			**9.30% to 9.90%**	
Midpoint	**9.55%**			**9.60%**	

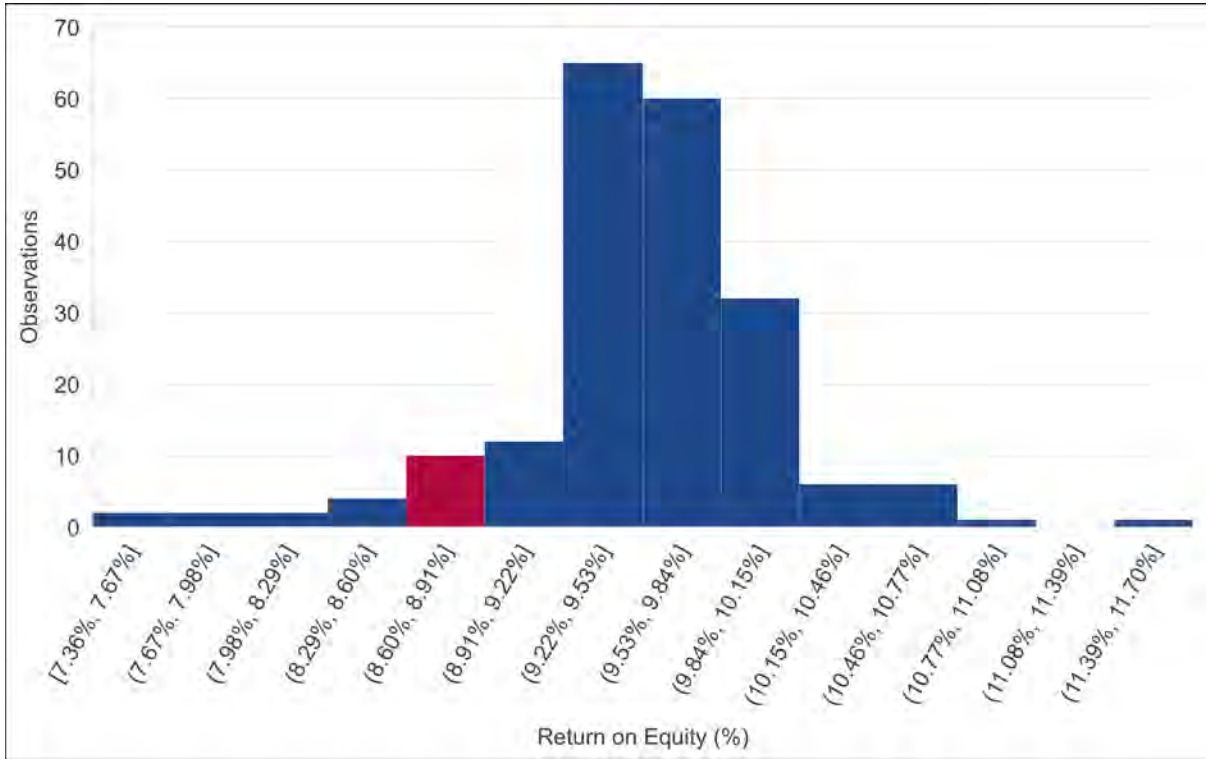
On-going US Case – Parties ROE Positions

Intervenor#2 Model Outputs
Range from 7.86% to 9.58%

ROE Model	Components				As Filed	Revised Group
DCF	Average Dividend Yield	Dividend Growth	Adjusted Dividend Yield	Earnings Growth Rate	Indicated Rate of Return	Indicated Rate of Return
Zacks	3.93%	0.10%	4.03%	5.19%	9.22%	9.58%
Seeking Alpha	3.93%	0.09%	4.02%	4.75%	8.77%	7.86%
Yahoo	3.93%	0.09%	4.02%	4.68%	8.70%	8.53%
Average					**8.89%**	**8.66%**
	Betas					
CAPM	Zacks	Seeking Alpha	Yahoo		Average	Average
@7% Adjusted Risk Premium	8.53%	8.64%	8.57%		8.58%	8.48%
@8% Adjusted Risk Premium	9.10%	9.22%	9.14%		9.15%	9.04%
Average					**8.87%**	**8.76%**
Average DCF and CAPM					**8.88%**	**8.71%**
Current Authorized ROE					**9.28%**	**9.28%**
Midpoint					**9.08%**	**8.99%**
Recommendation					**9.10%**	**9.00%**

On-going US Case – Parties ROE Positions

Authorized ROEs from 2019 to 2024



On-going US Case – ROE Recommendations

Requested / Recommended ROE			
Utility	Intervenor 1	Intervenor 2	Staff Range
10.50%	9.35%	9.10%	9.25% - 9.75%

On-going US Case – Parties ROE Positions

What would Steve say?

The ROE and cost of equity are not synonyms.

Regulatory Finance – Helpful Data Sources

- Company Filings
- Analyst Estimates
- Capital Market Assumptions
- Economic Data

Regulatory Finance – Helpful Data Sources

Securities and Exchange Commission - EDGAR

- All registered companies that issue publicly traded securities
- Annual (10-k), Quarterly (10-Q), and Interim (8-K)
- XML to search filings across issues for specific data
- Reg FD – All investor presentations are filed as 8-Ks.
- SEC.gov | EDGAR Full Text Search

Regulatory Finance – Helpful Data Sources

Federal Energy Regulatory Commission

- Public Utility Annual Reports (Form 1 and Form 2)
- Audit Reports
- Service Company Annual Reports (Form 60)
- Docket Information
- eLibrary | General search (ferc.gov)
- Audits | Federal Energy Regulatory Commission (ferc.gov)

Regulatory Finance – Helpful Data Sources

Energy Information Agency

- Public Utility Company Sales and Revenue Data Monthly
- Data on electric generation units
- Natural Gas and Electric price data and forecasts
- Homepage - U.S. Energy Information Administration (EIA)

Regulatory Finance – Helpful Data Sources

Zacks

- Earnings Per Share
- Dividends Per Share
- Price Data
- Analyst (3-5 Year Estimates)
- Zacks.com

ZACKS
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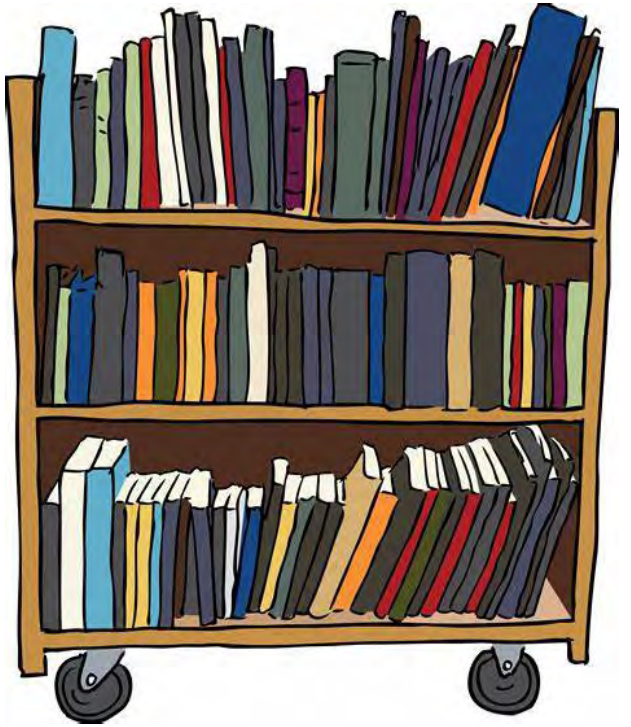
Quote Overview Enter Symbol

Stock Activity		Key Earnings Data	
Open	212.10	Earnings ESP	0.40%
Day Low	211.97	Most Accurate Est	1.59
Day High	216.78	Current Qtr Est	1.59
52 Wk Low	164.08	Current Yr Est	6.68
52 Wk High	237.23	Exp Earnings Date	11/7/24
20 Day Avg Vol	57,972,888	Prior Year EPS	6.13
Market Cap	3,287.74 B	Exp EPS Growth (3-5yr)	12.69%
Dividend	1.00 (0.46%)	Forward PE	32.38
Beta	1.24	PEG Ratio	2.55

Regulatory Finance – Helpful Data Sources



Other Sites with Financial Market Data

- Earnings Per Share
- Dividends Per Share
- Price Data
- Securities Rankings by Quality
- Analyst Reports on Individual Securities
- Cost of Capital Assumptions by Company/Sector

Morningstar.com (Fee Required)
Valueline.com (Fee Required)
Home | S&P Global Market Intelligence (spglobal.com) (Fee Required)

Regulatory Finance – Helpful Data Sources

Publicly Available Capital Market Assumptions

- JP Morgan AM, "Guide to the Markets"
  - Guide to the Markets | J.P. Morgan Asset Management (jpmorgan.com)
- Northern Trust AM, "Capital Market Assumptions"
  - Northern Trust Capital Market Assumptions 10 Year Outlook: 2024 Edition
- BlackRock Investment Institute, "Capital Market Assumptions"
  - Capital market assumptions - Institutional | BlackRock
- AQR Capital Management, "Capital Market Assumptions"
  - 2024 Capital Market Assumptions for Major Asset Classes (aqr.com)

Regulatory Finance – Helpful Data Sources

Publicly Available Capital Market Assumptions

- GMO LLC, “7 Year Asset Class Forecast” (registration req’d)
  - GMO 7-Year Asset Class Forecast: 2Q 2024
- Kroll, “Equity Market Risk Premium and Risk-Free Rates”
  - Recommended U.S. Equity Risk Premium and Corresponding Risk-Free Rates (kroll.com)

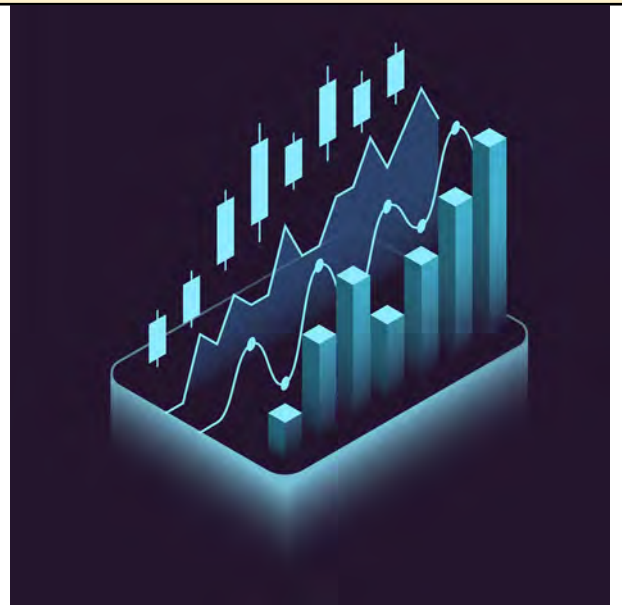
Regulatory Finance – Helpful Data Sources

Publicly Available Economic Data and Forecasts

- Federal Reserve Bank of St. Louis, “FRED”
  - Large amounts of Economic Time Series Data Available
  - Federal Reserve Economic Data | FRED | St. Louis Fed (stlouisfed.org)

- Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters
  - Quarterly and Annual forecasts of US macro economic variables, published quarterly.
  - Survey of Professional Forecasters (philadelphiafed.org)

Current Economic Data – Bonus Section



A brief discussion of current economic and market conditions that could impact the regulatory finance models discussed today.

Current Economic Data – Bonus Section

Industry Capital Expenditures

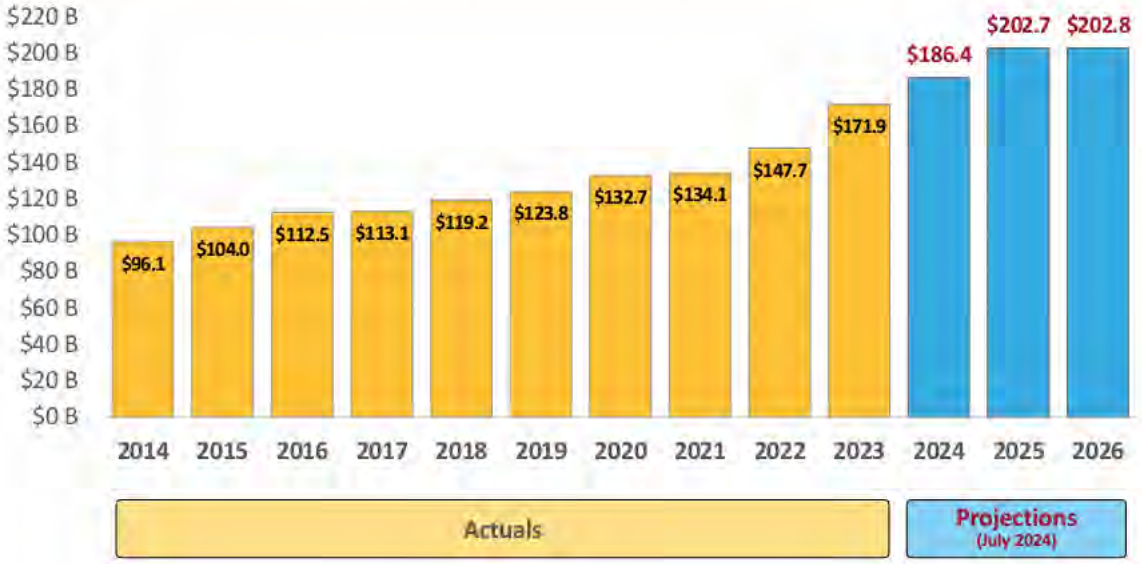


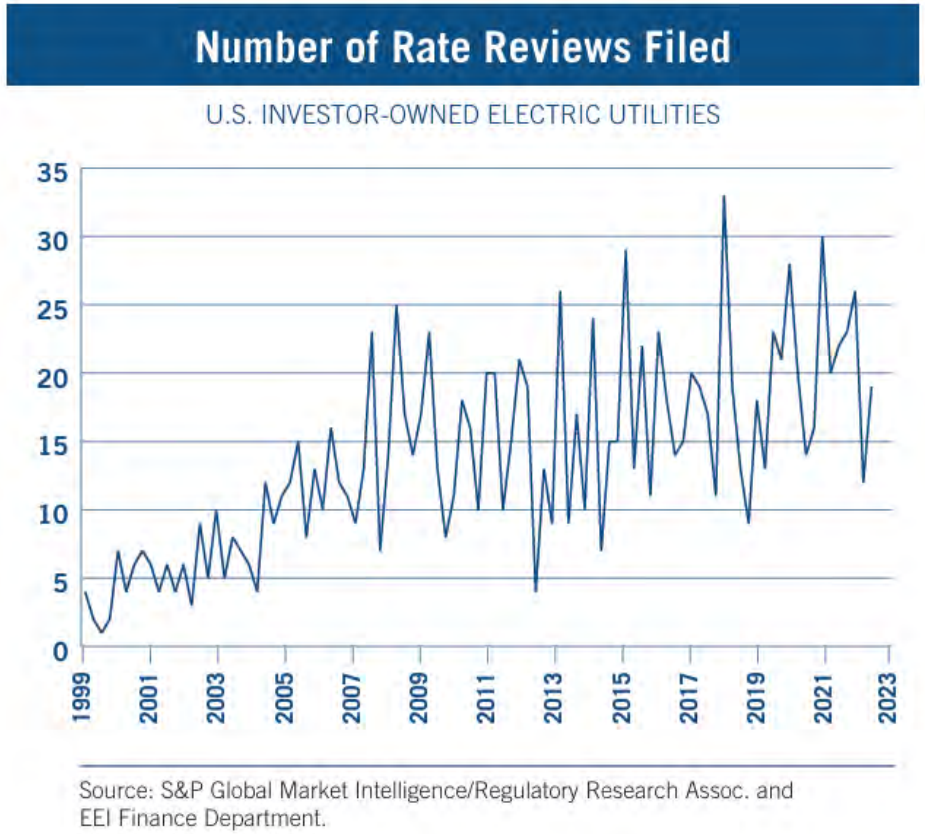
Chart represents total company spending of U.S. Investor-Owned Electric Utilities, consolidated at the parent or appropriate holding company.

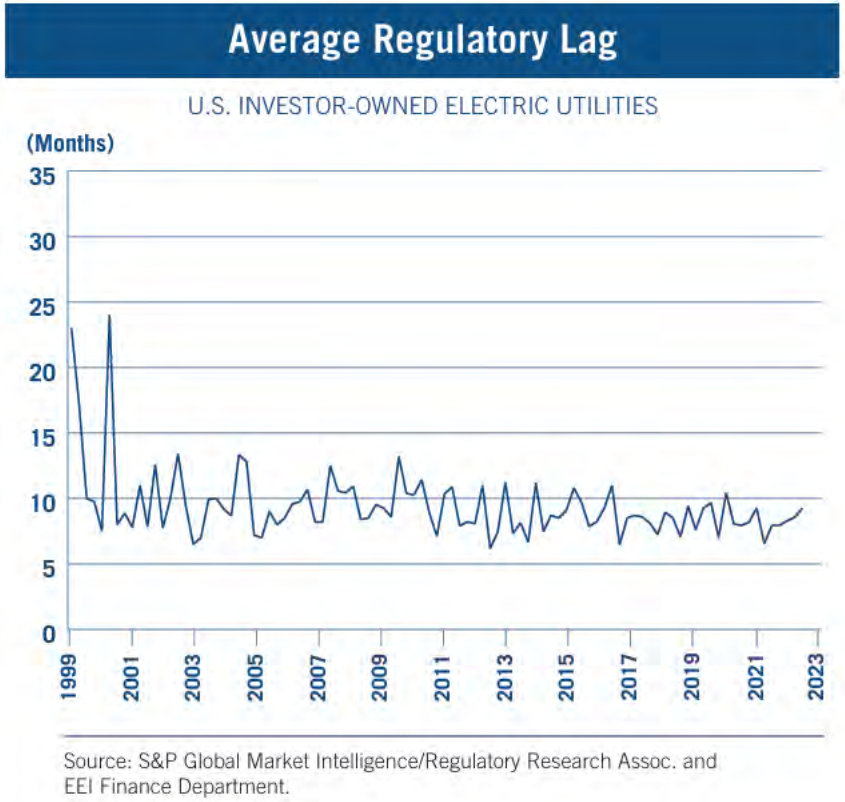
Note: At the industry level, CapEx tends to be overestimated for the current, or first, year's projection and underestimated for the two following years. We expect a continued level of elevated spending after accounting for the historical trend of over- and underestimation.

Source: EEI Finance Department, member company reports, and S&P Global Market Intelligence (updated July 2024).

Source: Industry-Capital-Expenditures.pdf (eei.org)

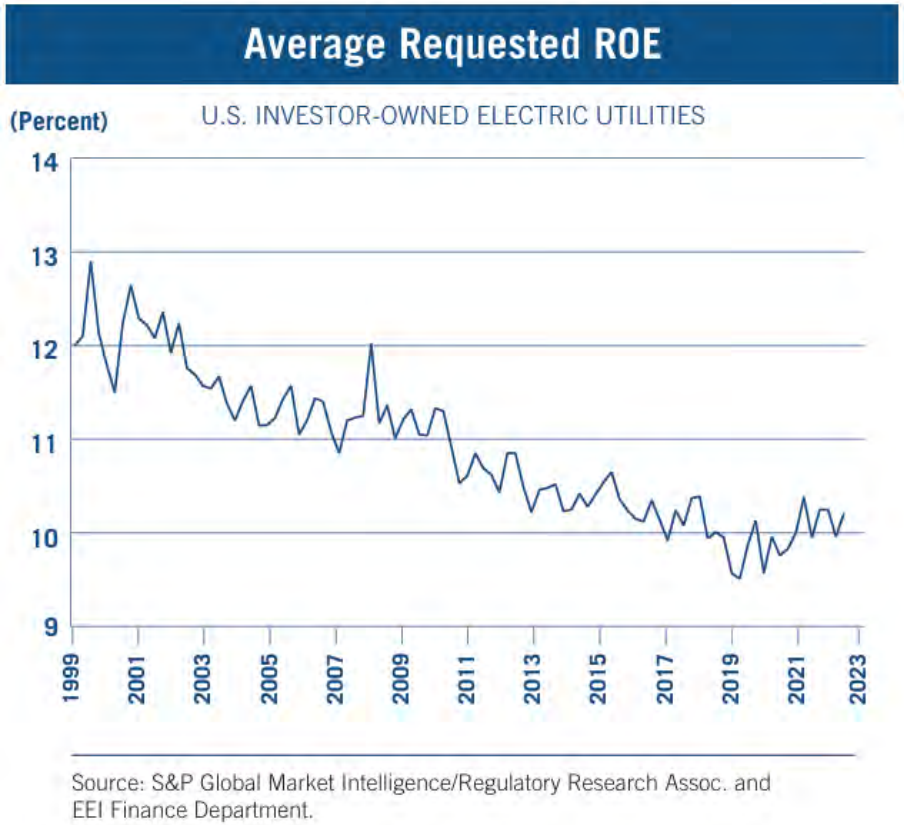
Current Economic Data – Bonus Section

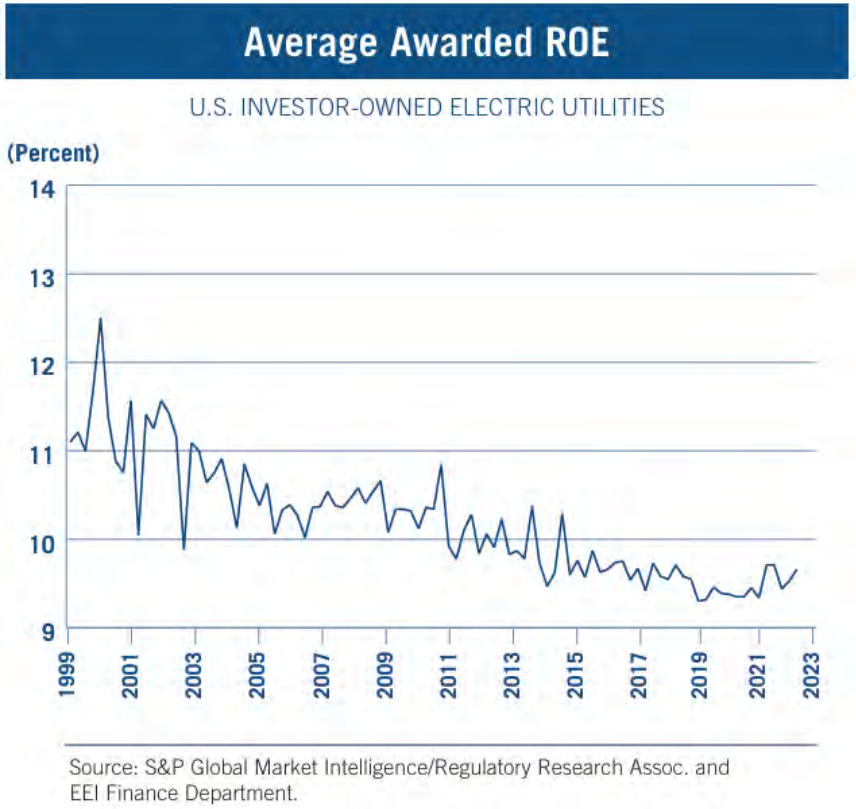




Sourcee: [FinancialReview_2023.pdf (eei.org)]

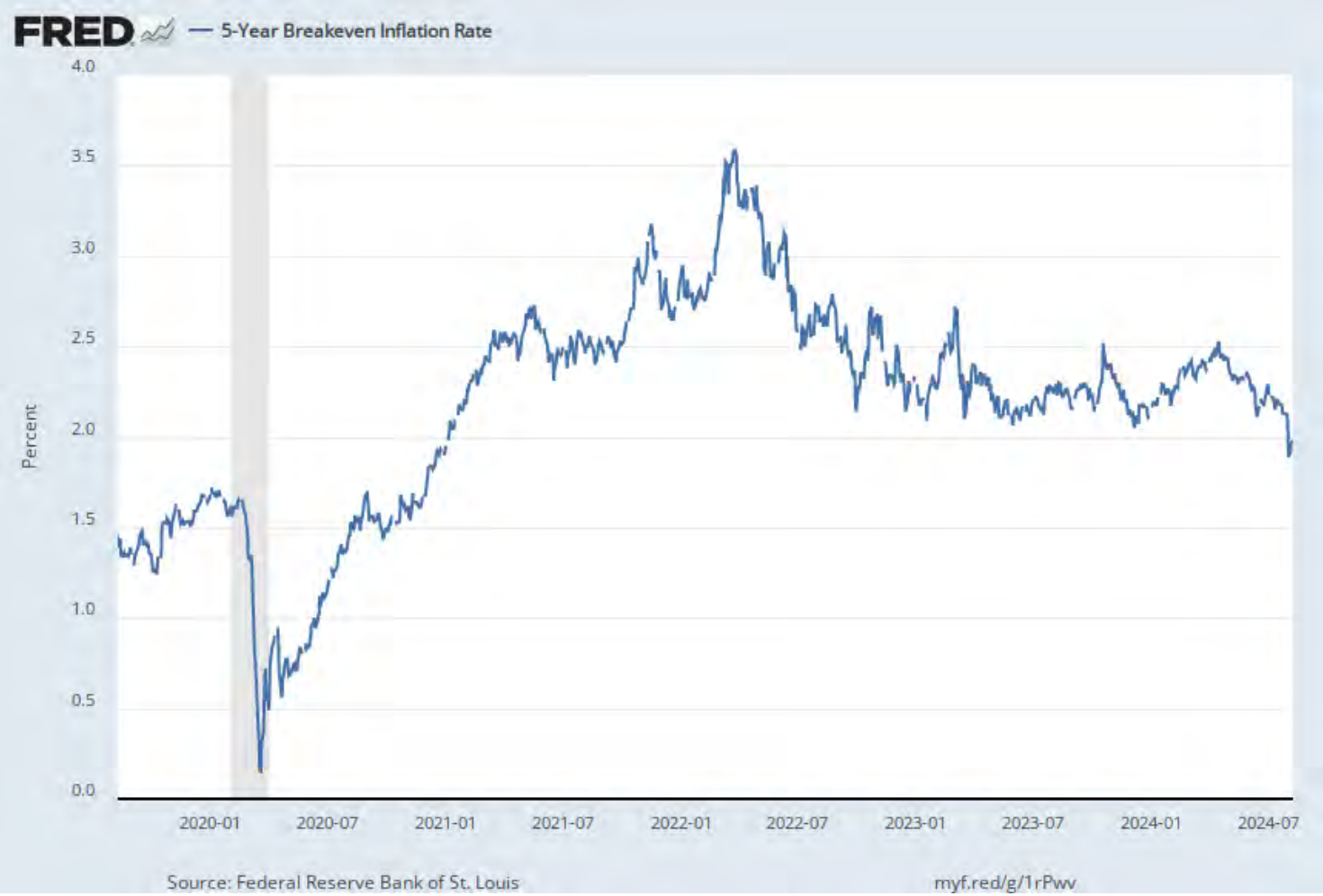
Current Economic Data – Bonus Section





Sourcee: [FinancialReview_2023.pdf (eei.org)]

Current Economic Data – Bonus Section



Current Economic Data – Bonus Section

Current Economic Data – Bonus Section

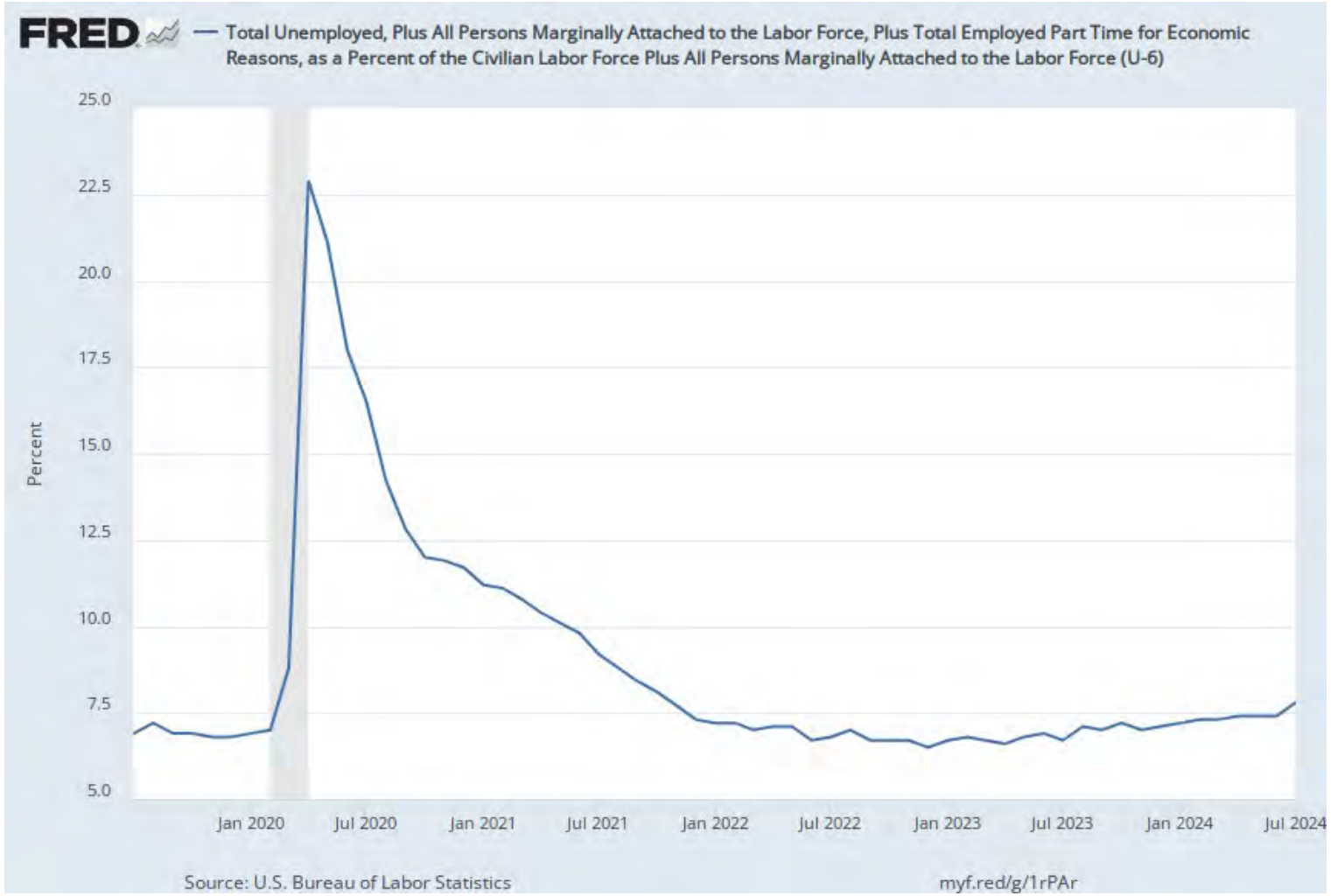
Table 1. Flexible and Sticky Prices in the CPI Market Basket

Flexible-price items	Frequency of adjustment[a]	Relative importance
Motor fuel	0.7	3.2
Car and truck rental	1.2	0.1
Fresh fruits and vegetables	1.3	0.9
Fuel oil and other fuels	1.5	0.3
Gas (piped) and electricity	1.6	4.2
Meats, poultry, fish, and eggs	1.9	1.9
Used cars and trucks[b]	2.0	1.6
Leased cars and trucks[b]	2.0	0.6
New vehicles	2.0	4.5
Women's and girls' apparel	2.3	1.5
Dairy and related products	2.6	0.9
Nonalcoholic beverages and beverage materials	2.7	1.0
Lodging away from home	3.1	2.5
Processed fruits and vegetables	3.2	0.3
Men's and boys' apparel	3.2	0.9
Cereals and bakery products	3.3	1.2
Footwear	3.4	0.7
Other food at home	3.6	2.0
Jewelry and watches	3.9	0.4
Motor vehicle parts and equipment	4.1	0.4
Tobacco and smoking products	4.2	0.8
Total, flexible-price items		**29.8**
Total, core flexible-price items		**14.0**

Sticky-price items	Frequency of adjustment[a]	Relative importance
Infants' and toddlers' apparel	5.3	0.2
Household furnishings and operations	5.3	4.8
Motor vehicle maintenance and repair	5.8	1.2
Motor vehicle insurance	5.9	2.0
Medical care commodities	6.2	1.6
Personal care products	6.7	0.7
Alcoholic beverages	7.3	1.1
Recreation	7.9	5.7
Miscellaneous personal goods	8.1	0.2
Communication	8.4	3.2
Public transportation	9.4	1.1
Tenants' and household insurance	10.1	0.3
Food away from home	10.7	6.5
Rent of primary residence[b]	11.0	6.0
OER, Northeast[b]	11.0	5.3
OER, Midwest[b]	11.0	4.5
OER, South[b]	11.0	7.7
OER, West[b]	11.0	6.9
Education	11.1	3.1
Medical care services	14.0	4.8
Water, sewer, and trash collection services	14.3	1.0
Motor vehicle fees	16.4	0.5
Personal care services	23.7	0.6
Miscellaneous personal services	25.9	1.1
Total, sticky-price items		**70.1**
Total, core sticky-price items		**63.6**
Total, non-OER sticky-price items		**45.7**

https://www.atlantafed.org/-/media/documents/research/inflationproject/stickyprice/sticky-price-cpi-supplemental-reading.pdf

Current Economic Data – Bonus Section



Current Economic Data – Bonus Section

Current Economic Data – Bonus Section

Applications of Regulatory Finance

Regulatory Reserves Network

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