

Ann E. Bulkley

PRINCIPAL

Boston

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With more than 25 years of experience in the energy industry, Ms. Bulkley specializes in regulatory economics for the electric and natural gas sectors, including rate of return, cost of equity, and capital structure issues.

Ms. Bulkley has extensive state and federal regulatory experience, and she has provided expert testimony on the cost of capital in nearly 100 regulatory proceedings before 32 state regulatory commissions and the Federal Energy Regulatory Commission (FERC).

In addition to her regulatory experience, Ms. Bulkley has provided valuation and appraisal services for a variety of purposes, including the sale or acquisition of utility assets, regulated ratemaking, ad valorem tax disputes, and other litigation purposes. In addition, she has experience in the areas of contract and business unit valuation, strategic alliances, market restructuring, and regulatory and litigation support.

Ms. Bulkley is a Certified General Appraiser licensed in the Commonwealth of Massachusetts and the State of New Hampshire.

Prior to joining Brattle, Ms. Bulkley was a Senior Vice President at an economic consultancy, and also held senior positions at several consulting firms.

AREAS OF EXPERTISE

- Regulatory Economics, Finance & Rates
- Regulatory Investigations & Enforcement
- Tax Controversy & Transfer Pricing
- Electricity Litigation & Regulatory Disputes
- M&A Litigation

EDUCATION

- **Boston University**
MA in Economics
- **Simmons College**
BA in Economics and Finance

PROFESSIONAL EXPERIENCE

- **The Brattle Group (2022–Present)**
Principal
- **Concentric Energy Advisors, Inc. (2002–2021)**
Senior Vice President
Vice President
Assistant Vice President
Project Manager
- **Navigant Consulting, Inc. (1997–2002)**
Project Manager
- **Reed Consulting Group (1995-1997)**
Consultant- Project Manager
- **Cahners Publishing Company (1995)**
Economist

SELECTED CONSULTING EXPERIENCE & EXPERT TESTIMONY

REGULATORY ANALYSIS AND RATEMAKING

Have provided a range of advisory services relating to regulatory policy analysis and many aspects of utility ratemaking, with specific services including:

- Cost of capital and return on equity testimony, cost of service and rate design analysis and testimony, development of ratemaking strategies
- Development of merchant function exit strategies
- Analysis and program development to address residual energy supply and/or provider of last resort obligations
- Stranded costs assessment and recovery



Performance-based ratemaking analysis and design

- Many aspects of traditional utility ratemaking (e.g., rate design, rate base valuation)

COST OF CAPITAL

Have provided expert testimony on the cost of capital and capital structure in nearly 100 regulatory proceedings before state and federal regulatory commissions in the United States.

RATEMAKING

Have assisted several clients with analysis to support investor-owned and municipal utility clients in the preparation of rate cases. Sample engagements include:

- Assisted several investor-owned and municipal clients on cost allocation and rate design issues including the development of expert testimony supporting recommended rate alternatives.
- Worked with Canadian regulatory staff to establish filing requirements for a rate review of a newly regulated electric utility. Along with analyzing and evaluating rate application, attended hearings and conducted investigation of rate application for regulatory staff and prepared, supported, and defended recommendations for revenue requirements and rates for the company. Additionally, developed rates for gas utility for transportation program and ancillary services.

VALUATION

Have provided valuation services to utility clients, unregulated generators, and private equity clients for a variety of purposes, including ratemaking, fair value, ad valorem tax, litigation and damages, and acquisition. Appraisal practices are consistent with the national standards established by the Uniform Standards of Professional Appraisal Practice.

Representative projects/clients have included:

- Prepared appraisals of electric utility transmission and distribution assets for ad valorem tax purposes.
- Prepared appraisals of several hydroelectric generating facilities for ad valorem tax purposes.
- Conducted appraisals of fossil fuel generating facilities for ad valorem tax purposes.
- Conducted appraisals of generating assets for the purposes of unwinding sale-leaseback agreements.
- For a confidential utility client, prepared valuation of fossil and nuclear generation assets for financing purposes for regulated utility client.
- Prepared a valuation of a portfolio of generation assets for a large energy utility to be used for strategic planning purposes. Valuation approach included an income approach, a real options analysis, and a risk analysis.



- Assisted clients in the restructuring of NUG contracts through the valuation of the underlying assets. Performed analysis to determine the option value of a plant in a competitively priced electricity market following the settlement of the NUG contract.
- Prepared market valuations of several purchase power contracts for large electric utilities in the sale of purchase power contracts. Assignment included an assessment of the regional power market, analysis of the underlying purchase power contracts, and a traditional discounted cash flow valuation approach, as well as a risk analysis. Analyzed bids from potential acquirers using income and risk analysis approached. Prepared an assessment of the credit issues and value at risk for the selling utility.
- Prepared appraisal of a portfolio of generating facilities for a large electric utility to be used for financing purposes.
- Prepared fair value rate base analyses for Northern Indiana Public Service Company for several electric rate proceedings. Valuation approaches used in this project included income, cost, and comparable sales approaches.
- Prepared an appraisal of a fleet of fossil generating assets for a large electric utility to establish the value of assets transferred from utility property.
- Conducted due diligence on an electric transmission and distribution system as part of a buy-side due diligence team.
- Provided analytical support for and prepared appraisal reports of generation assets to be used in ad valorem tax disputes.
- Provided analytical support and prepared testimony regarding the valuation of electric distribution system assets in five communities in a condemnation proceeding.
- Prepared feasibility reports analyzing the expected net benefits resulting from municipal ownership of investor-owned utility operations.
- Prepared independent analyses of proposal for the proposed government condemnation of the investor-owned utilities in Maine and the formation of a public power district.
- Valued purchase power agreements in the transfer of assets to a deregulated electric market.

STRATEGIC AND FINANCIAL ADVISORY SERVICES

Have assisted several clients across North America with analytically-based strategic planning, due diligence, and financial advisory services.

Representative projects include:

- Preparation of feasibility studies for bond issuances for municipal and district steam clients.
- Assisted in the development of a generation strategy for an electric utility. Analyzed various NERC regions to identify potential market entry points. Evaluated potential competitors and alliance



partners. Assisted in the development of gas and electric price forecasts. Developed a framework for the implementation of a risk management program.

- Assisted clients in identifying potential joint venture opportunities and alliance partners. Contacted interviewed and evaluated potential alliance candidates based on company-established criteria for several LDCs and marketing companies. Worked with several LDCs and unregulated marketing companies to establish alliances to enter into the retail energy market. Prepared testimony in support of several merger cases and participated in the regulatory process to obtain approval for these mergers.
- Assisted clients in several buy-side due diligence efforts, providing regulatory insight and developing valuation recommendations for acquisitions of both electric and gas properties.

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arizona Corporation Commission				
Tucson Electric Power Company	6/22	Tucson Electric Power Company	Docket No. G-01933A-22-0107	Return on Equity
Southwest Gas Corporation	12/21	Southwest Gas Corporation	Docket No. G-01551A-21-0368	Return on Equity
Arizona Public Service Company	10/19	Arizona Public Service Company	Docket No. E-01345A-19-0236	Return on Equity
Tucson Electric Power Company	04/19	Tucson Electric Power Company	Docket No. E-01933A-19-0028	Return on Equity
Tucson Electric Power Company	11/15	Tucson Electric Power Company	Docket No. E-01933A-15-0322	Return on Equity
UNS Electric	05/15	UNS Electric	Docket No. E-04204A-15-0142	Return on Equity
UNS Electric	12/12	UNS Electric	Docket No. E-04204A-12-0504	Return on Equity
Arkansas Public Service Commission				
Oklahoma Gas and Electric Co	10/21	Oklahoma Gas and Electric Co	Docket No. D-18-046-FR	Return on Equity
Arkansas Oklahoma Gas Corporation	10/13	Arkansas Oklahoma Gas Corporation	Docket No. 13-078-U	Return on Equity
California Public Utilities Commission				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Pacificorp, d/b/a Pacific Power	5/22	Pacificorp, d/b/a Pacific Power		Return on Equity
San Jose Water Company	05/21	San Jose Water Company	A2105004	Return on Equity
Colorado Public Utilities Commission				
Public Service Company of Colorado	07/21	Public Service Company of Colorado	21AL-0317E	Return on Equity
Public Service Company of Colorado	02/20	Public Service Company of Colorado	20AL-0049G	Return on Equity
Public Service Company of Colorado	05/19	Public Service Company of Colorado	19AL-0268E	Return on Equity
Public Service Company of Colorado	01/19	Public Service Company of Colorado	19AL-0063ST	Return on Equity
Atmos Energy Corporation	05/15	Atmos Energy Corporation	Docket No. 15AL-0299G	Return on Equity
Atmos Energy Corporation	04/14	Atmos Energy Corporation	Docket No. 14AL-0300G	Return on Equity
Atmos Energy Corporation	05/13	Atmos Energy Corporation	Docket No. 13AL-0496G	Return on Equity
Connecticut Public Utilities Regulatory Authority				
United Illuminating	05/21	United Illuminating	Docket No. 17-12-03RE11	Return on Equity
Connecticut Water Company	01/21	Connecticut Water Company	Docket No. 20-12-30	Return on Equity
Connecticut Natural Gas Corporation	06/18	Connecticut Natural Gas Corporation	Docket No. 18-05-16	Return on Equity
Yankee Gas Services Co. d/b/a Eversource Energy	06/18	Yankee Gas Services Co. d/b/a Eversource Energy	Docket No. 18-05-10	Return on Equity
The Southern Connecticut Gas Company	06/17	The Southern Connecticut Gas Company	Docket No. 17-05-42	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
The United Illuminating Company	07/16	The United Illuminating Company	Docket No. 16-06-04	Return on Equity
Federal Energy Regulatory Commission				
Northern Natural Gas Company	07/22	Northern Natural Gas Company	Docket No. RP22-___	Return on Equity
Transwestern Pipeline Company, LLC	07/22	Transwestern Pipeline Company, LLC	Docket No. RP22-___	Return on Equity
Florida Gas Transmission	02/21	Florida Gas Transmission	Docket No. RP21-441	Return on Equity
TransCanyon	01/21	TransCanyon	Docket No. ER21-1065	Return on Equity
Duke Energy	12/20	Duke Energy	Docket No. EL21-9-000	Return on Equity
Wisconsin Electric Power Company	08/20	Wisconsin Electric Power Company	Docket No. EL20-57-000	Return on Equity
Panhandle Eastern Pipe Line Company, LP	10/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-78-000 RP19-78-001	Return on Equity
Panhandle Eastern Pipe Line Company, LP	08/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-1523	Return on Equity
Sea Robin Pipeline Company LLC	11/18	Sea Robin Pipeline Company LLC	Docket# RP19-352-000	Return on Equity
Tallgrass Interstate Gas Transmission	10/15	Tallgrass Interstate Gas Transmission	RP16-137	Return on Equity
Idaho Public Utilities Commission				
PacifiCorp d/b/a Rocky Mountain Power	05/21	PacifiCorp d/b/a Rocky Mountain Power	Case No. PAC-E-21-07	Return on Equity
Illinois Commerce Commission				
Illinois American Water	02/22	Illinois American Water	Docket No. 22-0210	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
North Shore Gas Company	02/21	North Shore Gas Company	No. 20-0810	Return on Equity
Indiana Utility Regulatory Commission				
Indiana Michigan Power Co.	07/21	Indiana Michigan Power Co.	IURC Cause No. 45576	Return on Equity
Indiana Gas Company Inc.	12/20	Indiana Gas Company Inc.	IURC Cause No. 45468	Return on Equity
Southern Indiana Gas and Electric Company	10/20	Southern Indiana Gas and Electric Company	IURC Cause No. 45447	Return on Equity
Indiana and Michigan American Water Company	09/18	Indiana and Michigan American Water Company	IURC Cause No. 45142	Return on Equity
Indianapolis Power and Light Company	12/17	Indianapolis Power and Light Company	Cause No. 45029	Fair Value
Northern Indiana Public Service Company	09/17	Northern Indiana Public Service Company	Cause No. 44988	Fair Value
Indianapolis Power and Light Company	12/16	Indianapolis Power and Light Company	Cause No.44893	Fair Value
Northern Indiana Public Service Company	10/15	Northern Indiana Public Service Company	Cause No. 44688	Fair Value
Indianapolis Power and Light Company	09/15	Indianapolis Power and Light Company	Cause No. 44576 Cause No. 44602	Fair Value
Kokomo Gas and Fuel Company	09/10	Kokomo Gas and Fuel Company	Cause No. 43942	Fair Value
Northern Indiana Fuel and Light Company, Inc.	09/10	Northern Indiana Fuel and Light Company, Inc.	Cause No. 43943	Fair Value
Iowa Department of Commerce Utilities Board				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
MidAmerican Energy Company	01/22	MidAmerican Energy Company	Docket No. RPU-2022-0001	Return on Equity
Iowa-American Water Company	08/20	Iowa-American Water Company	Docket No. RPU-2020-0001	Return on Equity
Kansas Corporation Commission				
Atmos Energy Corporation	08/15	Atmos Energy Corporation	Docket No. 16-ATMG-079-RTS	Return on Equity
Kentucky Public Service Commission				
Kentucky-American Water Company	11/18	Kentucky-American Water Company	Docket No. 2018-00358	Return on Equity
Maine Public Utilities Commission				
Central Maine Power	08/22	Central Maine Power	Docket No. 2022-00152	Return on Equity
Central Maine Power	10/18	Central Maine Power	Docket No. 2018-194	Return on Equity
Maryland Public Service Commission				
Maryland American Water Company	06/18	Maryland American Water Company	Case No. 9487	Return on Equity
Massachusetts Appellate Tax Board				
Hopkinton LNG Corporation	03/20	Hopkinton LNG Corporation	Docket No.	Valuation of LNG Facility
FirstLight Hydro Generating Company	06/17	FirstLight Hydro Generating Company	Docket No. F-325471 Docket No. F-325472 Docket No. F-325473 Docket No. F-325474	Valuation of Electric Generation Assets
Massachusetts Department of Public Utilities				
National Grid USA	11/20	Boston Gas Company	DPU 20-120	Return on Equity
Berkshire Gas Company	05/18	Berkshire Gas Company	DPU 18-40	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Unitil Corporation	01/04	Fitchburg Gas and Electric	DTE 03-52	Integrated Resource Plan; Gas Demand Forecast
Michigan Public Service Commission				
Michigan Gas Utilities Corporation	03/21	Michigan Gas Utilities Corporation	Case No. U-20718	Return on Equity
Wisconsin Electric Power Company	12/11	Wisconsin Electric Power Company	Case No. U-16830	Return on Equity
Michigan Tax Tribunal				
New Covert Generating Co., LLC.	03/18	The Township of New Covert Michigan	MTT Docket No. 000248TT and 16-001888-TT	Valuation of Electric Generation Assets
Covert Township	07/14	New Covert Generating Co., LLC.	Docket No. 399578	Valuation of Electric Generation Assets
Minnesota Public Utilities Commission				
CenterPoint Energy Resources	11/21	CenterPoint Energy Resources	D-G-008/GR-21-435	Return on Equity
Allete, Inc. d/b/a Minnesota Power	11/21	Allete, Inc. d/b/a Minnesota Power	D-E-015/GR-21-630	Return on Equity
Otter Tail Power Company	11/20	Otter Tail Power Company	E017/GR-20-719	Return on Equity
Allete, Inc. d/b/a Minnesota Power	11/19	Allete, Inc. d/b/a Minnesota Power	E015/GR-19-442	Return on Equity
CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	10/19	CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	G-008/GR-19-524	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Great Plains Natural Gas Co.	09/19	Great Plains Natural Gas Co.	Docket No. G004/GR-19-511	Return on Equity
Minnesota Energy Resources Corporation	10/17	Minnesota Energy Resources Corporation	Docket No. G011/GR-17-563	Return on Equity
Missouri Public Service Commission				
Missouri American Water Company	07/22	Missouri American Water Company	Case No. WR-2022-0303 Case No. SR-2022-0304	Return on Equity
Evergy Missouri West	1/22	Evergy Missouri West	File No. ER-2022-0130	Return on Equity
Evergy Missouri Metro	1/22	Evergy Missouri Metro	File No. ER-2022-0129	Return on Equity
Ameren Missouri	03/21	Ameren Missouri	Docket No. ER-2021-0240 Docket No. GR-2021-0241	Return on Equity
Missouri American Water Company	06/20	Missouri American Water Company	Case No. WR-2020-0344 Case No. SR-2020-0345	Return on Equity
Missouri American Water Company	06/17	Missouri American Water Company	Case No. WR-17-0285 Case No. SR-17-0286	Return on Equity
Montana Public Service Commission				
Montana-Dakota Utilities Co.	06/20	Montana-Dakota Utilities Co.	D2020.06.076	Return on Equity
Montana-Dakota Utilities Co.	09/18	Montana-Dakota Utilities Co.	D2018.9.60	Return on Equity
New Hampshire - Board of Tax and Land Appeals				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Public Service Company of New Hampshire d/b/a Eversource Energy	11/19 12/19	Public Service Company of New Hampshire d/b/a Eversource Energy	Master Docket No. 28873-14-15-16-17PT	Valuation of Utility Property and Generating Assets
New Hampshire Public Utilities Commission				
Public Service Company of New Hampshire	05/19	Public Service Company of New Hampshire	DE-19-057	Return on Equity
New Hampshire-Merrimack County Superior Court				
Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	04/18	Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	220-2012-CV-1100	Valuation of Utility Property
New Hampshire-Rockingham Superior Court				
Eversource Energy	05/18	Public Service Commission of New Hampshire	218-2016-CV-00899 218-2017-CV-00917	Valuation of Utility Property
New Jersey Board of Public Utilities				
New Jersey American Water Company, Inc.	01/22	New Jersey American Water Company, Inc.	WR22010019	Return on Equity
Public Service Electric and Gas Company	10/20	Public Service Electric and Gas Company	EO18101115	Return on Equity
New Jersey American Water Company, Inc.	12/19	New Jersey American Water Company, Inc.	WR19121516	Return on Equity
Public Service Electric and Gas Company	04/19	Public Service Electric and Gas Company	EO18060629 GO18060630	Return on Equity
Public Service Electric and Gas Company	02/18	Public Service Electric and Gas Company	GR17070776	Return on Equity
Public Service Electric and Gas Company	01/18	Public Service Electric and Gas Company	ER18010029 GR18010030	Return on Equity
New Mexico Public Regulation Commission				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Southwestern Public Service Company	07/19	Southwestern Public Service Company	19-00170-UT	Return on Equity
Southwestern Public Service Company	10/17	Southwestern Public Service Company	Case No. 17-00255-UT	Return on Equity
Southwestern Public Service Company	12/16	Southwestern Public Service Company	Case No. 16-00269-UT	Return on Equity
Southwestern Public Service Company	10/15	Southwestern Public Service Company	Case No. 15-00296-UT	Return on Equity
Southwestern Public Service Company	06/15	Southwestern Public Service Company	Case No. 15-00139-UT	Return on Equity
New York State Department of Public Service				
New York State Electric and Gas Company Rochester Gas and Electric	05/22	New York State Electric and Gas Company Rochester Gas and Electric	22-E-0317 22-G-0318 22-E-0319 22-G-0320	Return on Equity
Corning Natural Gas Corporation	07/21	Corning Natural Gas Corporation	Case No. 21-G-0394	Return on Equity
Central Hudson Gas and Electric Corporation	08/20	Central Hudson Gas and Electric Corporation	Electric 20-E-0428 Gas 20-G-0429	Return on Equity
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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
North Dakota Public Service Commission				
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
Oklahoma Corporation Commission				
Oklahoma Gas & Electric	12/21	Oklahoma Gas & Electric	Cause No. PUD 202100164	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arkansas Oklahoma Gas Corporation	01/13	Arkansas Oklahoma Gas Corporation	Cause No. PUD 201200236	Return on Equity
Oregon Public Service Commission				
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
Pennsylvania Public Utility Commission				
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
American Water Works Company Inc.	04/17	Pennsylvania-American Water Company	Docket No. R-2017-2595853	Return on Equity
South Dakota Public Utilities Commission				
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
Texas Public Utility Commission				
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Utah Public Service Commission				
PacifiCorp d/b/a Rocky Mountain Power	05/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20-035-04	Return on Equity
Virginia State Corporation Commission				
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
Washington Utilities Transportation Commission				
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
West Virginia Public Service Commission				
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
Wisconsin Public Service Commission				
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

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
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
Wyoming Public Service Commission				
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

Christopher Wall

SENIOR ASSOCIATE

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Chris.Wall@brattle.com

With more than 10 years of experience as a financial and economic consultant in the energy industry, Mr. Wall specializes in regulatory economics for the electric, natural gas, and water utility sectors.

Mr. Wall has expertise in matters related to rate of return, cost of equity, capital structure, cost of service, and rate design. He has prepared expert testimony related to return on equity and capital structure in over 50 regulatory proceedings for electric, natural gas, and water utility clients across the US.

Mr. Wall has also applied his economics, financial modeling, advanced statistics, and econometrics competencies to prepare rate design, rate consolidation, marginal cost, cost of service, valuation, and demand forecast studies for electric and natural gas utilities. These studies have been submitted in utility regulatory proceedings throughout North America.

Mr. Wall has provided expert testimony before regulatory commissions in Arkansas, Massachusetts, and New York on issues that include cost of capital, natural gas demand forecasting, and statistical concepts for return on equity and cost of service.

Prior to joining Brattle, Mr. Wall was an Assistant Vice President at an economic consulting firm.

AREAS OF EXPERTISE

- Regulatory Economics, Finance & Rates

EDUCATION

- **Northeastern University**
MA in Economics
- **Saint Peter's College**
BA in Economics and Mathematics (summa cum laude)

PROFESSIONAL EXPERIENCE

- **The Brattle Group (2022–Present)**
Senior Associate

- **Concentric Energy Advisors, Inc. (2010–2021)**
 - Assistant Vice President (2021)
 - Senior Project Manager (2019–2020)
 - Project Manager (2017–2018)
 - Senior Consultant (2015–2016)
 - Consultant (2013–2014)
 - Assistant Consultant (2011–2012)
 - Associate (2010)
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EXPERT TESTIMONY

- **Return on Equity** | New York Department of Public Service
On behalf of the Corning Natural Gas Corporation, provided testimony related to return on equity in Case No. 21-G-0394 (July 2021) and Case No. 20-G-0101 (February 2020).
 - **Integrated Resource Plan** | Massachusetts Department of Public Utilities
On behalf of Berkshire Gas Company, provided testimony regarding the development of the natural gas demand forecast for an integrated resource plan in DPU 20-139 (2020), DPU 18-107 (2018), DPU 16-103 (2016), and DPU 14-98 (2014).
 - **Return on Equity and Class Cost of Service** | Arkansas Public Service Commission
On behalf of the Arkansas Oklahoma Gas Corporation, provided rebuttal testimony on statistical concepts for return on equity and class cost of service in Docket No. 13-078-U (2014).
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SELECTED CONSULTING EXPERIENCE

COST OF CAPITAL

- Provided expert testimony on the cost of capital for a Northeast natural gas utility.
- Prepared expert testimony and exhibits for return on equity, capital structure, and cost of debt analysis for numerous electric, gas, and water utility clients across the US. This included preparing direct testimony, responding to data requests, drafting rebuttal testimony in response to intervening witnesses, assisting with hearing preparation, and drafting and reviewing post-hearing briefs.

DEMAND FORECASTING & SUPPLY PLANNING

- Filed expert testimony regarding the development of the natural gas demand forecast for a Northeast gas utility.
- Contributed to and worked on demand forecasting projects for multiple Northeast gas utilities:

- Assisted in the development of natural gas price and effective degree day forecasts.
- Developed natural gas demand forecasts by customer class using SPSS.
 - ▶ Developed models for number of customers and use per customer.
 - ▶ Performed checks for model stability, heteroscedasticity, and autocorrelation by performing the Chow, Breusch-Pagan, and Autocorrelation Function/Partial Autocorrelation Function tests.
- Contributed in the development of the forecasting and supply planning report and supported data requests.

RATEMAKING

- Evaluated rate design restructuring and its impacts on customer bills for Northeast gas and electric utilities.
- Developed marginal cost studies and prepared testimony for Northeast electric and gas utilities.
- Designed rates and prepared testimony for a Northeast electric and gas utility.
- Prepared a cost of service study and designed rates for a Mid-Atlantic municipal gas utility.
- Prepared cost of service studies and designed rates for Midwest electric and gas utilities.
- Evaluated the impact of different rate alternatives and solar generation compensation approaches on solar customers in each rate class for a Midwest municipal electric utility.
- Contributed to the development of a benchmarking study to compare a Canadian natural gas utility's performance with its peers.
- Assisted in the development of a Total Factor Productivity Analysis for a Canadian natural gas utility as part of an Incentive Ratemaking report filed with the Ontario Energy Board.

VALUATION

- Provided analytical support for and prepared appraisal reports of generation assets to be used in ad valorem tax disputes.
- Provided analytical support and prepared expert testimony regarding the fair value of the distribution system assets of a Midwest natural gas utility and the fair value of the transmission and distribution system assets of a different Midwest electric utility.

SUMMARY OF ROE ANALYSES RESULTS

<i>Constant Growth DCF - Earnings Growth</i>			
	Minimum Growth Rate	Average Growth Rate	Maximum Growth Rate
30-Day Avg. Stock Price	8.09%	9.32%	10.33%
90-Day Avg. Stock Price	8.23%	9.46%	10.48%
180-Day Avg. Stock Price	8.14%	9.37%	10.38%
Average	8.15%	9.38%	10.40%
<i>Constant Growth DCF - Earnings & Retention Growth</i>			
30-Day Avg. Stock Price	7.39%	9.09%	10.33%
90-Day Avg. Stock Price	7.53%	9.23%	10.48%
180-Day Avg. Stock Price	7.44%	9.13%	10.38%
Average	7.45%	9.15%	10.40%
<i>CAPM, ECAPM, and Bond Yield Risk Premium</i>			
	Current 30-Day Avg 30-Year Treasury Yield	Near-Term Projected 30-Year Treasury Yield	Longer-Term Projected 30-Year Treasury Yield
CAPM:			
Current <i>Value Line</i> Beta	11.41%	11.42%	11.43%
Current Bloomberg Beta	10.83%	10.85%	10.87%
Long-term Avg. <i>Value Line</i> Beta	10.41%	10.44%	10.46%
ECAPM:			
Current <i>Value Line</i> Beta	11.68%	11.69%	11.70%
Current Bloomberg Beta	11.25%	11.26%	11.28%
Long-term Avg. <i>Value Line</i> Beta	10.93%	10.95%	10.97%
Bond Yield Risk Premium:	10.12%	10.17%	10.21%

PROXY GROUP SCREENING DATA AND RESULTS - FINAL PROXY GROUP

	[1]	[2]	[3]	[4]	[5]	[6]	
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)	% Regulated Electric Operating Income \geq 70%	Announced Merger
ALLETE, Inc.	ALE	Yes	BBB	Yes	Yes	93.08%	No
Alliant Energy Corporation	LNT	Yes	A-	Yes	Yes	88.08%	No
Ameren Corporation	AEE	Yes	BBB+	Yes	Yes	85.03%	No
American Electric Power Company, Inc.	AEP	Yes	A-	Yes	Yes	95.43%	No
Avista Corporation	AVA	Yes	BBB	Yes	Yes	76.10%	No
Duke Energy Corporation	DUK	Yes	BBB+	Yes	Yes	90.32%	No
Edison International	EIX	Yes	BBB	Yes	Yes	100.25%	No
Energy Corporation	ETR	Yes	BBB+	Yes	Yes	99.41%	No
Eversource Energy	ES	Yes	A-	Yes	Yes	80.09%	No
Evergy, Inc.	EVRG	Yes	A-	Yes	Yes	100.00%	No
IDACORP, Inc.	IDA	Yes	BBB	Yes	Yes	99.84%	No
NextEra Energy, Inc.	NEE	Yes	A-	Yes	Yes	85.07%	No
NorthWestern Corporation	NWE	Yes	BBB	Yes	Yes	84.01%	No
OGE Energy Corporation	OGE	Yes	BBB+	Yes	Yes	100.00%	No
Otter Tail Corporation	OTTR	Yes	BBB	Yes	Yes	62.74%	No
Portland General Electric Company	POR	Yes	BBB+	Yes	Yes	100.00%	No
Xcel Energy Inc.	XEL	Yes	A-	Yes	Yes	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]Source: SNL Financial (pulled from FERC Form 1) 2019-2021

[6] to [7] Source: Form 10-Ks for 2019, 2020 & 2021

[8]SNL Financial News Releases

30-DAY CONSTANT GROWTH DCF

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Projected EPS Growth Rate	Yahoo! Finance Projected EPS Growth Rate	Zacks Projected EPS Growth Rate	Average Projected EPS Growth Rate	Cost of Equity: Minimum Growth Rate	Cost of Equity: Mean Growth Rate	Cost of Equity: Maximum Growth Rate
ALLETE, Inc.	ALE	\$2.60	\$64.09	4.06%	4.22%	6.00%	8.70%	9.60%	8.10%	10.18%	12.32%	13.85%
Alliant Energy Corporation	LNT	\$1.81	\$54.38	3.33%	3.42%	6.00%	5.55%	5.80%	5.78%	8.97%	9.21%	9.43%
Ameren Corporation	AEE	\$2.36	\$88.15	2.68%	2.77%	6.50%	6.64%	6.90%	6.68%	9.26%	9.45%	9.67%
American Electric Power Company	AEP	\$3.32	\$94.56	3.51%	3.62%	6.50%	6.15%	6.10%	6.25%	9.72%	9.87%	10.13%
Avista Corporation	AVA	\$1.76	\$42.48	4.14%	4.24%	3.50%	5.20%	5.20%	4.63%	7.72%	8.87%	9.45%
Duke Energy Corporation	DUK	\$4.02	\$102.85	3.91%	4.01%	5.00%	5.65%	5.50%	5.38%	9.01%	9.40%	9.67%
Edison International	EIX	\$2.95	\$66.39	4.44%	4.55%	6.49%	4.40%	3.00%	4.63%	7.51%	9.18%	11.08%
Entergy Corporation	ETR	\$4.28	\$109.55	3.91%	4.01%	4.00%	6.19%	6.00%	5.40%	7.98%	9.41%	10.22%
Eversource Energy	ES	\$2.55	\$83.08	3.07%	3.17%	6.50%	6.42%	6.50%	6.47%	9.59%	9.64%	9.67%
Eversource Energy	EVRG	\$2.45	\$62.50	3.92%	4.02%	7.50%	2.43%	5.30%	5.08%	6.40%	9.10%	11.57%
IDACORP, Inc.	IDA	\$3.16	\$106.55	2.97%	3.02%	4.50%	3.40%	3.40%	3.77%	6.42%	6.79%	7.53%
NextEra Energy, Inc.	NEE	\$1.70	\$82.50	2.06%	2.16%	10.50%	10.21%	9.00%	9.90%	11.15%	12.07%	12.67%
NorthWestern Corporation	NWE	\$2.52	\$57.74	4.36%	4.43%	3.50%	4.50%	1.70%	3.23%	6.10%	7.67%	8.96%
OGE Energy Corporation	OGE	\$1.66	\$39.21	4.22%	4.32%	6.50%	1.90%	5.00%	4.47%	6.17%	8.79%	10.86%
Otter Tail Corporation	OTTR	\$1.65	\$60.44	2.73%	2.82%	4.50%	9.00%	n/a	6.75%	7.29%	9.57%	11.85%
Portland General Electric Company	POR	\$1.81	\$48.17	3.76%	3.83%	5.00%	1.39%	5.30%	3.90%	5.17%	7.73%	9.16%
Xcel Energy Inc.	XEL	\$1.95	\$69.89	2.79%	2.88%	6.00%	7.01%	6.50%	6.50%	8.87%	9.38%	9.90%
Mean										8.09%	9.32%	10.33%
Median										7.98%	9.38%	9.90%

Notes:

[1] Bloomberg Professional as of January 31 2023

[2] Bloomberg Professional 30-day average as of January 31 2023

[3] Equals [1]/[2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Value Line. Projected EPS growth rate for EIX based on estimated 2022 EPS in order to exclude anomalous results in 2021 due to wildfire and landslide events per Value Line.

[6] Yahoo! Finance

[7] Zacks

[8] Equals average of [5], [6], [7]

[9] Equals [3] x (1 + 0.5 x (min([5], [6], [7])) + (min([5], [6], [7])))

[10] Equals [4] + [8]

[11] Equals [3] x (1 + 0.5 x (max([5], [6], [7])) + (max([5], [6], [7])))

90-DAY CONSTANT GROWTH DCF

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Projected EPS Growth Rate	Yahoo! Finance Projected EPS Growth Rate	Zacks Projected EPS Growth Rate	Average Projected EPS Growth Rate	Cost of Equity: Minimum Growth Rate	Cost of Equity: Mean Growth Rate	Cost of Equity: Maximum Growth Rate
ALLETE, Inc.	ALE	\$2.60	\$59.65	4.36%	4.54%	6.00%	8.70%	9.60%	8.10%	10.49%	12.64%	14.17%
Alliant Energy Corporation	LNT	\$1.81	\$53.40	3.39%	3.49%	6.00%	5.55%	5.80%	5.78%	9.03%	9.27%	9.49%
Ameren Corporation	AEE	\$2.36	\$84.71	2.79%	2.88%	6.50%	6.64%	6.90%	6.68%	9.38%	9.56%	9.78%
American Electric Power Company	AEP	\$3.32	\$91.64	3.62%	3.74%	6.50%	6.15%	6.10%	6.25%	9.83%	9.99%	10.24%
Avista Corporation	AVA	\$1.76	\$40.23	4.37%	4.48%	3.50%	5.20%	5.20%	4.63%	7.95%	9.11%	9.69%
Duke Energy Corporation	DUK	\$4.02	\$97.43	4.13%	4.24%	5.00%	5.65%	5.50%	5.38%	9.23%	9.62%	9.89%
Edison International	EIX	\$2.95	\$62.17	4.75%	4.86%	6.49%	4.40%	3.00%	4.63%	7.82%	9.49%	11.39%
Entergy Corporation	ETR	\$4.28	\$108.60	3.94%	4.05%	4.00%	6.19%	6.00%	5.40%	8.02%	9.44%	10.25%
Eversource Energy	ES	\$2.55	\$79.99	3.19%	3.29%	6.50%	6.42%	6.50%	6.47%	9.71%	9.76%	9.79%
Evergy, Inc.	EVRG	\$2.45	\$60.52	4.05%	4.15%	7.50%	2.43%	5.30%	5.08%	6.53%	9.23%	11.70%
IDACORP, Inc.	IDA	\$3.16	\$103.99	3.04%	3.10%	4.50%	3.40%	3.40%	3.77%	6.49%	6.86%	7.61%
NextEra Energy, Inc.	NEE	\$1.70	\$80.86	2.10%	2.21%	10.50%	10.21%	9.00%	9.90%	11.20%	12.11%	12.71%
NorthWestern Corporation	NWE	\$2.52	\$54.56	4.62%	4.69%	3.50%	4.50%	1.70%	3.23%	6.36%	7.93%	9.22%
OGE Energy Corporation	OGE	\$1.66	\$37.88	4.37%	4.47%	6.50%	1.90%	5.00%	4.47%	6.31%	8.94%	11.01%
Otter Tail Corporation	OTTR	\$1.65	\$60.40	2.73%	2.82%	4.50%	9.00%	n/a	6.75%	7.29%	9.57%	11.85%
Portland General Electric Company	POR	\$1.81	\$46.44	3.90%	3.97%	5.00%	1.39%	5.30%	3.90%	5.31%	7.87%	9.30%
Xcel Energy Inc.	XEL	\$1.95	\$67.09	2.91%	3.00%	6.00%	7.01%	6.50%	6.50%	8.99%	9.50%	10.02%
Mean										8.23%	9.46%	10.48%
Median										8.02%	9.49%	10.02%

Notes:

[1] Bloomberg Professional as of January 31 2023

[2] Bloomberg Professional 90-day average as of January 31 2023

[3] Equals [1]/[2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Value Line. Projected EPS growth rate for EIX based on estimated 2022 EPS in order to exclude anomalous results in 2021 due to wildfire and landslide events per Value Line.

[6] Yahoo! Finance

[7] Zacks

[8] Equals average of [5], [6], [7]

[9] Equals [3] x (1 + 0.5 x (min([5], [6], [7]))) + (min([5], [6], [7]))

[10] Equals [4] + [8]

[11] Equals [3] x (1 + 0.5 x (max([5], [6], [7]))) + (max([5], [6], [7]))

180-DAY CONSTANT GROWTH DCF

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Company		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Projected EPS Growth Rate	Yahoo! Finance Projected EPS Growth Rate	Zacks Projected EPS Growth Rate	Average Projected EPS Growth Rate	Cost of Equity: Minimum Growth Rate	Cost of Equity: Mean Growth Rate	Cost of Equity: Maximum Growth Rate
ALLETE, Inc.	ALE	\$2.60	\$59.39	4.38%	4.56%	6.00%	8.70%	9.60%	8.10%	10.51%	12.66%	14.19%
Alliant Energy Corporation	LNT	\$1.81	\$56.17	3.22%	3.32%	6.00%	5.55%	5.80%	5.78%	8.86%	9.10%	9.32%
Ameren Corporation	AEE	\$2.36	\$87.43	2.70%	2.79%	6.50%	6.64%	6.90%	6.68%	9.29%	9.47%	9.69%
American Electric Power Company	AEP	\$3.32	\$94.51	3.51%	3.62%	6.50%	6.15%	6.10%	6.25%	9.72%	9.87%	10.13%
Avista Corporation	AVA	\$1.76	\$40.84	4.31%	4.41%	3.50%	5.20%	5.20%	4.63%	7.88%	9.04%	9.62%
Duke Energy Corporation	DUK	\$4.02	\$101.88	3.95%	4.05%	5.00%	5.65%	5.50%	5.38%	9.04%	9.44%	9.71%
Edison International	EIX	\$2.95	\$63.34	4.66%	4.77%	6.49%	4.40%	3.00%	4.63%	7.73%	9.40%	11.30%
Entergy Corporation	ETR	\$4.28	\$111.02	3.86%	3.96%	4.00%	6.19%	6.00%	5.40%	7.93%	9.36%	10.16%
Eversource Energy	ES	\$2.55	\$83.45	3.06%	3.15%	6.50%	6.42%	6.50%	6.47%	9.57%	9.63%	9.65%
Evergy, Inc.	EVRG	\$2.45	\$63.35	3.87%	3.97%	7.50%	2.43%	5.30%	5.08%	6.34%	9.04%	11.51%
IDACORP, Inc.	IDA	\$3.16	\$105.36	3.00%	3.06%	4.50%	3.40%	3.40%	3.77%	6.45%	6.82%	7.57%
NextEra Energy, Inc.	NEE	\$1.70	\$80.77	2.10%	2.21%	10.50%	10.21%	9.00%	9.90%	11.20%	12.11%	12.72%
NorthWestern Corporation	NWE	\$2.52	\$55.02	4.58%	4.65%	3.50%	4.50%	1.70%	3.23%	6.32%	7.89%	9.18%
OGE Energy Corporation	OGE	\$1.66	\$38.41	4.31%	4.41%	6.50%	1.90%	5.00%	4.47%	6.25%	8.88%	10.95%
Otter Tail Corporation	OTTR	\$1.65	\$64.85	2.54%	2.63%	4.50%	9.00%	n/a	6.75%	7.10%	9.38%	11.66%
Portland General Electric Company	POR	\$1.81	\$47.85	3.78%	3.86%	5.00%	1.39%	5.30%	3.90%	5.20%	7.75%	9.18%
Xcel Energy Inc.	XEL	\$1.95	\$69.39	2.81%	2.90%	6.00%	7.01%	6.50%	6.50%	8.89%	9.40%	9.92%
Mean										8.14%	9.37%	10.38%
Median										7.93%	9.38%	9.92%

Notes:

[1] Bloomberg Professional as of January 31 2023

[2] Bloomberg Professional 180-day average as of January 31 2023

[3] Equals [1]/[2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Value Line. Projected EPS growth rate for EIX based on estimated 2022 EPS in order to exclude anomalous results in 2021 due to wildfire and landslide events per Value Line.

[6] Yahoo! Finance

[7] Zacks

[8] Equals average of [5], [6], [7]

[9] Equals [3] x (1 + 0.5 x (min([5], [6], [7]))) + (min([5], [6], [7]))

[10] Equals [4] + [8]

[11] Equals [3] x (1 + 0.5 x (max([5], [6], [7]))) + (max([5], [6], [7]))

RETENTION GROWTH

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]
Company	Ticker	All Dividends to Net Profit Projection Year 1	All Dividends to Net Profit Projection Year 2	All Dividends to Net Profit Projection Years 3-5	Average Retention Ratio	Return on Common Equity Projection Year 1	Return on Common Equity Projection Year 2	Return on Common Equity Projection Years 3-5	Average Return on Common Equity	b x r	Common Shares Outstanding Year 0	Common Shares Outstanding Years 3-5	Common Shares Outstanding Growth Rate	Price Projection Years 3-5 High	Price Projection Years 3-5 Low	Price Projection Years 3-5 Mid	Projected Book Value per Share Years 3-5	Market-to-Book Ratio	s	v	s x v	br + sv
ALLETE, Inc.	ALE	69.00%	68.00%	63.00%	33%	7.50%	8.00%	9.00%	8.17%	2.72%	53.20	61.00	2.77%	\$ 95.00	\$ 70.00	\$ 82.50	\$ 54.00	1.53	4.24%	34.55%	1.46%	4.19%
Alliant Energy Corporation	LNT	61.00%	61.00%	61.00%	39%	11.00%	11.50%	11.50%	11.33%	4.42%	250.47	253.00	0.20%	\$ 70.00	\$ 55.00	\$ 62.50	\$ 30.25	2.07	0.42%	51.60%	0.21%	4.63%
Ameren Corporation	AEE	58.00%	58.00%	60.00%	41%	10.00%	10.00%	10.00%	10.00%	4.13%	257.70	280.00	1.67%	\$ 100.00	\$ 80.00	\$ 90.00	\$ 51.25	1.76	2.94%	43.06%	1.27%	5.40%
American Electric Power Company, Inc	AEP	63.00%	63.00%	62.00%	37%	11.00%	10.50%	11.00%	10.83%	4.04%	504.21	545.00	1.57%	\$ 120.00	\$ 100.00	\$ 110.00	\$ 59.00	1.86	2.92%	46.36%	1.36%	5.40%
Avista Corporation	AVA	93.00%	78.00%	72.00%	19%	6.50%	7.50%	8.00%	7.33%	1.39%	71.50	83.00	3.03%	\$ 65.00	\$ 50.00	\$ 57.50	\$ 34.95	1.65	4.98%	39.22%	1.95%	3.35%
Duke Energy Corporation	DUK	76.00%	73.00%	68.00%	28%	8.50%	9.00%	9.00%	8.83%	2.44%	769.00	770.00	0.03%	\$ 130.00	\$ 95.00	\$ 112.50	\$ 70.00	1.61	0.04%	37.78%	0.02%	2.46%
Edison International	EIX	61.00%	61.00%	56.00%	41%	13.00%	12.50%	13.00%	12.83%	5.22%	380.38	390.00	0.50%	\$ 120.00	\$ 80.00	\$ 100.00	\$ 47.45	2.11	1.06%	52.55%	0.55%	5.77%
Energy Corporation	ETR	62.00%	64.00%	60.00%	38%	9.50%	10.50%	11.50%	10.50%	3.99%	202.65	214.00	1.10%	\$ 160.00	\$ 115.00	\$ 137.50	\$ 74.00	1.86	2.04%	46.18%	0.94%	4.93%
Eversource Energy	ES	62.00%	62.00%	62.00%	38%	9.00%	9.50%	10.00%	9.50%	3.61%	344.40	365.00	1.17%	\$ 115.00	\$ 95.00	\$ 105.00	\$ 53.75	1.95	2.28%	48.81%	1.11%	4.72%
Evergy, Inc.	EVRG	64.00%	65.00%	63.00%	36%	8.50%	9.00%	10.00%	9.17%	3.30%	229.30	230.00	0.06%	\$ 95.00	\$ 70.00	\$ 82.50	\$ 47.50	1.74	0.11%	42.42%	0.04%	3.34%
IDACORP, Inc.	IDA	60.00%	63.00%	66.00%	37%	9.50%	9.00%	9.50%	9.33%	3.45%	50.52	52.00	0.58%	\$ 130.00	\$ 105.00	\$ 117.50	\$ 67.30	1.75	1.01%	42.72%	0.43%	3.89%
NextEra Energy, Inc.	NEE	58.00%	59.00%	61.00%	41%	15.00%	13.50%	15.00%	14.50%	5.90%	1963.00	2025.00	0.62%	\$ 105.00	\$ 85.00	\$ 95.00	\$ 27.25	3.49	2.17%	71.32%	1.55%	7.45%
NorthWestern Corporation	NWE	75.00%	72.00%	67.00%	29%	7.50%	7.50%	8.00%	7.67%	2.20%	54.06	62.00	2.78%	\$ 75.00	\$ 55.00	\$ 65.00	\$ 50.00	1.30	3.61%	23.08%	0.83%	3.03%
OGE Energy Corporation	OGE	73.00%	81.00%	57.00%	30%	12.00%	12.00%	13.00%	12.33%	3.66%	200.10	200.20	0.01%	\$ 55.00	\$ 40.00	\$ 47.50	\$ 26.00	1.83	0.02%	45.26%	0.01%	3.67%
Otter Tail Corporation	OTTR	31.00%	44.00%	57.00%	56%	19.50%	13.50%	11.50%	14.83%	8.31%	41.55	42.50	0.45%	\$ 75.00	\$ 55.00	\$ 65.00	\$ 34.25	1.90	0.86%	47.31%	0.41%	8.71%
Portland General Electric Company	POR	64.00%	64.00%	64.00%	36%	9.00%	8.50%	9.50%	9.00%	3.24%	89.41	100.00	2.26%	\$ 75.00	\$ 55.00	\$ 65.00	\$ 37.00	1.76	3.98%	43.08%	1.71%	4.95%
Xcel Energy Inc.	XEL	62.00%	62.00%	62.00%	38%	10.50%	10.50%	11.00%	10.67%	4.05%	544.03	561.00	0.62%	\$ 90.00	\$ 75.00	\$ 82.50	\$ 37.00	2.23	1.37%	55.15%	0.76%	4.81%
Mean																						4.75%

Notes:
 [1] - [3] Value Line
 [4] Equals 1 - Average ([1], [2], [3])
 [5] - [7] Value Line
 [8] Equals Average ([5], [6], [7])
 [9] Equals [4] x [8]
 [10] - [11] Value Line
 [12] Equals ([11] / [10]) ^ 0.2 - 1
 [13] - [14] Value Line
 [15] Equals Average ([13], [14])
 [16] Value Line
 [17] Equals [15] / [16]
 [18] Equals [12] x [17]
 [19] Equals 1 - (1 / [17])
 [20] Equals [18] x [19]
 [21] Equals [9] + [20]

30-DAY CONSTANT GROWTH DCF

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Company		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Projected EPS Growth Rate	Yahoo! Finance Projected EPS Growth Rate	Zacks Projected EPS Growth Rate	Projected Retention Growth Rate	Average Projected Growth Rate	Cost of Equity: Minimum Growth Rate	Cost of Equity: Mean Growth Rate	Cost of Equity: Maximum Growth Rate
ALLETE, Inc.	ALE	\$2.60	\$64.09	4.06%	4.20%	6.00%	8.70%	9.60%	4.19%	7.12%	8.33%	11.32%	13.85%
Alliant Energy Corporation	LNT	\$1.81	\$54.38	3.33%	3.42%	6.00%	5.55%	5.80%	4.63%	5.50%	8.04%	8.92%	9.43%
Ameren Corporation	AEE	\$2.36	\$88.15	2.68%	2.76%	6.50%	6.64%	6.90%	5.40%	6.36%	8.15%	9.12%	9.67%
American Electric Power Company	AEP	\$3.32	\$94.56	3.51%	3.62%	6.50%	6.15%	6.10%	5.40%	6.04%	9.01%	9.65%	10.13%
Avista Corporation	AVA	\$1.76	\$42.48	4.14%	4.23%	3.50%	5.20%	5.20%	3.35%	4.31%	7.56%	8.54%	9.45%
Duke Energy Corporation	DUK	\$4.02	\$102.85	3.91%	4.00%	5.00%	5.65%	5.50%	2.46%	4.65%	6.42%	8.65%	9.67%
Edison International	EIX	\$2.95	\$66.39	4.44%	4.55%	6.49%	4.40%	3.00%	5.77%	4.92%	7.51%	9.47%	11.08%
Energy Corporation	ETR	\$4.28	\$109.55	3.91%	4.01%	4.00%	6.19%	6.00%	4.93%	5.28%	7.98%	9.29%	10.22%
Eversource Energy	ES	\$2.55	\$83.08	3.07%	3.16%	6.50%	6.42%	6.50%	4.72%	6.04%	7.87%	9.20%	9.67%
Evergy, Inc.	EVRG	\$2.45	\$62.50	3.92%	4.01%	7.50%	2.43%	5.30%	3.34%	4.64%	6.40%	8.65%	11.57%
IDACORP, Inc.	IDA	\$3.16	\$106.55	2.97%	3.02%	4.50%	3.40%	3.40%	3.89%	3.80%	6.42%	6.82%	7.53%
NextEra Energy, Inc.	NEE	\$1.70	\$82.50	2.06%	2.16%	10.50%	10.21%	9.00%	7.45%	9.29%	9.59%	11.45%	12.67%
NorthWestern Corporation	NWE	\$2.52	\$57.74	4.36%	4.43%	3.50%	4.50%	1.70%	3.03%	3.18%	6.10%	7.62%	8.96%
OGE Energy Corporation	OGE	\$1.66	\$39.21	4.22%	4.32%	6.50%	1.90%	5.00%	3.67%	4.27%	6.17%	8.58%	10.86%
Otter Tail Corporation	OTTR	\$1.65	\$60.44	2.73%	2.83%	4.50%	9.00%	n/a	8.71%	7.40%	7.29%	10.24%	11.85%
Portland General Electric Company	POR	\$1.81	\$48.17	3.76%	3.84%	5.00%	1.39%	5.30%	4.95%	4.16%	5.17%	8.00%	9.16%
Xcel Energy Inc.	XEL	\$1.95	\$69.89	2.79%	2.87%	6.00%	7.01%	6.50%	4.81%	6.08%	7.67%	8.96%	9.90%
Mean											7.39%	9.09%	10.33%
Median											7.56%	8.96%	9.90%

Notes:

[1] Bloomberg Professional as of January 31 2023

[2] Bloomberg Professional 30-day average as of January 31 2023

[3] Equals [1]/[2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Value Line. Projected EPS growth rate for EIX based on estimated 2022 EPS in order to exclude anomalous results in 2021 due to wildfire and landslide events per Value Line.

[6] Yahoo! Finance

[7] Zacks

[8] Attachment AEB/CMW-5

[9] Equals average of [5], [6], [7], [8]

[10] Equals [3] x (1 + 0.5 x (min([5], [6], [7], [8])) + (min([5], [6], [7], [8])))

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x (max([5], [6], [7], [8])) + (max([5], [6], [7], [8])))

90-DAY CONSTANT GROWTH DCF

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	
Company	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Projected EPS Growth Rate	Yahoo! Finance Projected EPS Growth Rate	Zacks Projected EPS Growth Rate	Retention Growth Rate	Average Projected Growth Rate	Equity: Minimum Growth Rate	Equity: Mean Growth Rate	Equity: Maximum Growth Rate	
ALLETE, Inc.	ALE	\$2.60	\$59.65	4.36%	4.51%	6.00%	8.70%	9.60%	4.19%	7.12%	8.64%	11.64%	14.17%
Alliant Energy Corporation	LNT	\$1.81	\$53.40	3.39%	3.48%	6.00%	5.55%	5.80%	4.63%	5.50%	8.10%	8.98%	9.49%
Ameren Corporation	AEE	\$2.36	\$84.71	2.79%	2.87%	6.50%	6.64%	6.90%	5.40%	6.36%	8.26%	9.23%	9.78%
American Electric Power Company	AEP	\$3.32	\$91.64	3.62%	3.73%	6.50%	6.15%	6.10%	5.40%	6.04%	9.12%	9.77%	10.24%
Avista Corporation	AVA	\$1.76	\$40.23	4.37%	4.47%	3.50%	5.20%	5.20%	3.35%	4.31%	7.79%	8.78%	9.69%
Duke Energy Corporation	DUK	\$4.02	\$97.43	4.13%	4.22%	5.00%	5.65%	5.50%	2.46%	4.65%	6.64%	8.87%	9.89%
Edison International	EIX	\$2.95	\$62.17	4.75%	4.86%	6.49%	4.40%	3.00%	5.77%	4.92%	7.82%	9.78%	11.39%
Energy Corporation	ETR	\$4.28	\$108.60	3.94%	4.05%	4.00%	6.19%	6.00%	4.93%	5.28%	8.02%	9.33%	10.25%
Eversource Energy	ES	\$2.55	\$79.99	3.19%	3.28%	6.50%	6.42%	6.50%	4.72%	6.04%	7.99%	9.32%	9.79%
Energy, Inc.	EVRG	\$2.45	\$60.52	4.05%	4.14%	7.50%	2.43%	5.30%	3.34%	4.64%	6.53%	8.79%	11.70%
IDACORP, Inc.	IDA	\$3.16	\$103.99	3.04%	3.10%	4.50%	3.40%	3.40%	3.89%	3.80%	6.49%	6.89%	7.61%
NextEra Energy, Inc.	NEE	\$1.70	\$80.86	2.10%	2.20%	10.50%	10.21%	9.00%	7.45%	9.29%	9.63%	11.49%	12.71%
NorthWestern Corporation	NWE	\$2.52	\$54.56	4.62%	4.69%	3.50%	4.50%	1.70%	3.03%	3.18%	6.36%	7.87%	9.22%
OGE Energy Corporation	OGE	\$1.66	\$37.88	4.37%	4.47%	6.50%	1.90%	5.00%	3.67%	4.27%	6.31%	8.73%	11.01%
Otter Tail Corporation	OTTR	\$1.65	\$60.40	2.73%	2.83%	4.50%	9.00%	n/a	8.71%	7.40%	7.29%	10.24%	11.85%
Portland General Electric Company	POR	\$1.81	\$46.44	3.90%	3.98%	5.00%	1.39%	5.30%	4.95%	4.16%	5.31%	8.14%	9.30%
Xcel Energy Inc.	XEL	\$1.95	\$67.09	2.91%	2.99%	6.00%	7.01%	6.50%	4.81%	6.08%	7.79%	9.08%	10.02%
Mean											7.53%	9.23%	10.48%
Median											7.79%	9.08%	10.02%

Notes:

[1] Bloomberg Professional as of January 31 2023

[2] Bloomberg Professional 90-day average as of January 31 2023

[3] Equals [1]/[2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Value Line. Projected EPS growth rate for EIX based on estimated 2022 EPS in order to exclude anomalous results in 2021 due to wildfire and landslide events per Value Line.

[6] Yahoo! Finance

[7] Zacks

[8] Attachment AEB/CMW-5

[9] Equals average of [5], [6], [7], [8]

[10] Equals [3] x (1 + 0.5 x (min([5], [6], [7], [8])) + (min([5], [6], [7], [8])))

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x (max([5], [6], [7], [8])) + (max([5], [6], [7], [8])))

180-DAY CONSTANT GROWTH DCF

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	
Company	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Projected EPS Growth Rate	Yahoo! Finance Projected EPS Growth Rate	Zacks Projected EPS Growth Rate	Retention Growth Rate	Average Projected Growth Rate	Equity: Minimum Growth Rate	Equity: Mean Growth Rate	Equity: Maximum Growth Rate	
ALLETE, Inc.	ALE	\$2.60	\$59.39	4.38%	4.53%	6.00%	8.70%	9.60%	4.19%	7.12%	8.66%	11.66%	14.19%
Alliant Energy Corporation	LNT	\$1.81	\$56.17	3.22%	3.31%	6.00%	5.55%	5.80%	4.63%	5.50%	7.93%	8.81%	9.32%
Ameren Corporation	AEE	\$2.36	\$87.43	2.70%	2.78%	6.50%	6.64%	6.90%	5.40%	6.36%	8.17%	9.14%	9.69%
American Electric Power Company	AEP	\$3.32	\$94.51	3.51%	3.62%	6.50%	6.15%	6.10%	5.40%	6.04%	9.01%	9.66%	10.13%
Avista Corporation	AVA	\$1.76	\$40.84	4.31%	4.40%	3.50%	5.20%	5.20%	3.35%	4.31%	7.73%	8.71%	9.62%
Duke Energy Corporation	DUK	\$4.02	\$101.88	3.95%	4.04%	5.00%	5.65%	5.50%	2.46%	4.65%	6.45%	8.69%	9.71%
Edison International	EIX	\$2.95	\$63.34	4.66%	4.77%	6.49%	4.40%	3.00%	5.77%	4.92%	7.73%	9.69%	11.30%
Energy Corporation	ETR	\$4.28	\$111.02	3.86%	3.96%	4.00%	6.19%	6.00%	4.93%	5.28%	7.93%	9.24%	10.16%
Eversource Energy	ES	\$2.55	\$83.45	3.06%	3.15%	6.50%	6.42%	6.50%	4.72%	6.04%	7.85%	9.18%	9.65%
Energy, Inc.	EVRG	\$2.45	\$63.35	3.87%	3.96%	7.50%	2.43%	5.30%	3.34%	4.64%	6.34%	8.60%	11.51%
IDACORP, Inc.	IDA	\$3.16	\$105.36	3.00%	3.06%	4.50%	3.40%	3.40%	3.89%	3.80%	6.45%	6.85%	7.57%
NextEra Energy, Inc.	NEE	\$1.70	\$80.77	2.10%	2.20%	10.50%	10.21%	9.00%	7.45%	9.29%	9.63%	11.49%	12.72%
NorthWestern Corporation	NWE	\$2.52	\$55.02	4.58%	4.65%	3.50%	4.50%	1.70%	3.03%	3.18%	6.32%	7.84%	9.18%
OGE Energy Corporation	OGE	\$1.66	\$38.41	4.31%	4.40%	6.50%	1.90%	5.00%	3.67%	4.27%	6.25%	8.67%	10.95%
Otter Tail Corporation	OTTR	\$1.65	\$64.85	2.54%	2.64%	4.50%	9.00%	n/a	8.71%	7.40%	7.10%	10.04%	11.66%
Portland General Electric Company	POR	\$1.81	\$47.85	3.78%	3.86%	5.00%	1.39%	5.30%	4.95%	4.16%	5.20%	8.02%	9.18%
Xcel Energy Inc.	XEL	\$1.95	\$69.39	2.81%	2.90%	6.00%	7.01%	6.50%	4.81%	6.08%	7.69%	8.98%	9.92%
Mean											7.44%	9.13%	10.38%
Median											7.73%	8.98%	9.92%

Notes:

[1] Bloomberg Professional as of January 31 2023

[2] Bloomberg Professional 180-day average as of January 31 2023

[3] Equals [1]/[2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Value Line. Projected EPS growth rate for EIX based on estimated 2022 EPS in order to exclude anomalous results in 2021 due to wildfire and landslide events per Value Line.

[6] Yahoo! Finance

[7] Zacks

[8] Attachment AEB/CMW-5

[9] Equals average of [5], [6], [7], [8]

[10] Equals [3] x (1 + 0.5 x (min([5], [6], [7], [8])) + (min([5], [6], [7], [8])))

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x (max([5], [6], [7], [8])) + (max([5], [6], [7], [8])))

**CAPITAL ASSET PRICING MODEL
CURRENT RISK FREE RATE AND VALUE LINE 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]
		Current 30-day average of 30-year Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE (K)	ECAPM ROE (K)
Company	Ticker						
ALLETE, Inc.	ALE	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
Alliant Energy Corporation	LNT	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Ameren Corporation	AEE	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
American Electric Power Company, Inc.	AEP	3.71%	0.75	12.50%	8.79%	10.30%	10.85%
Avista Corporation	AVA	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
Duke Energy Corporation	DUK	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Edison International	EIX	3.71%	0.95	12.50%	8.79%	12.06%	12.17%
Entergy Corporation	ETR	3.71%	0.95	12.50%	8.79%	12.06%	12.17%
Eversource Energy	ES	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
Evergy, Inc.	EVRG	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
IDACORP, Inc.	IDA	3.71%	0.80	12.50%	8.79%	10.74%	11.18%
NextEra Energy, Inc.	NEE	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
NorthWestern Corporation	NWE	3.71%	0.90	12.50%	8.79%	11.62%	11.84%
OGE Energy Corporation	OGE	3.71%	1.00	12.50%	8.79%	12.50%	12.50%
Otter Tail Corporation	OTTR	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Portland General Electric Company	POR	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Xcel Energy Inc.	XEL	3.71%	0.80	12.50%	8.79%	10.74%	11.18%
Mean						11.41%	11.68%
Median						11.62%	11.84%

Notes:

[1] Bloomberg Professional 30-day average as of January 31, 2023

[2] Value Line

[3] Attachment AEB/CMW-8

[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 AND VALUE LINE 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]
		Near-term projected 30-year U.S. Treasury bond yield (Q2 2023 - Q2 2024)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE (K)	ECAPM ROE (K)
Company	Ticker						
ALLETE, Inc.	ALE	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
Alliant Energy Corporation	LNT	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Ameren Corporation	AEE	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
American Electric Power Company, Inc.	AEP	3.82%	0.75	12.50%	8.68%	10.33%	10.87%
Avista Corporation	AVA	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
Duke Energy Corporation	DUK	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Edison International	EIX	3.82%	0.95	12.50%	8.68%	12.06%	12.17%
Entergy Corporation	ETR	3.82%	0.95	12.50%	8.68%	12.06%	12.17%
Eversource Energy	ES	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
Evergy, Inc.	EVRG	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
IDACORP, Inc.	IDA	3.82%	0.80	12.50%	8.68%	10.76%	11.19%
NextEra Energy, Inc.	NEE	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
NorthWestern Corporation	NWE	3.82%	0.90	12.50%	8.68%	11.63%	11.85%
OGE Energy Corporation	OGE	3.82%	1.00	12.50%	8.68%	12.50%	12.50%
Otter Tail Corporation	OTTR	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Portland General Electric Company	POR	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Xcel Energy Inc.	XEL	3.82%	0.80	12.50%	8.68%	10.76%	11.19%
Mean						11.42%	11.69%
Median						11.63%	11.85%

Notes:

[1] *Blue Chip Financial Forecasts*, Vol. 42, No. 2, February 1, 2023, at 2

[2] Value Line

[3] Attachment AEB/CMW-8

[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 AND VALUE LINE 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]
		Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	CAPM ROE (K)	ECAPM ROE (K)
Company	Ticker						
ALLETE, Inc.	ALE	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
Alliant Energy Corporation	LNT	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Ameren Corporation	AEE	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
American Electric Power Company, Inc.	AEP	3.90%	0.75	12.50%	8.60%	10.35%	10.88%
Avista Corporation	AVA	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
Duke Energy Corporation	DUK	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Edison International	EIX	3.90%	0.95	12.50%	8.60%	12.07%	12.17%
Entergy Corporation	ETR	3.90%	0.95	12.50%	8.60%	12.07%	12.17%
Eversource Energy	ES	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
Evergy, Inc.	EVRG	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
IDACORP, Inc.	IDA	3.90%	0.80	12.50%	8.60%	10.78%	11.21%
NextEra Energy, Inc.	NEE	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
NorthWestern Corporation	NWE	3.90%	0.90	12.50%	8.60%	11.64%	11.85%
OGE Energy Corporation	OGE	3.90%	1.00	12.50%	8.60%	12.50%	12.50%
Otter Tail Corporation	OTTR	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Portland General Electric Company	POR	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Xcel Energy Inc.	XEL	3.90%	0.80	12.50%	8.60%	10.78%	11.21%
Mean						11.43%	11.70%
Median						11.64%	11.85%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14

[2] Value Line

[3] Attachment AEB/CMW-8

[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 AND 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]	[2]	[3]	[4]	[5]	[6]
		Current 30-day average of 30-year Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.71%	0.83	12.50%	8.79%	11.01%	11.38%
Alliant Energy Corporation	LNT	3.71%	0.80	12.50%	8.79%	10.71%	11.16%
Ameren Corporation	AEE	3.71%	0.76	12.50%	8.79%	10.37%	10.90%
American Electric Power Company, Inc.	AEP	3.71%	0.77	12.50%	8.79%	10.48%	10.98%
Avista Corporation	AVA	3.71%	0.76	12.50%	8.79%	10.36%	10.89%
Duke Energy Corporation	DUK	3.71%	0.73	12.50%	8.79%	10.08%	10.69%
Edison International	EIX	3.71%	0.85	12.50%	8.79%	11.19%	11.52%
Entergy Corporation	ETR	3.71%	0.86	12.50%	8.79%	11.25%	11.56%
Eversource Energy	ES	3.71%	0.81	12.50%	8.79%	10.79%	11.21%
Evergy, Inc.	EVRG	3.71%	0.79	12.50%	8.79%	10.63%	11.10%
IDACORP, Inc.	IDA	3.71%	0.81	12.50%	8.79%	10.80%	11.22%
NextEra Energy, Inc.	NEE	3.71%	0.82	12.50%	8.79%	10.94%	11.33%
NorthWestern Corporation	NWE	3.71%	0.86	12.50%	8.79%	11.30%	11.60%
OGE Energy Corporation	OGE	3.71%	0.93	12.50%	8.79%	11.87%	12.03%
Otter Tail Corporation	OTTR	3.71%	0.88	12.50%	8.79%	11.46%	11.72%
Portland General Electric Company	POR	3.71%	0.79	12.50%	8.79%	10.62%	11.09%
Xcel Energy Inc.	XEL	3.71%	0.75	12.50%	8.79%	10.28%	10.84%
Mean						10.83%	11.25%
Median						10.79%	11.21%

Notes:

[1] Bloomberg Professional 30-day average as of January 31, 2023

[2] Bloomberg Professional

[3] Attachment AEB/CMW-8

[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 AND 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]	[2]	[3]	[4]	[5]	[6]
		Near-term projected 30-year U.S. Treasury bond yield (Q2 2023 - Q2)	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	CAPM ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.82%	0.83	12.50%	8.68%	11.03%	11.40%
Alliant Energy Corporation	LNT	3.82%	0.80	12.50%	8.68%	10.73%	11.17%
Ameren Corporation	AEE	3.82%	0.76	12.50%	8.68%	10.40%	10.92%
American Electric Power Company, Inc.	AEP	3.82%	0.77	12.50%	8.68%	10.50%	11.00%
Avista Corporation	AVA	3.82%	0.76	12.50%	8.68%	10.38%	10.91%
Duke Energy Corporation	DUK	3.82%	0.73	12.50%	8.68%	10.11%	10.71%
Edison International	EIX	3.82%	0.85	12.50%	8.68%	11.21%	11.53%
Entergy Corporation	ETR	3.82%	0.86	12.50%	8.68%	11.26%	11.57%
Eversource Energy	ES	3.82%	0.81	12.50%	8.68%	10.81%	11.23%
Evergy, Inc.	EVRG	3.82%	0.79	12.50%	8.68%	10.65%	11.11%
IDACORP, Inc.	IDA	3.82%	0.81	12.50%	8.68%	10.82%	11.24%
NextEra Energy, Inc.	NEE	3.82%	0.82	12.50%	8.68%	10.96%	11.34%
NorthWestern Corporation	NWE	3.82%	0.86	12.50%	8.68%	11.31%	11.61%
OGE Energy Corporation	OGE	3.82%	0.93	12.50%	8.68%	11.88%	12.03%
Otter Tail Corporation	OTTR	3.82%	0.88	12.50%	8.68%	11.48%	11.73%
Portland General Electric Company	POR	3.82%	0.79	12.50%	8.68%	10.64%	11.11%
Xcel Energy Inc.	XEL	3.82%	0.75	12.50%	8.68%	10.31%	10.86%
Mean						10.85%	11.26%
Median						10.81%	11.23%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 42, No. 2, February 1, 2023, at 2

[2] Bloomberg Professional

[3] Attachment AEB/CMW-8

[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 AND 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]	[2]	[3]	[4]	[5]	[6]
		Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	CAPM ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.90%	0.83	12.50%	8.60%	11.05%	11.41%
Alliant Energy Corporation	LNT	3.90%	0.80	12.50%	8.60%	10.75%	11.19%
Ameren Corporation	AEE	3.90%	0.76	12.50%	8.60%	10.42%	10.94%
American Electric Power Company, Inc.	AEP	3.90%	0.77	12.50%	8.60%	10.52%	11.01%
Avista Corporation	AVA	3.90%	0.76	12.50%	8.60%	10.40%	10.93%
Duke Energy Corporation	DUK	3.90%	0.73	12.50%	8.60%	10.13%	10.73%
Edison International	EIX	3.90%	0.85	12.50%	8.60%	11.22%	11.54%
Entergy Corporation	ETR	3.90%	0.86	12.50%	8.60%	11.27%	11.58%
Eversource Energy	ES	3.90%	0.81	12.50%	8.60%	10.82%	11.24%
Evergy, Inc.	EVRG	3.90%	0.79	12.50%	8.60%	10.67%	11.13%
IDACORP, Inc.	IDA	3.90%	0.81	12.50%	8.60%	10.84%	11.25%
NextEra Energy, Inc.	NEE	3.90%	0.82	12.50%	8.60%	10.97%	11.35%
NorthWestern Corporation	NWE	3.90%	0.86	12.50%	8.60%	11.32%	11.62%
OGE Energy Corporation	OGE	3.90%	0.93	12.50%	8.60%	11.89%	12.04%
Otter Tail Corporation	OTTR	3.90%	0.88	12.50%	8.60%	11.48%	11.74%
Portland General Electric Company	POR	3.90%	0.79	12.50%	8.60%	10.66%	11.12%
Xcel Energy Inc.	XEL	3.90%	0.75	12.50%	8.60%	10.33%	10.87%
Mean						10.87%	11.28%
Median						10.82%	11.24%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14

[2] Bloomberg Professional

[3] Attachment AEB/CMW-8

[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 AND LONG-TERM VALUE LINE 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]
		Current 30-day average of 30-year Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE (K)	ECAPM ROE (K)
Company	Ticker						
ALLETE, Inc.	ALE	3.71%	0.79	12.50%	8.79%	10.61%	11.08%
Alliant Energy Corporation	LNT	3.71%	0.75	12.50%	8.79%	10.30%	10.85%
Ameren Corporation	AEE	3.71%	0.73	12.50%	8.79%	10.08%	10.68%
American Electric Power Company, Inc.	AEP	3.71%	0.68	12.50%	8.79%	9.64%	10.35%
Avista Corporation	AVA	3.71%	0.79	12.50%	8.79%	10.61%	11.08%
Duke Energy Corporation	DUK	3.71%	0.67	12.50%	8.79%	9.55%	10.29%
Edison International	EIX	3.71%	0.75	12.50%	8.79%	10.30%	10.85%
Entergy Corporation	ETR	3.71%	0.75	12.50%	8.79%	10.26%	10.82%
Eversource Energy	ES	3.71%	0.74	12.50%	8.79%	10.24%	10.81%
Evergy, Inc.	EVRG	3.71%	0.95	12.50%	8.79%	12.06%	12.17%
IDACORP, Inc.	IDA	3.71%	0.73	12.50%	8.79%	10.12%	10.72%
NextEra Energy, Inc.	NEE	3.71%	0.73	12.50%	8.79%	10.12%	10.72%
NorthWestern Corporation	NWE	3.71%	0.75	12.50%	8.79%	10.26%	10.82%
OGE Energy Corporation	OGE	3.71%	0.93	12.50%	8.79%	11.88%	12.03%
Otter Tail Corporation	OTTR	3.71%	0.85	12.50%	8.79%	11.18%	11.51%
Portland General Electric Company	POR	3.71%	0.75	12.50%	8.79%	10.30%	10.85%
Xcel Energy Inc.	XEL	3.71%	0.66	12.50%	8.79%	9.46%	10.22%
Mean						10.41%	10.93%
Median						10.26%	10.82%

Notes:

[1] Bloomberg Professional 30-day average as of January 31, 2023

[2] Attachment AEB/CMW-7

[3] Attachment AEB/CMW-8

[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 AND LONG-TERM VALUE LINE 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]	[2]	[3]	[4]	[5]	[6]
		Near-term projected 30-year U.S. Treasury bond yield (Q2 2023 - Q2)	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	CAPM ROE (K)	ECAPM ROE (K)
ALLETE, Inc.	ALE	3.82%	0.79	12.50%	8.68%	10.63%	11.10%
Alliant Energy Corporation	LNT	3.82%	0.75	12.50%	8.68%	10.33%	10.87%
Ameren Corporation	AEE	3.82%	0.73	12.50%	8.68%	10.11%	10.71%
American Electric Power Company, Inc.	AEP	3.82%	0.68	12.50%	8.68%	9.68%	10.38%
Avista Corporation	AVA	3.82%	0.79	12.50%	8.68%	10.63%	11.10%
Duke Energy Corporation	DUK	3.82%	0.67	12.50%	8.68%	9.59%	10.32%
Edison International	EIX	3.82%	0.75	12.50%	8.68%	10.33%	10.87%
Entergy Corporation	ETR	3.82%	0.75	12.50%	8.68%	10.28%	10.84%
Eversource Energy	ES	3.82%	0.74	12.50%	8.68%	10.27%	10.83%
Evergy, Inc.	EVRG	3.82%	0.95	12.50%	8.68%	12.06%	12.17%
IDACORP, Inc.	IDA	3.82%	0.73	12.50%	8.68%	10.15%	10.74%
NextEra Energy, Inc.	NEE	3.82%	0.73	12.50%	8.68%	10.15%	10.74%
NorthWestern Corporation	NWE	3.82%	0.75	12.50%	8.68%	10.28%	10.84%
OGE Energy Corporation	OGE	3.82%	0.93	12.50%	8.68%	11.89%	12.04%
Otter Tail Corporation	OTTR	3.82%	0.85	12.50%	8.68%	11.19%	11.52%
Portland General Electric Company	POR	3.82%	0.75	12.50%	8.68%	10.33%	10.87%
Xcel Energy Inc.	XEL	3.82%	0.66	12.50%	8.68%	9.50%	10.25%
Mean						10.44%	10.95%
Median						10.28%	10.84%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 42, No. 2, February 1, 2023, at 2

[2] Attachment AEB/CMW-7

[3] Attachment AEB/CMW-8

[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 AND LONG-TERM VALUE LINE 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]
		Projected 30-year U.S. Treasury bond yield (2024 - 2028)	Beta (β)	Market Return (R_m)	Market Risk Premium ($R_m - R_f$)	CAPM ROE (K)	ECAPM ROE (K)
Company	Ticker						
ALLETE, Inc.	ALE	3.90%	0.79	12.50%	8.60%	10.65%	11.11%
Alliant Energy Corporation	LNT	3.90%	0.75	12.50%	8.60%	10.35%	10.88%
Ameren Corporation	AEE	3.90%	0.73	12.50%	8.60%	10.13%	10.72%
American Electric Power Company, Inc.	AEP	3.90%	0.68	12.50%	8.60%	9.70%	10.40%
Avista Corporation	AVA	3.90%	0.79	12.50%	8.60%	10.65%	11.11%
Duke Energy Corporation	DUK	3.90%	0.67	12.50%	8.60%	9.62%	10.34%
Edison International	EIX	3.90%	0.75	12.50%	8.60%	10.35%	10.88%
Entergy Corporation	ETR	3.90%	0.75	12.50%	8.60%	10.30%	10.85%
Eversource Energy	ES	3.90%	0.74	12.50%	8.60%	10.29%	10.84%
Evergy, Inc.	EVRG	3.90%	0.95	12.50%	8.60%	12.07%	12.17%
IDACORP, Inc.	IDA	3.90%	0.73	12.50%	8.60%	10.18%	10.76%
NextEra Energy, Inc.	NEE	3.90%	0.73	12.50%	8.60%	10.18%	10.76%
NorthWestern Corporation	NWE	3.90%	0.75	12.50%	8.60%	10.30%	10.85%
OGE Energy Corporation	OGE	3.90%	0.93	12.50%	8.60%	11.89%	12.04%
Otter Tail Corporation	OTTR	3.90%	0.85	12.50%	8.60%	11.21%	11.53%
Portland General Electric Company	POR	3.90%	0.75	12.50%	8.60%	10.35%	10.88%
Xcel Energy Inc.	XEL	3.90%	0.66	12.50%	8.60%	9.53%	10.27%
Mean						10.46%	10.97%
Median						10.30%	10.85%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14

[2] Attachment AEB/CMW-7

[3] Attachment AEB/CMW-8

[4] Equals [3]-[1]

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

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

HISTORICAL VALUE LINE BETA

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	Average
ALLETE, Inc.	ALE	0.75	0.80	0.80	0.75	0.80	0.65	0.65	0.85	0.90	0.90	0.79	
Alliant Energy Corporation	LNT	0.75	0.8	0.8	0.70	0.70	0.60	0.60	0.85	0.85	0.85	0.75	
Ameren Corporation	AEE	0.8	0.75	0.75	0.65	0.70	0.55	0.55	0.85	0.80	0.85	0.73	
American Electric Power Company,	AEP	0.7	0.7	0.7	0.65	0.65	0.55	0.55	0.75	0.75	0.75	0.68	
Avista Corporation	AVA	0.75	0.8	0.8	0.70	0.75	0.65	0.60	0.95	0.95	0.90	0.79	
Duke Energy Corporation	DUK	0.65	0.6	0.65	0.60	0.60	0.50	0.50	0.85	0.85	0.85	0.67	
Edison International	EIX	0.8	0.75	0.7	0.65	0.65	0.55	0.55	0.95	0.95	0.95	0.75	
Entergy Corporation	ETR	0.7	0.7	0.7	0.65	0.65	0.60	0.60	0.95	0.95	0.95	0.75	
Eversource Energy	ES			0.75	0.70	0.65	0.60	0.55	0.90	0.90	0.90	0.74	
Evergy, Inc.	EVRG						NMF	NMF	1.00	0.95	0.90	0.95	
IDACORP, Inc.	IDA	0.75	0.8	0.8	0.75	0.70	0.55	0.55	0.80	0.80	0.80	0.73	
NextEra Energy, Inc.	NEE	0.7	0.7	0.75	0.65	0.65	0.55	0.55	0.90	0.90	0.95	0.73	
NorthWestern Corporation	NWE	0.7	0.7	0.7	0.70	0.70	0.55	0.60	0.95	0.95	0.90	0.75	
OGE Energy Corporation	OGE	0.85	0.9	0.95	0.90	0.95	0.85	0.75	1.10	1.05	1.00	0.93	
Otter Tail Corporation	OTTR	0.95	0.9	0.85	0.85	0.90	0.75	0.70	0.85	0.90	0.85	0.85	
Portland General Electric Company	POR	0.75	0.8	0.8	0.70	0.70	0.60	0.55	0.85	0.90	0.85	0.75	
Xcel Energy Inc.	XEL	0.65	0.65	0.65	0.60	0.60	0.50	0.50	0.80	0.80	0.80	0.66	
Mean		0.75	0.76	0.76	0.70	0.71	0.60	0.58	0.89	0.89	0.88	0.76	

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] Value Line, dated December 30, 2022.
- [11] Average ([1] - [10])

MARKET RISK PREMIUM DERIVED FROM S&P 500 INDEX

[1] Estimate of the S&P 500 Dividend Yield	1.75%
[2] Estimate of the S&P 500 Growth Rate	10.65%
[3] S&P 500 Estimated Required Market Return	12.50%

		[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	325.62	96.69	31,484.58	0.11%	4.92%	0.01%	3.50%	0.00%
Signature Bank/New York NY	SBNY	62.93	128.95	8,114.69	0.03%	2.17%	0.00%	14.50%	0.00%
American Express Co	AXP	743.00	174.93	129,972.99	0.46%	1.19%	0.01%	10.00%	0.05%
Verizon Communications Inc	VZ	4,200.00	41.57	174,594.00	0.62%	6.28%	0.04%	2.50%	0.02%
Broadcom Inc	AVGO	417.89	585.01	244,467.49		3.15%		30.00%	
Boeing Co/The	BA	598.24	213.00	127,425.12					
Caterpillar Inc	CAT	520.41	252.29	131,293.99	0.46%	1.90%	0.01%	11.00%	0.05%
JPMorgan Chase & Co	JPM	2,933.21	139.96	410,531.37	1.45%	2.86%	0.04%	5.00%	0.07%
Chevron Corp	CVX	1,901.00	174.02	330,812.02		3.47%		44.00%	
Coca-Cola Co/The	KO	4,324.51	61.32	265,179.14	0.94%	2.87%	0.03%	8.00%	0.07%
AbbVie Inc	ABBV	1,768.48	147.75	261,293.07	0.92%	4.01%	0.04%	4.50%	0.04%
Walt Disney Co/The	DIS	1,823.59	108.49	197,841.50				86.00%	
FleetCor Technologies Inc	FLT	73.75	208.81	15,400.16	0.05%			10.50%	0.01%
Extra Space Storage Inc	EXR	133.92	157.83	21,136.91	0.07%	3.80%	0.00%	4.00%	0.00%
Exxon Mobil Corp	XOM	4,118.29	116.01	477,763.17		3.14%			
Phillips 66	PSX	472.63	100.27	47,390.81		3.87%		85.00%	
General Electric Co	GE	1,092.67	80.48	87,937.92		0.40%		21.00%	
HP Inc	HPQ	982.15	29.14	28,619.73	0.10%	3.60%	0.00%	10.50%	0.01%
Home Depot Inc/The	HD	1,019.19	324.17	330,389.53	1.17%	2.34%	0.03%	9.00%	0.11%
Monolithic Power Systems Inc	MPWR	46.94	426.56	20,023.58		0.70%		23.50%	
International Business Machines Corp	IBM	904.13	134.73	121,812.90	0.43%	4.90%	0.02%	3.00%	0.01%
Johnson & Johnson	JNJ	2,614.48	163.42	427,258.98	1.51%	2.77%	0.04%	8.00%	0.12%
McDonald's Corp	MCD	732.42	267.40	195,850.18	0.69%	2.27%	0.02%	10.50%	0.07%
Merk & Co Inc	MRK	2,535.40	107.41	272,326.88	0.96%	2.72%	0.03%	8.00%	0.08%
3M Co	MMM	552.74	115.08	63,609.66	0.22%	5.18%	0.01%	7.50%	0.02%
American Water Works Co Inc	AWK	181.83	156.49	28,454.26	0.10%	1.67%	0.00%	3.00%	0.00%
Bank of America Corp	BAC	7,996.78	35.48	283,725.68	1.00%	2.48%	0.02%	8.50%	0.09%
Pfizer Inc	PFE	5,613.32	44.16	247,883.99	0.88%	3.71%	0.03%	6.50%	0.06%
Procter & Gamble Co/The	PG	2,359.14	142.38	335,894.92	1.19%	2.57%	0.03%	6.50%	0.08%
AT&T Inc	T	7,128.00	20.37	145,197.36	0.51%	5.45%	0.03%	1.00%	0.01%
Travelers Cos Inc/The	TRV	232.10	191.12	44,358.95	0.16%	1.95%	0.00%	6.50%	0.01%
Raytheon Technologies Corp	RTX	1,470.06	99.85	146,785.59	0.52%	2.20%	0.01%	7.00%	0.04%
Analog Devices Inc	ADI	509.30	171.47	87,328.99	0.31%	1.77%	0.01%	14.00%	0.04%
Walmart Inc	WMT	2,696.80	143.87	387,988.62	1.37%	1.56%	0.02%	7.50%	0.10%
Cisco Systems Inc	CSCO	4,108.10	48.67	199,941.37	0.71%	3.12%	0.02%	9.00%	0.06%
Intel Corp	INTC	4,137.00	28.26	116,911.62		5.17%			
General Motors Co	GM	1,394.64	39.32	54,837.13	0.19%	0.92%	0.00%	10.00%	0.02%
Microsoft Corp	MSFT	7,443.80	247.81	1,844,649.07	6.52%	1.10%	0.07%	15.00%	0.98%
Dollar General Corp	DG	223.58	233.60	52,227.12	0.18%	0.94%	0.00%	10.00%	0.02%
Cigna Corp	CI	305.74	316.67	96,818.37	0.34%	1.41%	0.00%	10.00%	0.03%
Kinder Morgan Inc	KMI	2,247.74	18.30	41,133.68	0.15%	6.07%	0.01%	19.00%	0.03%
Citigroup Inc	C	1,937.00	52.22	101,150.14	0.36%	3.91%	0.01%	3.50%	0.01%
American International Group Inc	AIG	742.98	63.22	46,971.20	0.17%	2.02%	0.00%	6.50%	0.01%
Altria Group Inc	MO	1,792.17	45.04	80,719.47	0.29%	8.35%	0.02%	6.00%	0.02%
HCA Healthcare Inc	HCA	282.72	255.07	72,112.63	0.25%	0.94%	0.00%	12.50%	0.03%
International Paper Co	IP	355.67	41.82	14,874.12	0.05%	4.42%	0.00%	13.50%	0.01%
Hewlett Packard Enterprise Co	HPE	1,281.82	16.13	20,675.71	0.07%	2.98%	0.00%	7.50%	0.01%
Abbott Laboratories	ABT	1,743.57	110.55	192,522.11	0.68%	1.85%	0.01%	7.00%	0.05%
Aflac Inc	AFL	621.79	73.50	45,701.49	0.16%	2.29%	0.00%	9.00%	0.01%
Air Products and Chemicals Inc	APD	221.99	320.51	71,149.37	0.25%	2.18%	0.01%	11.50%	0.03%
Royal Caribbean Cruises Ltd	RCL	255.18	64.94	16,571.52					
Hess Corp	HES	308.31	150.16	46,295.53		1.00%			
Archer-Daniels-Midland Co	ADM	549.33	82.85	45,512.32	0.16%	2.17%	0.00%	13.00%	0.02%
Automatic Data Processing Inc	ADP	414.40	225.81	93,575.66	0.33%	2.21%	0.01%	10.00%	0.03%
Verisk Analytics Inc	VRSK	156.39	181.79	28,429.77	0.10%	0.68%	0.00%	13.00%	0.01%
AutoZone Inc	AZO	18.77	2,438.85	45,767.46	0.16%			14.50%	0.02%
Avery Dennison Corp	AVY	80.97	189.44	15,338.77	0.05%	1.58%	0.00%	12.00%	0.01%
Enphase Energy Inc	ENPH	135.92	221.38	30,090.86				26.50%	
MSCI Inc	MSCI	79.96	531.56	42,502.47	0.15%	1.04%	0.00%	14.50%	0.02%
Ball Corp	BALL	313.92	58.24	18,282.70		1.37%		21.50%	
Ceridian HCM Holding Inc	CDAY	153.60	72.28	11,101.85					
Carrier Global Corp	CARR	836.26	45.53	38,075.01		1.63%			
Bank of New York Mellon Corp/The	BK	808.45	50.57	40,883.06	0.14%	2.93%	0.00%	6.00%	0.01%
Otis Worldwide Corp	OTIS	416.59	82.23	34,255.87		1.41%			
Baxter International Inc	BAX	504.12	45.69	23,033.29	0.08%	2.54%	0.00%	8.00%	0.01%
Becton Dickinson and Co	BDX	284.27	252.22	71,698.07	0.25%	1.44%	0.00%	4.50%	0.01%
Berkshire Hathaway Inc	BRK/B	1,301.98	311.52	405,593.12	1.43%			6.00%	0.09%
Best Buy Co Inc	BBY	221.26	88.72	19,630.54	0.07%	3.97%	0.00%	4.00%	0.00%
Boston Scientific Corp	BSX	1,432.31	46.25	66,244.38	0.23%			17.00%	0.04%
Bristol-Myers Squibb Co	BMJ	2,126.16	72.65	154,465.52		3.14%			
Brown-Forman Corp	BF/B	309.95	66.58	20,636.60	0.07%	1.23%	0.00%	14.50%	0.01%
Coterra Energy Inc	CTRA	788.47	25.03	19,735.33		10.87%			
Campbell Soup Co	CPB	299.47	51.93	15,551.37	0.05%	2.85%	0.00%	5.00%	0.00%
Hilton Worldwide Holdings Inc	HLT	270.46	145.09	39,240.46		0.41%			
Carnival Corp	CCL	1,112.71	10.82	12,039.49					
Qorvo Inc	QRVO	101.39	108.66	11,016.93	0.04%			14.50%	0.01%
Lumen Technologies Inc	LUMN	1,034.58	5.25	5,431.56	0.02%			1.50%	0.00%
UDR Inc	UDR	325.54	42.59	13,864.83	0.05%	3.57%	0.00%	10.50%	0.01%
Clorox Co/The	CLX	123.39	144.69	17,852.58	0.06%	3.26%	0.00%	7.50%	0.00%
Paycom Software Inc	PAYC	60.02	323.94	19,442.88				21.00%	
CMS Energy Corp	CMS	290.25	63.19	18,341.02	0.06%	2.91%	0.00%	6.50%	0.00%
Newell Brands Inc	NWS	413.60	15.96	6,601.06		5.76%			
Colgate-Palmolive Co	CL	835.21	74.53	62,248.50	0.22%	2.52%	0.01%	6.50%	0.01%
EPAM Systems Inc	EPAM	57.51	332.65	19,131.70				20.50%	
Comerica Inc	CMA	131.00	73.31	9,603.61	0.03%	3.71%	0.00%	9.00%	0.00%
Conagra Brands Inc	CAG	476.62	37.19	17,725.61	0.06%	3.55%	0.00%	3.50%	0.00%
Consolidated Edison Inc	ED	354.86	95.31	33,821.99	0.12%	3.40%	0.00%	4.00%	0.00%
Coming Inc	GLW	845.81	34.61	29,273.52	0.10%	3.12%	0.00%	17.50%	0.02%
Cummins Inc	CMI	141.02	249.54	35,190.63	0.12%	2.52%	0.00%	8.50%	0.01%
Caesars Entertainment Inc	CZR	214.57	52.06	11,170.31					
Danaher Corp	DHR	728.30	264.38	192,547.95	0.68%	0.38%	0.00%	16.00%	0.11%
Target Corp	TGT	460.31	172.14	79,237.76	0.28%	2.51%	0.01%	12.00%	0.03%
Deere & Co	DE	297.16	422.84	125,649.87	0.44%	1.14%	0.01%	16.50%	0.07%
Dominion Energy Inc	D	833.28	63.64	53,029.62	0.19%	4.20%	0.01%	5.50%	0.01%
Dover Corp	DOV	140.35	151.83	21,309.95	0.08%	1.33%	0.00%	9.00%	0.01%

MARKET RISK PREMIUM DERIVED FROM S&P 500 INDEX

[1] Estimate of the S&P 500 Dividend Yield	1.75%
[2] Estimate of the S&P 500 Growth Rate	10.65%
[3] S&P 500 Estimated Required Market Return	12.50%

		[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.
Alliant Energy Corp	LNT	251.02	54.03	13,562.72	0.05%	3.35%	0.00%	6.00%	0.00%
Steel Dynamics Inc	STLD	175.57	120.64	21,180.89	0.07%	1.13%	0.00%	2.00%	0.00%
Duke Energy Corp	DUK	770.00	102.45	78,886.50	0.28%	3.92%	0.01%	5.00%	0.01%
Regency Centers Corp	REG	171.12	66.63	11,401.93	0.04%	3.90%	0.00%	12.50%	0.01%
Eaton Corp PLC	ETN	397.70	162.21	64,510.92	0.23%	2.00%	0.00%	12.00%	0.03%
Ecobab Inc	ECL	284.83	154.83	44,099.92	0.16%	1.37%	0.00%	10.50%	0.02%
PerkinElmer Inc	PKI	126.32	137.53	17,372.24	0.06%	0.20%	0.00%	4.00%	0.00%
Emerson Electric Co	EMR	582.30	90.22	52,535.38	0.19%	2.31%	0.00%	9.50%	0.02%
EOG Resources Inc	EOG	587.39	132.25	77,682.20	0.25%	2.50%	0.00%	26.00%	0.00%
Aon PLC	AON	206.85	318.68	65,919.91	0.23%	0.70%	0.00%	7.50%	0.02%
Entergy Corp	ETR	203.48	108.28	22,033.25	0.08%	3.95%	0.00%	4.00%	0.00%
Equifax Inc	EFX	122.44	222.20	27,206.83	0.10%	0.70%	0.00%	7.00%	0.01%
EQT Corp	EQT	367.05	32.67	11,991.39		1.84%			
IQVIA Holdings Inc	IQV	185.74	229.41	42,610.61	0.15%			14.50%	0.02%
Gartner Inc	IT	79.02	338.14	26,721.18	0.09%			18.00%	0.02%
FedEx Corp	FDX	252.40	193.86	48,929.68	0.17%	2.37%	0.00%	13.00%	0.02%
FMC Corp	FMC	125.97	133.13	16,769.85	0.06%	1.74%	0.00%	11.00%	0.01%
Brown & Brown Inc	BRO	283.20	58.56	16,584.19	0.06%	0.79%	0.00%	8.00%	0.00%
Ford Motor Co	F	3,949.64	13.51	53,359.66		4.44%		33.50%	
NextEra Energy Inc	NEE	1,987.16	74.63	148,302.05	0.52%	2.28%	0.01%	10.50%	0.06%
Franklin Resources Inc	BEN	500.36	31.20	15,611.17	0.06%	3.85%	0.00%	3.50%	0.00%
Garmin Ltd	GRMN	191.66	98.88	18,951.74	0.07%	2.95%	0.00%	6.00%	0.00%
Freeport-McMoRan Inc	FCX	1,429.33	44.62	63,776.57		1.34%			
Dexcom Inc	DXCM	386.26	107.09	41,364.37					
General Dynamics Corp	GD	274.55	233.06	63,986.39	0.23%	2.16%	0.00%	9.00%	0.02%
General Mills Inc	GIS	589.61	78.36	46,201.92	0.16%	2.76%	0.00%	4.00%	0.01%
Genuine Parts Co	GPC	141.16	167.82	23,689.64	0.08%	2.13%	0.00%	9.00%	0.01%
Atmos Energy Corp	ATO	141.02	117.54	16,575.02	0.06%	2.52%	0.00%	7.50%	0.00%
WW Grainger Inc	GWV	50.53	589.48	29,785.83	0.11%	1.17%	0.00%	11.00%	0.01%
Halliburton Co	HAL	908.05	41.22	37,429.70		1.55%		32.50%	
L3Harris Technologies Inc	LHX	190.40	214.82	40,902.37	0.14%	2.09%	0.00%	18.00%	0.03%
Healthpeak Properties Inc	PEAK	537.54	27.48	14,771.60	0.05%	4.37%	0.00%	17.00%	0.01%
Catalent Inc	CTLT	179.96	53.55	9,637.07				21.00%	
Fortive Corp	FTV	353.81	68.03	24,069.56	0.09%	0.41%	0.00%	12.00%	0.01%
Hershey Co/The	HSY	146.97	224.60	33,009.24	0.12%	1.85%	0.00%	9.00%	0.01%
Synchrony Financial	SYF	438.20	36.73	16,095.09	0.06%	2.50%	0.00%	9.50%	0.01%
Hormel Foods Corp	HRL	546.42	45.31	24,758.47	0.09%	2.43%	0.00%	7.50%	0.01%
Arthur J Gallagher & Co	AJG	211.90	195.72	41,473.07	0.15%	1.12%	0.00%	18.50%	0.03%
Mondelez International Inc	MDLZ	1,365.62	65.44	89,366.11	0.32%	2.35%	0.01%	7.50%	0.02%
CenterPoint Energy Inc	CNP	629.43	30.12	18,958.49	0.07%	2.52%	0.00%	6.50%	0.00%
Humana Inc	HUM	126.60	511.70	64,781.22	0.23%	0.62%	0.00%	11.00%	0.03%
Willis Towers Watson PLC	WTW	108.24	254.19	27,513.02	0.10%	1.29%	0.00%	8.50%	0.01%
Illinois Tool Works Inc	ITW	307.19	236.04	72,508.18	0.26%	2.22%	0.01%	11.00%	0.03%
CDW Corp/DE	CDW	135.39	196.03	26,540.70	0.09%	1.20%	0.00%	8.50%	0.01%
Trane Technologies PLC	TT	230.31	179.12	41,252.59		1.50%			
Interpublic Group of Cos Inc/The	IPG	388.53	36.46	14,165.62	0.05%	3.18%	0.00%	10.00%	0.01%
International Flavors & Fragrances Inc	IFF	254.96	112.46	28,673.03	0.10%	2.88%	0.00%	7.50%	0.01%
Generac Holdings Inc	GNRC	633.36	120.60	7,640.73				23.50%	
NXP Semiconductors NV	NXPI	259.14	184.31	47,761.17	0.17%	2.20%	0.00%	12.00%	0.02%
Kellogg Co	K	341.28	68.58	23,405.05	0.08%	3.44%	0.00%	3.50%	0.00%
Broadridge Financial Solutions Inc	BR	117.66	150.36	17,690.61	0.06%	1.93%	0.00%	9.50%	0.01%
Kimberly-Clark Corp	KMB	337.49	130.01	43,877.33	0.16%	3.63%	0.01%	5.50%	0.01%
Kimco Realty Corp	KIM	618.46	22.46	13,890.63	0.05%	4.10%	0.00%	8.50%	0.00%
Oracle Corp	ORCL	2,696.25	88.46	238,510.54	0.84%	1.45%	0.01%	10.00%	0.08%
Kroger Co/The	KR	715.82	44.63	31,947.14	0.11%	2.33%	0.00%	6.50%	0.01%
Lennar Corp	LEN	253.54	102.40	25,962.39	0.09%	1.46%	0.00%	8.50%	0.01%
Eli Lilly & Co	LLY	950.18	344.15	327,003.76	1.16%	1.31%	0.02%	11.50%	0.13%
Bath & Body Works Inc	BBWI	228.42	46.01	10,509.37		1.74%		26.50%	
Charter Communications Inc	CHTR	155.67	384.31	59,826.31				23.00%	
Lincoln National Corp	LNK	169.22	35.43	5,995.29	0.02%	5.08%	0.00%	11.50%	0.00%
Loews Corp	L	237.43	61.48	14,597.01	0.05%	0.41%	0.00%	18.50%	0.01%
Lowe's Cos Inc	LOW	604.70	208.25	125,929.40	0.45%	2.02%	0.01%	12.50%	0.06%
IDEX Corp	IEX	75.42	239.68	18,076.91	0.06%	1.00%	0.00%	11.00%	0.01%
Marsh & McLennan Cos Inc	MMC	496.01	174.91	86,757.11	0.31%	1.35%	0.00%	11.00%	0.03%
Masco Corp	MAS	225.53	53.20	11,998.14	0.04%	2.11%	0.00%	8.00%	0.00%
S&P Global Inc	SPGI	325.80	374.94	122,155.45	0.43%	0.96%	0.00%	9.50%	0.04%
Medtronic PLC	MDT	1,330.18	83.69	111,322.76	0.39%	3.25%	0.01%	7.50%	0.03%
Viatis Inc	VTRS	1,212.69	12.16	14,746.25		3.95%			
CVS Health Corp	CVS	1,313.97	88.22	115,918.17	0.41%	2.74%	0.01%	6.00%	0.02%
DuPont de Nemours Inc	DD	496.79	73.95	36,737.55	0.13%	1.78%	0.00%	9.50%	0.01%
Micron Technology Inc	MU	1,091.18	60.30	65,797.97	0.23%	0.76%	0.00%	13.00%	0.03%
Motorola Solutions Inc	MSI	167.20	257.01	42,972.84	0.15%	1.37%	0.00%	10.50%	0.02%
Choe Global Markets Inc	CBOE	106.08	122.88	13,035.36	0.05%	1.63%	0.00%	10.00%	0.00%
Laboratory Corp of America Holdings	LH	88.60	252.12	22,337.83	0.08%	1.14%	0.00%	1.50%	0.00%
Newmont Corp	NEM	793.74	52.93	42,012.61	0.15%	4.16%	0.01%	9.50%	0.01%
NIKE Inc	NKE	1,245.67	127.33	158,610.65		1.07%		24.00%	
NISource Inc	NI	406.13	27.75	11,270.22	0.04%	3.60%	0.00%	9.50%	0.00%
Norfolk Southern Corp	NSC	228.08	245.81	56,063.36	0.20%	2.20%	0.00%	10.00%	0.02%
Principal Financial Group Inc	PFG	244.68	92.55	22,645.41	0.08%	2.77%	0.00%	6.50%	0.01%
Eversource Energy	ES	348.31	82.33	28,676.12	0.10%	3.10%	0.00%	6.50%	0.01%
Northrop Grumman Corp	NOC	153.05	448.04	68,573.87	0.24%	1.54%	0.00%	6.50%	0.02%
Wells Fargo & Co	WFC	3,833.80	46.87	179,690.21	0.64%	2.56%	0.02%	12.00%	0.08%
Nucor Corp	NUE	256.54	169.02	43,361.07	0.15%	1.21%	0.00%	2.50%	0.00%
Occidental Petroleum Corp	OXY	908.91	64.79	58,888.54		0.80%			
Omnicon Group Inc	OMC	203.92	85.99	17,534.74	0.06%	3.26%	0.00%	6.50%	0.00%
ONEOK Inc	OKE	446.95	68.48	30,607.41	0.11%	5.58%	0.01%	11.50%	0.01%
Raymond James Financial Inc	RJF	215.00	112.77	24,245.55	0.09%	1.49%	0.00%	15.00%	0.01%
PG&E Corp	PG&E	1,987.70	15.90	31,604.43	0.11%			7.50%	0.01%
Parker-Hannifin Corp	PH	128.41	326.00	41,860.36	0.15%	1.63%	0.00%	15.50%	0.02%
Rollins Inc	ROL	492.47	36.40	17,925.98	0.06%	1.43%	0.00%	10.50%	0.01%
PPL Corp	PPL	736.32	29.60	21,795.01	0.08%	3.04%	0.00%	3.00%	0.00%
ConocoPhillips	COP	1,246.07	121.87	151,858.67	0.54%	0.57%	0.00%	20.00%	0.11%
PulteGroup Inc	PHM	227.82	56.89	12,960.68	0.05%	1.12%	0.00%	7.00%	0.00%
Pinnacle West Capital Corp	PNW	113.14	74.55	8,434.59	0.03%	4.64%	0.00%	0.50%	0.00%
PNC Financial Services Group Inc/The	PNC	401.00	165.43	66,337.43	0.23%	3.63%	0.01%	12.00%	0.03%

MARKET RISK PREMIUM DERIVED FROM S&P 500 INDEX

[1] Estimate of the S&P 500 Dividend Yield	1.75%
[2] Estimate of the S&P 500 Growth Rate	10.65%
[3] S&P 500 Estimated Required Market Return	12.50%

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
PPG Industries Inc	PPG	235.03	130.34	30,633.42	0.11%	1.90%	0.00%	4.00%	0.00%
Progressive Corp/The	PGR	584.90	136.35	79,751.12	0.28%	0.29%	0.00%	6.50%	0.02%
Public Service Enterprise Group Inc	PEG	498.95	61.93	30,899.97	0.11%	3.49%	0.00%	4.50%	0.00%
Robert Half International Inc	RHI	108.50	83.96	9,109.58	0.03%	2.05%	0.00%	10.50%	0.00%
Edison International	EIX	381.88	68.90	26,311.19	0.09%	4.28%	0.00%	16.00%	0.01%
Schlumberger Ltd	SLB	1,420.19	56.98	80,922.31		1.76%		28.50%	
Charles Schwab Corp/The	SCHW	1,815.85	77.42	140,582.80	0.50%	1.29%	0.01%	9.00%	0.04%
Sherwin-Williams Co/The	SHW	259.14	236.59	61,310.64	0.22%	1.01%	0.00%	11.50%	0.02%
West Pharmaceutical Services Inc	WST	74.03	265.60	19,663.16	0.07%	0.29%	0.00%	17.00%	0.01%
J M Smucker Co/The	SJM	106.64	152.80	16,294.44	0.06%	2.67%	0.00%	4.00%	0.00%
Snap-on Inc	SNA	53.16	248.73	13,221.24	0.05%	2.61%	0.00%	4.50%	0.00%
AMETEK Inc	AME	229.65	144.92	33,281.46	0.12%	0.61%	0.00%	10.00%	0.01%
Southern Co/The	SO	1,088.67	67.68	73,681.39	0.26%	4.02%	0.01%	6.50%	0.02%
Truist Financial Corp	TFC	1,326.83	49.39	65,532.08	0.23%	4.21%	0.01%	5.50%	0.01%
Southwest Airlines Co	LUV	593.75	35.77	21,238.51		2.01%			
W R Berkley Corp	WRB	264.55	70.14	18,555.26	0.07%	0.57%	0.00%	15.50%	0.01%
Stanley Black & Decker Inc	SWK	147.94	89.31	13,212.70	0.05%	3.58%	0.00%	6.00%	0.00%
Public Storage	PSA	175.64	304.34	53,453.67	0.19%	2.63%	0.00%	8.00%	0.02%
Arista Networks Inc	ANET	305.57	126.02	38,508.31	0.14%			10.00%	0.01%
Sysco Corp	SYYS	576.67	77.46	39,254.25		2.53%		21.50%	
Corteva Inc	CTVA	118.60	64.45	46,313.77	0.16%	0.93%	0.00%	16.50%	0.03%
Texas Instruments Inc	TXN	906.00	177.21	160,552.26	0.57%	2.80%	0.02%	7.50%	0.04%
Textron Inc	TXI	208.77	72.85	15,208.97	0.05%	0.11%	0.00%	10.50%	0.01%
Thermo Fisher Scientific Inc	TMO	392.20	570.33	223,681.14	0.79%	0.21%	0.00%	11.00%	0.09%
TIJ Cos Inc/The	TIJ	1,155.50	81.86	94,589.56	0.33%	1.44%	0.00%	17.00%	0.06%
Globe Life Inc	GL	97.27	120.85	11,755.08	0.04%	0.69%	0.00%	8.50%	0.00%
Johnson Controls International plc	JCI	687.21	69.57	47,809.48	0.17%	2.01%	0.00%	12.50%	0.02%
Ulta Beauty Inc	ULTA	50.88	513.96	26,150.80	0.09%			16.50%	0.02%
Union Pacific Corp	UNP	614.80	204.19	125,536.22	0.44%	2.55%	0.01%	9.50%	0.04%
Keysight Technologies Inc	KEYS	178.34	179.35	31,986.00	0.11%			13.00%	0.01%
UnitedHealth Group Inc	UNH	934.35	499.19	466,417.68	1.65%	1.32%	0.02%	12.00%	0.20%
Marathon Oil Corp	MRO	635.07	27.47	17,445.32		1.46%			
Bio-Rad Laboratories Inc	BIO	24.75	467.46	11,569.17	0.04%			11.50%	0.00%
Ventas Inc	VTR	399.72	51.81	20,709.39	0.07%	3.47%	0.00%	10.50%	0.01%
VFC Corp	VFC	388.57	30.94	12,022.23	0.04%	6.59%	0.00%	9.00%	0.00%
Vulcan Materials Co	VMC	132.91	183.33	24,365.84	0.09%	0.87%	0.00%	8.50%	0.01%
Weyerhaeuser Co	WY	732.79	34.43	25,230.10	0.09%	2.09%	0.00%	7.00%	0.01%
Whirlpool Corp	WHR	54.00	155.59	8,401.86	0.03%	4.50%	0.00%	6.00%	0.00%
Williams Cos Inc/The	WMB	1,218.34	32.24	39,279.28	0.14%	5.55%	0.01%	12.00%	0.02%
Constellation Energy Corp	CEG	326.66	85.36	27,884.04		0.66%			
WEC Energy Group Inc	WEC	315.44	93.99	29,647.74	0.10%	3.32%	0.00%	6.00%	0.01%
Adobe Inc	ADBE	457.80	370.34	169,541.65	0.60%			13.00%	0.08%
AES Corp/The	AES	667.95	27.41	18,308.51	0.06%	2.42%	0.00%	14.00%	0.01%
Amgen Inc	AMGN	533.58	252.40	134,675.34	0.48%	3.38%	0.02%	5.50%	0.03%
Apple Inc	AAPL	15,836.21	144.29	2,285,007.17	8.08%	0.64%	0.05%	13.50%	1.09%
Autodesk Inc	ADSK	215.77	215.16	46,424.43	0.16%			14.00%	0.12%
Cintas Corp	CTAS	101.62	443.74	45,092.86	0.16%	1.04%	0.00%	14.00%	0.02%
Comcast Corp	CMCSA	4,313.96	39.35	169,754.48	0.60%	2.95%	0.02%	9.00%	0.05%
Molson Coors Beverage Co	TAP	200.15	52.58	10,523.62		2.89%		49.50%	
KLA Corp	KLAC	138.48	392.48	54,350.63	0.19%	1.32%	0.00%	20.00%	0.04%
Mariott International Inc/MD	MAR	316.54	174.18	55,134.94	0.19%	0.92%	0.00%	17.50%	0.03%
McCormick & Co Inc/MD	MCK	250.72	75.12	18,834.16	0.07%	2.08%	0.00%	4.50%	0.00%
PACCAR Inc	PCAR	348.00	109.31	38,039.88	0.13%	0.91%	0.00%	5.00%	0.01%
Costco Wholesale Corp	COST	443.73	511.14	226,807.64	0.80%	0.70%	0.01%	10.50%	0.08%
First Republic Bank/CA	FRC	182.93	140.88	25,770.47	0.09%	0.77%	0.00%	11.50%	0.01%
Stryker Corp	SYK	378.43	253.81	96,049.32	0.34%	1.18%	0.00%	8.50%	0.03%
Tyson Foods Inc	TSN	287.82	65.75	18,923.90	0.07%	2.92%	0.00%	6.00%	0.00%
Lamb Weston Holdings Inc	LW	143.87	99.89	14,371.27	0.05%	1.12%	0.00%	11.50%	0.01%
Applied Materials Inc	AMAT	843.08	111.49	93,994.77	0.33%	0.93%	0.00%	13.50%	0.04%
American Airlines Group Inc	AAL	649.90	16.14	10,489.40					
Cardinal Health Inc	CAH	262.13	77.25	20,249.85	0.07%	2.57%	0.00%	5.00%	0.00%
Cincinnati Financial Corp	CINF	157.18	113.15	17,855.37	0.06%	2.65%	0.00%	9.00%	0.01%
Paramount Global	PARA	608.47	23.16	14,092.17	0.05%	4.15%	0.00%	4.50%	0.00%
DR Horton Inc	DHI	343.39	98.69	33,889.46	0.12%	1.01%	0.00%	0.50%	0.00%
Electronic Arts Inc	EA	276.08	128.68	35,525.97	0.13%	0.59%	0.00%	13.00%	0.02%
Expeditors International of Washington Inc	EXPD	159.14	108.15	17,210.56	0.06%	1.24%	0.00%	10.00%	0.01%
Fastenal Co	FAST	570.81	50.20	28,654.76	0.10%	2.79%	0.00%	8.50%	0.01%
M&T Bank Corp	MTB	172.61	156.00	26,927.63	0.10%	3.08%	0.00%	9.00%	0.01%
Xcel Energy Inc	XEL	547.25	68.77	37,634.24	0.13%	2.84%	0.00%	6.00%	0.01%
Fiserv Inc	FISV	635.03	106.68	67,744.79	0.24%			11.00%	0.03%
Fifth Third Bancorp	FITB	683.39	36.29	24,800.08	0.09%	3.64%	0.00%	9.50%	0.01%
Gilead Sciences Inc	GILD	1,254.24	83.94	105,281.24	0.37%	3.48%	0.01%	12.00%	0.04%
Husco Inc	HAS	138.11	59.17	8,172.21	0.03%	4.73%	0.00%	7.50%	0.00%
Huntington Bancshares Inc/OH	HBAN	1,442.73	15.17	21,886.27	0.08%	4.09%	0.00%	12.50%	0.01%
Welltower Inc	WELL	472.52	75.04	35,457.98	0.13%	3.25%	0.00%	2.50%	0.00%
Biogen Inc	BIIB	144.00	290.90	41,889.89				-10.50%	
Northern Trust Corp	NTRS	208.89	96.97	20,256.45	0.07%	3.09%	0.00%	8.00%	0.01%
Packaging Corp of America	PKG	92.53	142.70	13,204.60	0.05%	3.50%	0.00%	11.00%	0.01%
Paychex Inc	PAYX	360.47	115.86	41,763.71	0.15%	2.73%	0.00%	10.50%	0.02%
QUALCOMM Inc	QCOM	1,117.19	133.21	148,821.15	0.53%	2.25%	0.01%	18.00%	0.09%
Roper Technologies Inc	ROP	106.05	426.75	45,257.69	0.16%	0.64%	0.00%	3.50%	0.01%
Ross Stores Inc	ROST	344.37	118.19	40,701.21	0.14%	1.05%	0.00%	14.00%	0.02%
IDEXX Laboratories Inc	IDXX	82.82	480.50	39,793.57	0.14%			12.00%	0.02%
Starbucks Corp	SBUX	1,148.56	109.14	125,353.73	0.44%	1.94%	0.01%	16.00%	0.07%
KeyCorp	KEY	933.33	19.19	17,910.51	0.06%	4.27%	0.00%	7.50%	0.00%
Fox Corp	FOXA	302.48	33.94	10,266.00	0.04%	1.47%	0.00%	12.00%	0.00%
Fox Corp	FOX	240.22	31.70	7,614.94		1.58%			
State Street Corp	STT	349.02	91.33	31,876.36	0.11%	2.76%	0.00%	8.50%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	421.40	15.21	6,409.43					
US Bancorp	USB	1,531.00	49.80	76,243.80	0.27%	3.86%	0.01%	6.00%	0.02%
A O Smith Corp	AOS	126.87	67.70	8,589.10	0.03%	1.77%	0.00%	11.50%	0.00%
Gen Digital Inc	GEN	651.36	23.01	14,987.79	0.05%	2.17%	0.00%	10.50%	0.01%
T Rowe Price Group Inc	TROW	224.30	116.47	26,124.22	0.09%	4.12%	0.00%	4.50%	0.00%
Waste Management Inc	WM	410.48	154.73	63,513.11	0.22%	1.68%	0.00%	6.50%	0.01%
Constellation Brands Inc	STZ	184.50	231.52	42,714.98	0.15%	1.38%	0.00%	6.00%	0.01%

MARKET RISK PREMIUM DERIVED FROM S&P 500 INDEX

[1] Estimate of the S&P 500 Dividend Yield	1.75%
[2] Estimate of the S&P 500 Growth Rate	10.65%
[3] S&P 500 Estimated Required Market Return	12.50%

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
DENTSPLY SIRONA Inc	XRAY	214.91	36.83	7,915.21	0.03%	1.36%	0.00%	12.00%	0.00%
Zions Bancorp NA	ZION	148.66	53.16	7,902.98	0.03%	3.09%	0.00%	6.50%	0.00%
Alaska Air Group Inc	ALK	127.53	51.34	6,547.54					
Invesco Ltd	IVZ	454.80	18.51	8,418.35	0.03%	4.05%	0.00%	10.00%	0.00%
Linde PLC	LIN	492.46	330.94	162,973.72	0.58%	1.41%	0.01%	12.00%	0.07%
Intuit Inc	INTU	280.93	422.67	118,738.57	0.42%	0.74%	0.00%	16.50%	0.07%
Morgan Stanley	MS	1,690.11	97.33	164,498.31	0.58%	3.19%	0.02%	8.50%	0.05%
Microchip Technology Inc	MCHP	550.01	77.62	42,691.70	0.15%	1.69%	0.00%	10.00%	0.02%
Chubb Ltd	CB	415.05	227.49	94,419.72	0.33%	1.46%	0.00%	14.50%	0.05%
Hologic Inc	HOLX	246.55	81.37	20,061.85				25.00%	
Citizens Financial Group Inc	CFG	492.49	43.32	21,334.71	0.08%	3.88%	0.00%	8.00%	0.01%
O'Reilly Automotive Inc	ORLY	62.58	792.35	49,582.09	0.18%			13.00%	0.02%
Allstate Corp/The	ALL	265.21	128.47	34,071.53	0.12%	2.65%	0.00%	2.50%	0.00%
Equity Residential	EQR	377.92	63.65	24,054.54		3.93%		-6.00%	
BorgWarner Inc	BWA	234.15	47.28	11,070.80	0.04%	1.44%	0.00%	9.50%	0.00%
Keurig Dr Pepper Inc	KDP	1,416.25	35.28	49,965.34	0.18%	2.27%	0.00%	11.50%	0.02%
Organon & Co	OGN	254.36	30.13	7,663.99		3.72%			
Host Hotels & Resorts Inc	HST	715.03	18.85	13,478.28		2.55%		59.50%	
Incyte Corp	INCY	222.48	85.14	18,941.52				25.50%	
Simon Property Group Inc	SPG	326.95	128.46	41,999.48	0.15%	5.60%	0.01%	3.00%	0.00%
Eastman Chemical Co	EMN	119.99	88.17	10,579.52	0.04%	3.58%	0.00%	7.00%	0.00%
AvalonBay Communities Inc	AVB	139.90	177.44	24,823.32	0.09%	3.58%	0.00%	9.00%	0.01%
Prudential Financial Inc	PRU	368.00	104.94	38,617.92	0.14%	4.57%	0.01%	5.00%	0.01%
United Parcel Service Inc	UPS	729.82	185.23	135,184.74	0.48%	3.50%	0.02%	11.50%	0.05%
Walgreens Boots Alliance Inc	WBA	862.50	36.86	31,791.90	0.11%	5.21%	0.01%	3.00%	0.00%
STERIS PLC	STE	99.82	206.51	20,614.45	0.07%	0.91%	0.00%	10.00%	0.01%
McKesson Corp	MCK	141.79	378.68	53,694.17	0.19%	0.57%	0.00%	10.00%	0.02%
Lockheed Martin Corp	LMT	255.30	463.26	118,268.89	0.42%	2.59%	0.01%	8.00%	0.03%
AmerisourceBergen Corp	ABC	202.24	168.96	34,169.79	0.12%	1.15%	0.00%	8.50%	0.01%
Capital One Financial Corp	COF	381.30	119.00	45,374.70		2.02%			
Waters Corp	WAT	59.41	328.58	19,520.28	0.07%			6.00%	0.00%
Nordson Corp	NDSN	57.18	243.30	13,911.65	0.05%	1.07%	0.00%	12.00%	0.01%
Dollar Tree Inc	DLTR	221.18	150.18	33,217.41	0.12%			12.00%	0.01%
Darden Restaurants Inc	DRI	121.71	147.97	18,008.69		3.27%		21.50%	
Evergy Inc	EVRG	229.48	62.65	14,376.80	0.05%	3.91%	0.00%	7.50%	0.00%
Match Group Inc	MTCH	279.31	54.12	15,116.04				21.00%	
Domino's Pizza Inc	DPZ	35.40	353.00	12,495.85	0.04%	1.25%	0.00%	14.00%	0.01%
NVR Inc	NVR	3.20	5,270.00	16,842.92	0.06%			5.50%	0.00%
NetApp Inc	NTAP	215.57	66.23	14,277.40	0.05%	3.02%	0.00%	8.50%	0.00%
DXC Technology Co	DXC	230.07	28.73	6,609.77	0.02%			12.00%	0.00%
Old Dominion Freight Line Inc	ODFL	110.48	333.24	36,817.02	0.13%	0.36%	0.00%	11.50%	0.01%
DaVita Inc	DVA	90.10	82.39	7,423.34	0.03%			8.50%	0.00%
Hartford Financial Services Group Inc/The	HIG	318.10	77.61	24,687.66	0.09%	2.19%	0.00%	6.50%	0.01%
Iron Mountain Inc	IRM	290.71	54.58	15,867.17	0.06%	4.53%	0.00%	11.00%	0.01%
Estee Lauder Cos Inc/The	EL	231.27	277.08	64,080.29	0.23%	0.95%	0.00%	14.00%	0.03%
Cadence Design Systems Inc	CDNS	274.32	182.83	50,153.19	0.18%			12.00%	0.02%
Tyler Technologies Inc	TYL	41.64	322.77	13,440.14	0.05%			12.00%	0.01%
Universal Health Services Inc	UHS	64.16	148.21	9,508.71	0.03%	0.54%	0.00%	7.00%	0.00%
Skyworks Solutions Inc	SKWS	160.16	109.67	17,564.86	0.06%	2.26%	0.00%	9.00%	0.01%
Quest Diagnostics Inc	DGX	113.89	148.48	16,909.94	0.06%	1.78%	0.00%	3.50%	0.00%
Activision Blizzard Inc	ATVI	782.63	76.57	59,925.60	0.21%	0.61%	0.00%	11.50%	0.02%
Rockwell Automation Inc	ROK	114.78	282.03	32,371.97	0.11%	1.67%	0.00%	9.50%	0.01%
Kraft Heinz Co/The	KHC	1,224.93	40.53	49,646.41	0.18%	3.95%	0.01%	6.50%	0.01%
American Tower Corp	AMT	465.61	223.39	104,011.72	0.37%	2.79%	0.01%	9.00%	0.03%
Regeneron Pharmaceuticals Inc	REGN	107.08	758.47	81,220.00	0.29%			3.00%	0.01%
Amazon.com Inc	AMZN	10,201.65	103.13	1,052,096.58				26.50%	
Jack Henry & Associates Inc	JKHY	72.95	180.09	13,137.39	0.05%	1.09%	0.00%	8.50%	0.00%
Ralph Lauren Corp	RL	41.09	123.85	5,089.12	0.02%	2.42%	0.00%	12.00%	0.00%
Boston Properties Inc	BXP	156.76	74.54	11,684.52		5.26%		-1.00%	
Amphenol Corp	APH	595.10	79.77	47,470.73	0.17%	1.05%	0.00%	13.00%	0.02%
Howmet Aerospace Inc	HWM	413.71	40.69	16,833.94	0.06%	0.39%	0.00%	12.00%	0.01%
Pioneer Natural Resources Co	PXD	237.60	230.35	54,730.93		9.92%		21.00%	
Valero Energy Corp	VLO	385.52	140.03	53,984.79	0.19%	2.91%	0.01%	11.00%	0.02%
Synopsys Inc	SNPS	152.42	353.75	53,917.51	0.19%			12.50%	0.02%
Etsy Inc	ETSY	125.69	137.58	17,292.16				24.50%	
CH Robinson Worldwide Inc	CHRW	117.71	100.17	11,790.91	0.04%	2.44%	0.00%	8.50%	0.00%
Accenture PLC	ACN	658.39	279.05	183,723.45	0.65%	1.61%	0.01%	12.50%	0.08%
TransDigm Group Inc	TDG	54.54	717.75	39,142.50	0.14%			19.50%	0.03%
Yum! Brands Inc	YUM	281.69	130.51	36,763.10	0.13%	1.75%	0.00%	10.50%	0.01%
Prologis Inc	PLD	923.08	129.28	119,335.65	0.42%	2.44%	0.01%	6.00%	0.03%
FirstEnergy Corp	FE	571.75	40.95	23,413.29	0.08%	3.81%	0.00%	3.00%	0.00%
VenSign Inc	VRSN	106.02	218.05	23,116.79	0.08%			11.00%	0.01%
Quanta Services Inc	PWR	142.90	152.19	21,748.10	0.08%	0.21%	0.00%	16.50%	0.01%
Henry Schein Inc	HSIC	135.55	86.15	11,677.46	0.04%			7.00%	0.00%
Ameren Corp	AEE	258.37	86.87	22,444.69	0.08%	2.72%	0.00%	6.50%	0.01%
ANSYS Inc	ANSS	87.11	266.36	23,203.15	0.08%			8.50%	0.01%
Facet Research Systems Inc	FDS	38.25	422.94	16,178.30	0.06%	0.84%	0.00%	10.50%	0.01%
NVIDIA Corp	NVDA	2,460.00	195.37	480,610.20	0.08%			23.00%	
Sealed Air Corp	SEE	144.66	54.76	7,921.47	0.03%	1.46%	0.00%	10.00%	0.00%
Cognizant Technology Solutions Corp	CTSH	513.92	66.75	34,304.23	0.12%	1.62%	0.00%	8.00%	0.01%
SVB Financial Group	SVB	59.17	302.44	17,895.98	0.06%			8.50%	0.01%
Intuitive Surgical Inc	ISRG	353.39	245.69	86,823.16	0.31%			12.50%	0.04%
Take-Two Interactive Software Inc	TTWO	167.82	113.23	19,002.15	0.07%			3.00%	0.00%
Republic Services Inc	RSG	316.00	124.82	39,443.24	0.14%	1.59%	0.00%	12.50%	0.02%
eBay Inc	EBAY	542.66	49.50	26,861.62	0.09%	1.78%	0.00%	12.50%	0.01%
Goldman Sachs Group Inc/The	GS	334.92	365.81	122,515.62	0.43%	2.73%	0.01%	5.00%	0.02%
SBA Communications Corp	SBAC	107.97	297.53	32,123.12	0.09%			35.50%	
Sempra Energy	SRE	314.33	160.33	50,397.01	0.18%	2.86%	0.01%	7.50%	0.01%
Moody's Corp	MCO	183.20	322.75	59,127.80	0.21%	0.95%	0.00%	4.00%	0.01%
ON Semiconductor Corp	ON	432.42	73.45	31,761.54				22.50%	
Booking Holdings Inc	BKNG	38.79	2,434.10	94,416.30				22.00%	
F5 Inc	FFIV	60.12	147.66	8,877.02	0.03%			10.00%	0.00%
Akamai Technologies Inc	AKAM	157.24	88.95	13,986.68	0.05%			5.50%	0.00%
Charles River Laboratories International Inc	CR	50.88	243.25	12,376.32	0.04%			12.00%	0.01%
MarketAxess Holdings Inc	MKTX	37.64	363.85	13,694.22	0.05%	0.79%	0.00%	10.00%	0.00%

MARKET RISK PREMIUM DERIVED FROM S&P 500 INDEX

[1] Estimate of the S&P 500 Dividend Yield	1.75%
[2] Estimate of the S&P 500 Growth Rate	10.65%
[3] S&P 500 Estimated Required Market Return	12.50%

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Devon Energy Corp	DVN	653.70	63.24	41,339.99		8.54%		33.50%	
Bio-Techne Corp	TECH	156.97	79.66	12,504.23	0.04%	0.40%	0.00%	14.50%	0.01%
Alphabet Inc	GOOGL	5,973.00	98.84	590,371.32					
Teleflex Inc	TFX	46.91	243.42	11,417.86	0.04%	0.56%	0.00%	10.00%	0.00%
Netflix Inc	NFLX	445.35	353.86	157,590.49	0.56%			14.50%	0.08%
Allegrion plc	ALLE	87.85	117.55	10,326.18	0.04%	1.40%	0.00%	11.00%	0.00%
Agilent Technologies Inc	A	296.07	152.08	45,026.63	0.16%	0.59%	0.00%	12.00%	0.02%
Warner Bros Discovery Inc	WBD	2,428.40	14.82	35,988.83					
Elevance Health Inc	ELV	238.83	499.99	119,411.61	0.42%	1.18%	0.00%	12.50%	0.05%
Trimble Inc	TRMB	246.63	58.06	14,319.05	0.05%			10.00%	0.01%
CME Group Inc	CME	359.73	176.66	63,549.02	0.22%	2.26%	0.01%	8.50%	0.02%
Juniper Networks Inc	JNPR	324.56	32.30	10,483.16	0.04%	2.72%	0.00%	10.50%	0.00%
BlackRock Inc	BLK	150.20	759.21	114,030.31	0.40%	2.63%	0.01%	8.50%	0.03%
DTE Energy Co	DTE	193.74	116.37	22,545.76	0.08%	3.27%	0.00%	4.50%	0.00%
Nasdaq Inc	NDAQ	491.28	60.19	29,570.14	0.10%	1.33%	0.00%	8.50%	0.01%
Celanese Corp	CE	108.43	123.20	13,358.33	0.05%	2.27%	0.00%	7.50%	0.00%
Philip Morris International Inc	PM	1,550.20	104.24	161,593.06	0.57%	4.87%	0.03%	5.00%	0.03%
Salesforce Inc	CRM	1,000.00	167.97	167,970.00	0.59%			19.50%	0.12%
Ingersoll Rand Inc	IR	404.93	56.00	22,675.86		0.14%			
Huntington Ingalls Industries Inc	HHI	39.90	220.54	8,800.43	0.03%	2.25%	0.00%	10.00%	0.00%
MetLife Inc	MET	784.61	73.02	57,291.93	0.20%	2.74%	0.01%	5.00%	0.01%
Tapscott Inc	TPR	240.96	45.57	10,980.59	0.04%	2.63%	0.00%	13.50%	0.01%
CSX Corp	CSX	2,102.41	30.92	65,006.49	0.23%	1.29%	0.00%	10.50%	0.02%
Edwards Lifesciences Corp	EW	618.26	76.70	47,420.54	0.17%			11.00%	0.02%
Ameriprise Financial Inc	AMP	106.42	350.12	37,258.72	0.13%	1.43%	0.00%	13.50%	0.02%
Zebra Technologies Corp	ZBRA	51.63	316.18	16,324.37	0.06%			11.50%	0.01%
Zimmer Biomet Holdings Inc	ZBH	209.85	127.34	26,722.55	0.09%	0.75%	0.00%	5.50%	0.01%
CBRE Group Inc	CBRE	315.95	85.51	27,016.80	0.10%			8.50%	0.01%
Camden Property Trust	CPT	106.53	123.21	13,125.31	0.05%	3.05%	0.00%	3.50%	0.00%
Mastercard Inc	MA	948.00	370.60	351,328.80	1.24%	0.62%	0.01%	18.50%	0.23%
CarMax Inc	KMX	158.02	70.45	11,132.72				-3.00%	
Intercontinental Exchange Inc	ICE	558.55	107.55	60,072.27	0.21%	1.41%	0.00%	7.00%	0.01%
Fidelity National Information Services Inc	FIS	593.38	75.04	44,527.16		2.51%		52.00%	
Chipotle Mexican Grill Inc	CMG	27.72	1,646.38	45,639.30				23.00%	
Wynn Resorts Ltd	WYNN	113.31	103.64	11,743.86				27.00%	
Live Nation Entertainment Inc	LUV	230.88	80.49	18,583.53					
Assurant Inc	AIZ	52.83	132.59	7,004.86	0.02%	2.11%	0.00%	15.50%	0.00%
NRG Energy Inc	NRG	213.39	34.22	7,302.17		4.41%		-10.50%	
Regions Financial Corp	RF	934.45	23.54	21,996.86	0.08%	3.40%	0.00%	11.50%	0.01%
Monster Beverage Corp	MNST	521.74	104.08	54,303.12	0.19%			10.50%	0.02%
Mosaic Co/The	MOS	340.48	49.54	16,867.43		1.61%		38.00%	
Baker Hughes Co	BKR	1,001.47	31.74	31,786.59		2.39%			
Expedia Group Inc	EXPE	150.57	114.30	17,209.81					
CF Industries Holdings Inc	CF	196.19	84.70	16,617.21		1.89%		32.00%	
Leidos Holdings Inc	LDOS	136.69	98.84	13,510.44	0.05%	1.46%	0.00%	8.50%	0.00%
APA Corp	APA	321.51	44.33	14,252.63		2.26%			
Alphabet Inc	GOOG	6,086.00	99.87	607,808.82	2.15%			18.50%	0.40%
First Solar Inc	FSLR	106.61	177.60	18,933.23				20.50%	
TE Connectivity Ltd	TEL	316.46	127.15	40,237.51	0.14%	1.76%	0.00%	10.50%	0.01%
Cooper Cos Inc/The	COO	49.43	348.93	17,245.87	0.06%	0.02%	0.00%	14.00%	0.01%
Discover Financial Services	DFS	267.00	116.73	31,166.91	0.11%	2.06%	0.00%	8.50%	0.01%
Visa Inc	V	1,624.95	230.21	374,080.66	1.32%	0.78%	0.01%	13.50%	0.18%
Mid-America Apartment Communities Inc	MAA	115.48	166.72	19,252.33		3.36%		-14.50%	
Xylem Inc/NY	XYL	180.26	104.01	18,748.43	0.07%	1.15%	0.00%	9.00%	0.01%
Marathon Petroleum Corp	MPC	468.66	128.52	60,232.31		2.33%			
Tractor Supply Co	TSCO	110.46	227.99	25,184.46	0.09%	1.61%	0.00%	13.00%	0.01%
Advanced Micro Devices Inc	AMD	1,612.36	75.15	121,168.55				25.50%	
ResMed Inc	RMD	146.91	228.37	33,549.61	0.12%	0.77%	0.00%	8.50%	0.01%
Mettler-Toledo International Inc	MTD	22.29	1,532.92	34,174.92	0.12%			13.50%	0.02%
VICI Properties Inc	VICI	1,033.99	34.18	35,341.88	0.12%	4.56%	0.01%	8.50%	0.01%
Copart Inc	CPRT	476.30	66.61	31,726.34	0.11%			7.00%	0.01%
Jacobs Solutions Inc	J	126.61	123.55	15,642.79	0.06%	0.84%	0.00%	12.00%	0.01%
Albemarle Corp	ALB	117.15	281.45	32,972.71		0.56%		21.50%	
Fortinet Inc	FTNT	781.24	52.34	40,889.89				21.50%	
Moderna Inc	MRNA	384.18	176.06	67,638.73				-2.50%	
Essex Property Trust Inc	ESS	64.75	226.07	14,638.94		3.89%		-4.00%	
CoStar Group Inc	CSGP	406.69	77.90	31,681.15	0.11%			13.00%	0.01%
Realty Income Corp	O	627.15	67.83	42,539.86	0.15%	4.40%	0.01%	6.00%	0.01%
Westrock Co	WRK	254.52	39.24	9,987.29	0.04%	2.80%	0.00%	15.00%	0.01%
Westinghouse Air Brake Technologies Corp	WAB	181.87	103.81	18,879.72	0.07%	0.58%	0.00%	9.50%	0.01%
Pool Corp	POOL	39.05	385.61	15,058.46	0.05%	1.04%	0.00%	14.00%	0.01%
Western Digital Corp	WDC	317.65	43.95	13,960.72	0.05%			6.50%	0.00%
Pepsico Inc	PEP	1,377.71	171.02	235,615.79	0.83%	2.69%	0.02%	6.50%	0.05%
Diamondback Energy Inc	FANG	181.86	146.12	26,573.24		6.19%			
ServiceNow Inc	NOW	203.00	455.13	92,391.39				45.50%	
Church & Dwight Co Inc	CHD	243.87	80.86	19,719.17	0.07%	1.30%	0.00%	6.00%	0.00%
Federal Realty Investment Trust	FRT	81.21	111.53	9,057.24	0.03%	3.87%	0.00%	2.50%	0.00%
MGM Resorts International	MGM	384.02	41.41	15,902.27		0.02%		25.00%	
American Electric Power Co Inc	AEP	513.86	93.96	48,282.66	0.17%	3.53%	0.01%	6.50%	0.01%
SolarEdge Technologies Inc	SEDG	55.90	319.13	17,837.77				22.00%	
Invitation Homes Inc	INVH	611.41	32.50	19,870.83		2.71%			
PTC Inc	PTC	118.15	134.88	15,936.61				29.00%	
JB Hunt Transport Services Inc	JBHT	103.54	189.05	19,573.67	0.07%	0.89%	0.00%	11.50%	0.01%
Lam Research Corp	LRCX	134.94	500.10	67,481.49	0.24%	1.38%	0.00%	14.00%	0.03%
Mohawk Industries Inc	MHK	63.53	120.06	7,627.89	0.03%			10.00%	0.00%
Pentair PLC	PNR	164.50	55.38	9,109.90	0.03%	1.59%	0.00%	12.00%	0.00%
GE HealthCare Technologies Inc	GEHC	453.93	69.52	31,556.94					
Vertex Pharmaceuticals Inc	VRTX	256.69	323.10	82,936.86	0.29%			12.50%	0.04%
Amcor PLC	AMCR	1,489.02	12.06	17,957.58	0.06%	4.06%	0.00%	14.50%	0.01%
Meta Platforms Inc	META	2,255.32	148.97	335,975.17	1.19%			11.00%	0.13%
T-Mobile US Inc	TMUS	1,244.15	149.31	185,764.63	0.66%			16.50%	0.11%
United Rentals Inc	URI	69.36	440.95	30,584.29	0.11%	1.34%	0.00%	18.00%	0.02%
Honeywell International Inc	HON	672.32	208.48	140,165.69	0.50%	1.98%	0.01%	12.00%	0.06%
Alexandria Real Estate Equities Inc	ARE	173.09	160.74	27,822.00	0.10%	3.01%	0.00%	10.00%	0.01%
Delta Air Lines Inc	DAL	641.19	39.10	25,070.45					

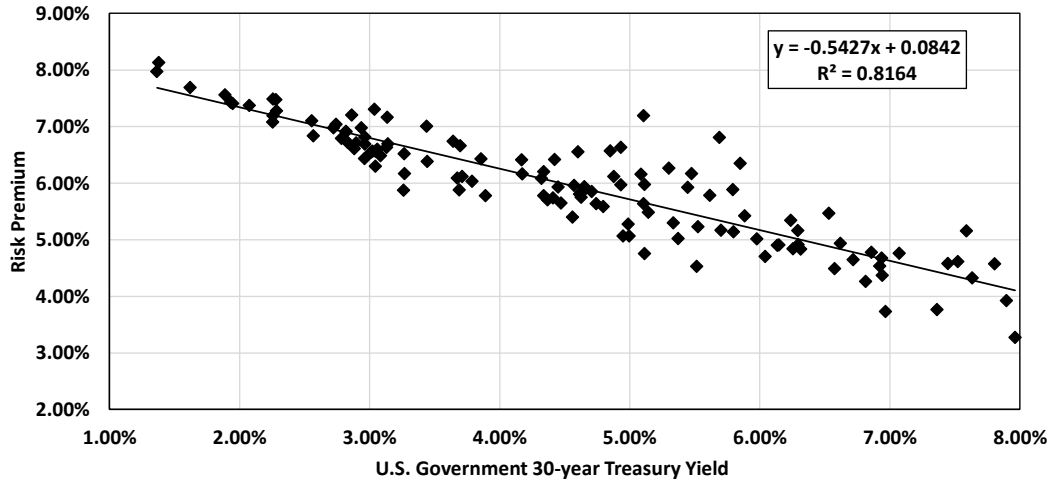
MARKET RISK PREMIUM DERIVED FROM S&P 500 INDEX

[1] Estimate of the S&P 500 Dividend Yield	1.75%
[2] Estimate of the S&P 500 Growth Rate	10.65%
[3] S&P 500 Estimated Required Market Return	12.50%

		[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.
Seagate Technology Holdings PLC	STX	206.48	67.78	13,995.49	0.05%	4.13%	0.00%	11.50%	0.01%
United Airlines Holdings Inc	UAL	326.73	48.96	15,996.65					
News Corp	NWS	193.28	20.44	3,950.56		0.98%			
Centene Corp	CNC	566.26	76.24	43,171.66	0.15%			10.00%	0.02%
Martin Marietta Materials Inc	MLM	62.09	359.64	22,330.41	0.08%	0.73%	0.00%	4.50%	0.00%
Teradyne Inc	TER	155.76	101.70	15,840.39	0.06%	0.43%	0.00%	11.50%	0.01%
PayPal Holdings Inc	PYPL	1,140.03	81.49	92,900.88	0.33%			12.00%	0.04%
Tesla Inc	TSLA	3,164.10	173.22	548,085.92				51.50%	
Arch Capital Group Ltd	ACGL	369.87	64.35	23,801.33	0.08%			19.50%	0.02%
DISH Network Corp	DISH	292.27	14.39	4,205.78				-1.50%	
Dow Inc	DOW	703.76	59.35	41,768.10	0.15%	4.72%	0.01%	15.00%	0.02%
Everest Re Group Ltd	RE	39.17	349.69	13,695.61	0.05%	1.89%	0.00%	9.50%	0.00%
Teledyne Technologies Inc	TDY	46.87	424.26	19,885.49	0.07%			11.50%	0.01%
News Corp	NWSA	382.35	20.26	7,746.43		0.99%			
Exelon Corp	EXC	991.76	42.19	41,842.23		3.20%			
Global Payments Inc	GPN	270.40	112.72	30,479.60	0.11%	0.89%	0.00%	17.00%	0.02%
Crown Castle Inc	CCI	433.00	148.11	64,131.63	0.23%	4.23%	0.01%	12.00%	0.03%
Aptiv PLC	APTIV	270.95	113.09	30,641.74				26.00%	
Advance Auto Parts Inc	AAP	59.25	152.28	9,023.20	0.03%	3.94%	0.00%	12.00%	0.00%
Align Technology Inc	ALGN	78.11	269.73	21,069.15	0.07%			17.00%	0.01%
Illumina Inc	ILMN	157.30	214.20	33,693.66	0.12%			6.50%	0.01%
Targa Resources Corp	TRGP	226.38	75.02	16,982.65		1.87%			
LKQ Corp	LKQ	267.18	58.96	15,752.64	0.06%	1.87%	0.00%	13.00%	0.01%
Zoetis Inc	ZTS	466.07	165.49	77,130.26	0.27%	0.91%	0.00%	11.00%	0.03%
Equinix Inc	EQIX	92.54	738.13	68,305.07	0.24%	1.68%	0.00%	15.00%	0.04%
Digital Realty Trust Inc	DLR	287.52	114.62	32,955.77		4.26%		-3.50%	
Las Vegas Sands Corp	LVS	764.17	59.00	45,085.79					
Molina Healthcare Inc	MOH	58.40	311.83	18,210.87	0.06%			11.00%	0.01%

Notes:

- [1] Equals sum of Col. [9]
- [2] Equals sum of Col. [11]
- [3] Equals ((1) x (1 + (0.5 x [2]))) + [2]
- [4] Source: Bloomberg Professional as of January 31, 202.
- [5] Source: Bloomberg Professional as of January 31, 202.
- [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 January 31, 202.
- [9] Equals [7] x [8]
- [10] Source: Value Line, as of January 31, 202.
- [11] Equals [7] x [10]



SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.903448
R Square	0.816218
Adjusted R Square	0.814724
Standard Error	0.004275
Observations	125.000000

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1.000000	0.009983	0.009983	546.270060	0.000000
Residual	123.000000	0.002248	0.000018		
Total	124.000000	0.012231			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.0842	0.0011	75.0021	0.0000	0.0820	0.0865	0.0820	0.0865
U.S. Govt. 30-year Treasury	(0.5427)	0.0232	(23.3724)	0.0000	(0.5886)	(0.4967)	(0.5886)	(0.4967)

	[7]	[8]	[9]
	30-Year Treasury Bond Yield	Risk Premium	ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	3.71%	6.41%	10.12%
Blue Chip Near-Term Projected Forecast (Q2/2023 - Q2/2024) [5]	3.82%	6.35%	10.17%
Blue Chip Long-Term Projected Forecast (2024-2028) [6]	3.90%	6.31%	10.21%
AVERAGE			10.17%

Notes:

- [1] Regulatory Research Associates, rate cases through January 31, 2023
- [2] 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] S&P Capital IQ Pro, 30-day average as of January 31, 2023
- [5] Blue Chip Financial Forecasts, Vol. 42, No. 2, February 1, 2023, at 2
- [6] Blue Chip Financial Forecasts, Vol. 41, No. 12, December 2, 2022, at 14
- [7] See notes [4], [5] and [6]
- [8] Equals $0.084312 + (-0.543602 \times \text{Column [7]})$
- [9] Equals Column [7] + Column [8]

BOND YIELD PLUS RISK PREMIUM

	[1]	[2]	[3]
	Average	U.S. Govt.	
Quarter	Authorized	30-year	Risk
	Electric ROE	Treasury	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%	6.86%	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	10.88%	5.70%	5.17%
2001.3	10.76%	5.53%	5.23%
2001.4	11.57%	5.30%	6.27%
2002.1	10.05%	5.52%	4.53%
2002.2	11.41%	5.62%	5.79%
2002.3	11.25%	5.09%	6.16%
2002.4	11.57%	4.93%	6.63%
2003.1	11.43%	4.85%	6.57%
2003.2	11.16%	4.60%	6.56%
2003.3	9.88%	5.11%	4.76%
2003.4	11.09%	5.11%	5.98%
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	10.91%	4.93%	5.98%
2005.1	10.56%	4.71%	5.85%
2005.2	10.13%	4.47%	5.65%
2005.3	10.85%	4.42%	6.42%
2005.4	10.59%	4.65%	5.94%
2006.1	10.38%	4.63%	5.75%
2006.2	10.63%	5.14%	5.49%
2006.3	10.06%	5.00%	5.07%

BOND YIELD PLUS RISK PREMIUM

	[1]	[2]	[3]
	Average	U.S. Govt.	
Quarter	Authorized	30-year	Risk
	Electric ROE	Treasury	Premium
2006.4	10.39%	4.74%	5.64%
2007.1	10.39%	4.80%	5.59%
2007.2	10.27%	4.99%	5.28%
2007.3	10.02%	4.95%	5.07%
2007.4	10.43%	4.61%	5.81%
2008.1	10.15%	4.41%	5.74%
2008.2	10.54%	4.57%	5.96%
2008.3	10.38%	4.45%	5.93%
2008.4	10.39%	3.64%	6.74%
2009.1	10.45%	3.44%	7.01%
2009.2	10.58%	4.17%	6.41%
2009.3	10.41%	4.32%	6.09%
2009.4	10.54%	4.34%	6.20%
2010.1	10.45%	4.62%	5.82%
2010.2	10.08%	4.37%	5.71%
2010.3	10.29%	3.86%	6.43%
2010.4	10.34%	4.17%	6.17%
2011.1	9.96%	4.56%	5.40%
2011.2	10.12%	4.34%	5.78%
2011.3	10.36%	3.70%	6.66%
2011.4	10.34%	3.04%	7.31%
2012.1	10.30%	3.14%	7.17%
2012.2	9.92%	2.94%	6.98%
2012.3	9.78%	2.74%	7.04%
2012.4	10.07%	2.86%	7.21%
2013.1	9.77%	3.13%	6.64%
2013.2	9.84%	3.14%	6.70%
2013.3	9.83%	3.71%	6.12%
2013.4	9.82%	3.79%	6.04%
2014.1	9.57%	3.69%	5.88%
2014.2	9.83%	3.44%	6.39%
2014.3	9.79%	3.27%	6.52%
2014.4	9.78%	2.96%	6.81%
2015.1	9.66%	2.55%	7.11%
2015.2	9.50%	2.88%	6.61%
2015.3	9.40%	2.96%	6.44%
2015.4	9.65%	2.96%	6.69%
2016.1	9.70%	2.72%	6.98%
2016.2	9.41%	2.57%	6.84%
2016.3	9.76%	2.28%	7.48%
2016.4	9.55%	2.83%	6.72%
2017.1	9.61%	3.05%	6.57%
2017.2	9.61%	2.90%	6.71%
2017.3	9.73%	2.82%	6.91%
2017.4	9.74%	2.82%	6.92%
2018.1	9.59%	3.02%	6.57%
2018.2	9.57%	3.09%	6.49%
2018.3	9.66%	3.06%	6.60%
2018.4	9.44%	3.27%	6.17%
2019.1	9.57%	3.01%	6.55%
2019.2	9.58%	2.78%	6.79%
2019.3	9.57%	2.29%	7.28%
2019.4	9.74%	2.26%	7.49%
2020.1	9.45%	1.89%	7.56%
2020.2	9.52%	1.38%	8.14%
2020.3	9.34%	1.37%	7.98%
2020.4	9.32%	1.62%	7.69%
2021.1	9.45%	2.07%	7.38%
2021.2	9.46%	2.26%	7.20%

BOND YIELD PLUS RISK PREMIUM

	[1]	[2]	[3]
	Average	U.S. Govt.	
	Authorized	30-year	Risk
Quarter	Electric ROE	Treasury	Premium
2021.3	9.37%	1.93%	7.43%
2021.4	9.36%	1.95%	7.41%
2022.1	9.34%	2.25%	7.08%
2022.2	9.35%	3.05%	6.30%
2022.3	9.14%	3.26%	5.88%
2022.4	9.67%	3.89%	5.78%
2023.1	9.77%	3.68%	6.09%
AVERAGE	10.51%	4.56%	5.95%
MEDIAN	10.39%	4.61%	5.98%

2023-2027 CAPITAL EXPENDITURES AS A PERCENTAGE OF 2022 NET PLANT
(\$ Millions)

		[1]	[2]	[3]	[4]	[5]	[6]	[7]
		2022	2023	2024	2025	2026	2027	2023-2027 Cap. Ex. / 2021 Net Plant
ALLETE, Inc.	ALE							
Capital Spending per Share		\$ 5.95	\$ 6.60	\$ 7.25	\$ 7.25	\$ 7.25	\$ 7.25	
Common Shares Outstanding		58	60	61	61	61	61	
Capital Expenditures		\$ 345.10	\$ 392.70	\$ 442.25	\$ 442.25	\$ 442.25	\$ 442.25	39.59%
Net Plant		\$ 5,215						
Alliant Energy Corporation	LNT							
Capital Spending per Share		\$ 5.90	\$ 6.08	\$ 6.25	\$ 6.25	\$ 6.25	\$ 6.25	
Common Shares Outstanding		252	252	253	253	253	253	
Capital Expenditures		\$ 1,483.85	\$ 1,532.42	\$ 1,581.25	\$ 1,581.25	\$ 1,581.25	\$ 1,581.25	48.42%
Net Plant		\$ 16,025						
Ameren Corporation	AEE							
Capital Spending per Share		\$ 12.55	\$ 12.78	\$ 13.00	\$ 13.00	\$ 13.00	\$ 13.00	
Common Shares Outstanding		267	274	280	280	280	280	
Capital Expenditures		\$ 3,350.85	\$ 3,493.96	\$ 3,640.00	\$ 3,640.00	\$ 3,640.00	\$ 3,640.00	56.89%
Net Plant		\$ 31,225						
American Electric Power Company, Inc.	AEP							
Capital Spending per Share		\$ 14.15	\$ 14.08	\$ 14.00	\$ 14.00	\$ 14.00	\$ 14.00	
Common Shares Outstanding		523	534	545	545	545	545	
Capital Expenditures		\$ 7,400.45	\$ 7,516.05	\$ 7,630.00	\$ 7,630.00	\$ 7,630.00	\$ 7,630.00	53.51%
Net Plant		\$ 70,650						
Avista Corporation	AVA							
Capital Spending per Share		\$ 6.40	\$ 6.20	\$ 6.00	\$ 6.00	\$ 6.00	\$ 6.00	
Common Shares Outstanding		77	80	83	83	83	83	
Capital Expenditures		\$ 492.80	\$ 496.00	\$ 498.00	\$ 498.00	\$ 498.00	\$ 498.00	45.56%
Net Plant		\$ 5,450						
Duke Energy Corporation	DUK							
Capital Spending per Share		\$ 16.75	\$ 16.75	\$ 16.75	\$ 16.75	\$ 16.75	\$ 16.75	
Common Shares Outstanding		770	770	770	770	770	770	
Capital Expenditures		\$12,897.50	\$12,897.50	\$12,897.50	\$12,897.50	\$12,897.50	\$12,897.50	54.78%
Net Plant		\$117,725						
Edison International	EIX							
Capital Spending per Share		\$ 15.10	\$ 15.80	\$ 16.50	\$ 16.50	\$ 16.50	\$ 16.50	
Common Shares Outstanding		382	386	390	390	390	390	
Capital Expenditures		\$ 5,768.20	\$ 6,098.80	\$ 6,435.00	\$ 6,435.00	\$ 6,435.00	\$ 6,435.00	58.05%
Net Plant		\$ 53,700						
Entergy Corporation	ETR							
Capital Spending per Share		\$ 19.00	\$ 19.38	\$ 19.75	\$ 19.75	\$ 19.75	\$ 19.75	
Common Shares Outstanding		209	212	214	214	214	214	
Capital Expenditures		\$ 3,971.00	\$ 4,097.81	\$ 4,226.50	\$ 4,226.50	\$ 4,226.50	\$ 4,226.50	47.42%
Net Plant		\$ 43,750						
Eversource Energy	ES							
Capital Spending per Share		10.5	\$ 10.00	9.5	9.5	9.5	9.5	
Common Shares Outstanding		351	358	365	365	365	365	
Capital Expenditures		\$ 3,685.50	\$ 3,580.00	\$ 3,467.50	\$ 3,467.50	\$ 3,467.50	\$ 3,467.50	49.04%
Net Plant		\$ 36,025						
Evergy, Inc.	EVRG							
Capital Spending per Share		\$ 9.20	\$ 9.35	\$ 9.50	\$ 9.50	\$ 9.50	\$ 9.50	
Common Shares Outstanding		230	230	230	230	230	230	
Capital Expenditures		\$ 2,116.00	\$ 2,150.50	\$ 2,185.00	\$ 2,185.00	\$ 2,185.00	\$ 2,185.00	48.97%
Net Plant		\$ 22,100						
IDACORP, Inc.	IDA							
Capital Spending per Share		\$ 14.20	\$ 12.15	\$ 10.10	\$ 10.10	\$ 10.10	\$ 10.10	
Common Shares Outstanding		51	52	52	52	52	52	

2023-2027 CAPITAL EXPENDITURES AS A PERCENTAGE OF 2022 NET PLANT
(\$ Millions)

		[1]	[2]	[3]	[4]	[5]	[6]	[7]
		2022	2023	2024	2025	2026	2027	2023-2027 Cap. Ex. / 2021 Net Plant
Capital Expenditures			\$ 724.20	\$ 625.73	\$ 525.20	\$ 525.20	\$ 525.20	55.72%
Net Plant		\$ 5,250						
NextEra Energy, Inc.	NEE							
Capital Spending per Share			\$ 8.40	\$ 9.20	\$ 10.00	\$ 10.00	\$ 10.00	
Common Shares Outstanding			2025	2025	2025	2025	2025	
Capital Expenditures			\$17,010.00	\$18,630.00	\$20,250.00	\$20,250.00	\$20,250.00	86.90%
Net Plant		\$110,925						
NorthWestern Corporation	NWE							
Capital Spending per Share			\$ 9.10	\$ 7.80	\$ 6.50	\$ 6.50	\$ 6.50	
Common Shares Outstanding			62	62	62	62	62	
Capital Expenditures			\$ 564.20	\$ 483.60	\$ 403.00	\$ 403.00	\$ 403.00	40.09%
Net Plant		\$ 5,630						
OGE Energy Corporation	OGE							
Capital Spending per Share			\$ 4.75	\$ 4.75	\$ 4.75	\$ 4.75	\$ 4.75	
Common Shares Outstanding			200	200	200	200	200	
Capital Expenditures			\$ 950.95	\$ 950.95	\$ 950.95	\$ 950.95	\$ 950.95	45.96%
Net Plant		\$ 10,345						
Otter Tail Corporation	OTTR							
Capital Spending per Share			\$ 5.90	\$ 6.08	\$ 6.25	\$ 6.25	\$ 6.25	
Common Shares Outstanding			42	42	43	43	43	
Capital Expenditures			\$ 247.21	\$ 256.37	\$ 265.63	\$ 265.63	\$ 265.63	58.84%
Net Plant		\$ 2,210						
Portland General Electric Company	POR							
Capital Spending per Share			\$ 8.25	\$ 8.38	\$ 8.50	\$ 8.50	\$ 8.50	
Common Shares Outstanding			94.5	97	100.0	100.0	100.0	
Capital Expenditures			\$ 779.63	\$ 814.47	\$ 850.00	\$ 850.00	\$ 850.00	49.78%
Net Plant		\$ 8,325						
Xcel Energy Inc.	XEL							
Capital Spending per Share			\$ 9.00	\$ 9.00	\$ 9.00	\$ 9.00	\$ 9.00	
Common Shares Outstanding			550	556	561	561	561	
Capital Expenditures			\$ 4,950.00	\$ 4,999.50	\$ 5,049.00	\$ 5,049.00	\$ 5,049.00	52.04%
Net Plant		\$ 48,225						
Liberty Utilities (Granite State Electric) Corp.	LUGSE							
Capital Expenditures [8]			\$ 18.42	\$ 29.71	\$ 21.30	\$ 42.69	\$ 17.46	53.50%
Net Plant [9]		\$ 242.21						

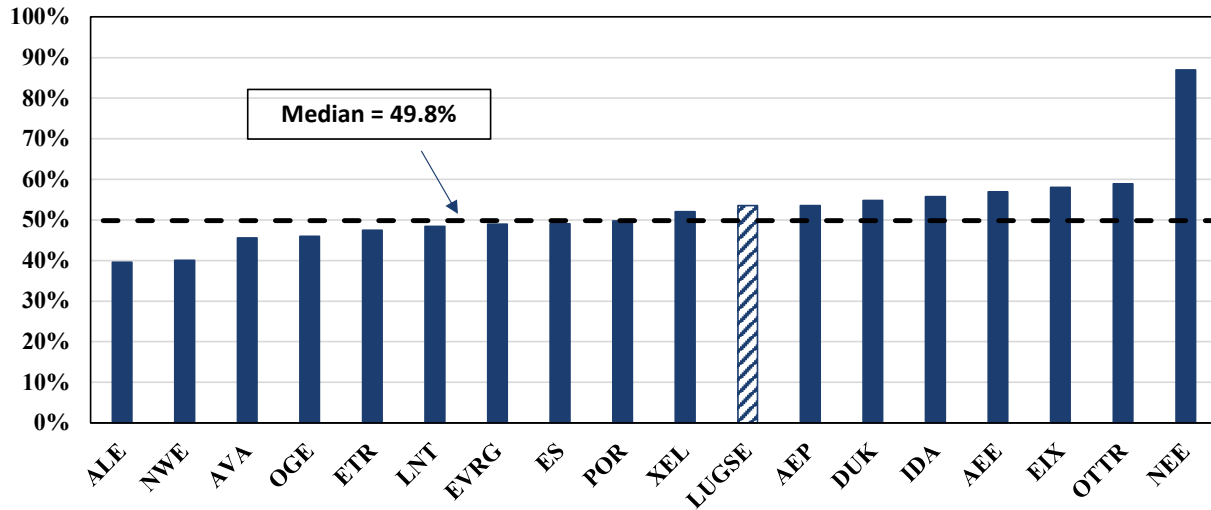
Notes:

[1] - [6] Value Line, dated January 20, 2023, December 9, 2022, and November 11, 2022

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

[8] Provided by the Company

[9] Provided by the Company



Projected CAPEX/2022 Net Plant

Company	Ticker	Projected CAPEX / 2022 Net Plant
1 ALLETE, Inc.	ALE	40%
2 NorthWestern Corporation	NWE	40%
3 Avista Corporation	AVA	46%
4 OGE Energy Corporation	OGE	46%
5 Entergy Corporation	ETR	47%
6 Alliant Energy Corporation	LNT	48%
7 Evergy, Inc.	EVRG	49%
8 Eversource Energy	ES	49%
9 Portland General Electric Company	POR	50%
10 Xcel Energy Inc.	XEL	52%
11 Liberty Utilities (Granite State Electric) Corp.	LUGSE	53%
12 American Electric Power Company, Inc.	AEP	54%
13 Duke Energy Corporation	DUK	55%
14 IDACORP, Inc.	IDA	56%
15 Ameren Corporation	AEE	57%
16 Edison International	EIX	58%
17 Otter Tail Corporation	OTTR	59%
18 NextEra Energy, Inc.	NEE	87%
Proxy Group Median		49.8%
Liberty Utilities (Granite State Electric) Corp. as % of Median		1.07

Notes:

Attachment AEB/CMW-11, p. 1 col. [7]

COMPARISON OF LIBERTY GRANITE STATE AND PROXY GROUP COMPANIES
REGULATORY RISK ASSESSMENT

Company	Operating Subsidiary	State	Utility Type	Test Year Convention	[1]	[3] Revenue Stabilization			[5]	[6]
						Revenue Decoupling	Formula-Based Rates	Straight Fixed Variable Rate Design		
ALLETE, Inc.	ALLETE (Minnesota Power)	Minnesota	Electric	Fully Forecast		No	No	No	No	Yes
Alliant Energy Corporation	Interstate Power & Light Co.	Iowa	Electric	Historical		No	No	No	No	Yes
	Interstate Power & Light Co.	Iowa	Gas	Historical		No	No	No	No	No
Ameren Corporation	Wisconsin Power & Light Co.	Wisconsin	Electric	Fully Forecast		No	No	No	No	No
	Wisconsin Power & Light Co.	Wisconsin	Gas	Fully Forecast		No	No	No	No	No
	Ameren Illinois Co.	Illinois	Electric	Historical		Yes	Yes	No	Yes	Yes
	Ameren Illinois Co.	Illinois	Gas	Fully Forecast		Yes	No	No	Yes	Yes
American Electric Power Company, Inc.	Union Electric Co.	Missouri	Electric	Historical		Yes	No	No	Yes	Yes
	Union Electric Co.	Missouri	Gas	Historical		Yes	No	No	Yes	Yes
	Southwestern Electric Power Co.	Arkansas	Electric	Historical		Yes	Yes	No	Yes	Yes
	Indiana Michigan Power Co.	Indiana	Electric	Fully Forecast		Yes	No	No	Yes	Yes
Avista Corporation	Kentucky Power Co.	Kentucky	Electric	Fully Forecast		Yes	No	No	Yes	Yes
	Southwestern Electric Power Co.	Louisiana	Electric	Historical		Yes	No	Yes	No	Yes
	Indiana Michigan Power Co.	Michigan	Electric	Fully Forecast		Yes	No	No	Yes	Yes
	Ohio Power Co.	Ohio	Electric	Partially Forecast		Yes	No	No	Yes	Yes
	Public Service Co. of Oklahoma	Oklahoma	Electric	Historical		Yes	No	No	Yes	Yes
	Kingsport Power Co.	Tennessee	Electric	Fully Forecast		No	No	No	No	No
	AEP Texas	Texas	Electric	Historical		No	No	No	No	Yes
	Southwestern Electric Power Co.	Texas	Electric	Historical		No	No	No	No	No
	Appalachian Power Co.	Virginia	Electric	Historical		No	No	No	No	Yes
	Appalachian Power Co./Wheeling Power Co.	West Virginia	Electric	Historical		No	No	No	No	Yes
	Alaska Electric Light and Power Co.	Alaska	Electric	Historical		No	No	No	No	No
	Avista Corp.	Idaho	Electric	Historical		Yes	No	No	Yes	No
	Avista Corp.	Idaho	Gas	Historical		Yes	No	No	Yes	No
	Avista Corp.	Oregon	Gas	Fully Forecast		Yes	No	No	Yes	No
Duke Energy Corporation	Avista Corp.	Washington	Electric	Historical		Yes	No	No	Yes	No
	Avista Corp.	Washington	Gas	Historical		Yes	No	No	Yes	No
	Duke Energy Florida LLC	Florida	Electric	Fully Forecast		No	No	No	Yes	Yes
	Duke Energy Indiana LLC	Indiana	Electric	Historical		Yes	No	No	Yes	Yes
	Duke Energy Kentucky Inc.	Kentucky	Electric	Fully Forecast		Yes	No	No	Yes	Yes
	Duke Energy Kentucky Inc.	Kentucky	Gas	Fully Forecast		Yes	No	No	Yes	Yes
	Duke Energy Carolinas LLC/Duke Energy Progress LL	North Carolina	Electric	Historical		No	No	No	No	Yes
	Piedmont Natural Gas Co. Inc.	North Carolina	Gas	Historical		Yes	No	No	Yes	Yes
	Duke Energy Ohio Inc.	Ohio	Electric	Partially Forecast		Yes	No	No	Yes	Yes
	Duke Energy Ohio Inc.	Ohio	Gas	Partially Forecast		No	No	Yes	Yes	Yes
	Duke Energy Carolinas LLC/Duke Energy Progress LL	South Carolina	Electric	Historical		No	No	No	No	No
	Piedmont Natural Gas Co. Inc.	South Carolina	Gas	Historical		Yes	No	No	Yes	Yes
	Piedmont Natural Gas Co. Inc.	Tennessee	Gas	Fully Forecast		Yes	No	No	Yes	Yes
	Southern California Edison Co.	California	Electric	Fully Forecast		Yes	No	No	Yes	No
Edison International Energy Corporation	Entergy Arkansas LLC	Arkansas	Electric	Fully Forecast		Yes	Yes	No	Yes	Yes
	Entergy New Orleans LLC	Louisiana-NOCC	Electric	Partially Forecast		No	Yes	No	Yes	Yes
	Entergy New Orleans LLC	Louisiana-NOCC	Gas	Partially Forecast		No	Yes	No	Yes	Yes
	Entergy Louisiana LLC	Louisiana	Electric	Historical		Yes	Yes	No	Yes	Yes
	Entergy Louisiana LLC	Louisiana	Gas	Historical		No	No	No	Yes	Yes
	Entergy Mississippi LLC	Mississippi	Electric	Fully Forecast		Yes	Yes	No	Yes	Yes
	Entergy Texas Inc.	Texas	Electric	Historical		No	No	No	No	Yes
Eversource Energy	Eversource Kansas Central Inc	Kansas	Electric	Historical		Yes	No	No	Yes	Yes
	Eversource Kansas Central Inc	Kansas	Electric	Historical		No	No	No	No	Yes
	Eversource Metro Inc	Missouri	Electric	Historical		Yes	No	No	Yes	Yes
	Eversource Missouri West Inc.	Missouri	Electric	Historical		Yes	No	No	Yes	Yes
EverSource Energy	Connecticut Light and Power Co.	Connecticut	Electric	Historical		Yes	No	No	Yes	Yes
	Yankee Gas Services Co.	Connecticut	Gas	Historical		Yes	No	No	Yes	Yes
	Eversource Gas Company of MA	Massachusetts	Gas	Historical		Yes	No	No	Yes	Yes
	NSTAR Electric Co.	Massachusetts	Electric	Historical		Yes	Yes	No	Yes	Yes
IDACORP, Inc.	NSTAR Gas Co.	Massachusetts	Gas	Historical		Yes	Yes	No	Yes	Yes
	Public Service Co. of New Hampshire	New Hampshire	Electric	Historical		Yes	No	No	Yes	Yes
	Idaho Power Co.	Idaho	Electric	Partially Forecast		Yes	No	No	Yes	No
	Idaho Power Co.	Oregon	Electric	Partially Forecast		No	No	No	No	No
NextEra Energy, Inc.	Florida Power & Light Co.	Florida	Electric	Fully Forecast		No	No	No	No	Yes
	Pivotal Utility Holdings Inc.	Florida	Gas	Fully Forecast		No	No	No	No	Yes
	Lone Star Transmission LLC	Texas	Electric	Historical		No	No	No	No	Yes
NorthWestern Corporation	NorthWestern Corporation	Montana	Electric	Historical		No	No	No	No	No
	NorthWestern Corporation	Montana	Gas	Historical		No	No	No	No	No
	NorthWestern Corporation	Nebraska	Gas	Historical		No	No	No	No	No
	NorthWestern Corporation	South Dakota	Electric	Historical		No	No	No	No	No
OGE Energy Corporation	NorthWestern Corporation	South Dakota	Gas	Historical		No	No	No	No	No
	Oklahoma Gas and Electric Company	Arkansas	Electric	Historical		Yes	Yes	No	Yes	Yes
Otter Tail Corporation	Oklahoma Gas and Electric Company	Oklahoma	Electric	Historical		Yes	No	No	Yes	Yes
	Otter Tail Power	Minnesota	Electric	Fully Forecast		No	No	No	No	Yes
	Otter Tail Power	North Dakota	Electric	Fully Forecast		No	No	No	No	Yes
	Otter Tail Power	South Dakota	Electric	Historical		No	No	No	No	Yes
Portland General Electric Company Xcel Energy Inc.	Portland General Electric Co.	Oregon	Electric	Fully Forecast		No	No	No	No	Yes
	Public Service Co. of Colorado	Colorado	Electric	Historical		Yes	No	No	Yes	Yes
	Public Service Co. of Colorado	Colorado	Gas	Historical		Yes	No	No	Yes	Yes
	Northern States Power Co.-Minnesota	Minnesota	Electric	Fully Forecast		Yes	Yes	No	Yes	Yes
	Northern States Power Co.-Minnesota	Minnesota	Gas	Fully Forecast		No	No	No	No	Yes
	Southwestern Public Service Co.	New Mexico	Electric	Historical		No	No	No	No	Yes
	Northern States Power Co.-Minnesota	North Dakota	Electric	Fully Forecast		No	No	No	No	Yes
	Northern States Power Co.-Minnesota	North Dakota	Gas	Fully Forecast		No	No	Yes	Yes	No
	Northern States Power Co.-Minnesota	South Dakota	Electric	Historical		Yes	No	No	Yes	Yes
	Southwestern Public Service Co.	Texas	Electric	Historical		No	No	No	No	No
Northern States Power Co.-Wisconsin	Wisconsin	Electric	Fully Forecast		No	No	No	No	No	
Northern States Power Co.-Wisconsin	Wisconsin	Gas	Fully Forecast		No	No	No	No	No	
Proxy Group Totals				Fully Forecast	27					
				Partially Forecast	7			Yes	48	Yes
				Historical	49			No	35	No
				% Forecast	41.0%			% Yes	57.8%	% Yes
										68.7%
Liberty Utilities (Granite State Electric) Corp. [7]		New Hampshire	Electric	Proposed		Yes	Proposed	No	Yes	No

Notes:
 [1] Regulatory Research Associates, effective as of December 31, 2022
 [2] 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. A designation of "Yes" indicates full or partial decoupler
 [3] Company Form 10-Ks, Company Tariffs, and S&P Capital IQ Pro
 [4] 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.
 [5] Equals IF AND [3]=No, [4]=No, [5]=No, No, Yes
 [6] 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.
 [7] Data provided by Company

**COMPARISON OF LIBERTY GRANITE STATE AND PROXY GROUP COMPANIES
RRA JURISDICTIONAL RANKINGS**

	Operation State	[1]	[2]
		RRA	
		Rank	Numeric Rank
ALLETE, Inc.	Minnesota	Average / 2	5
Alliant Energy Corporation	Iowa	Above Average / 3	3
	Wisconsin	Above Average / 3	3
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
Avista Corporation	Alaska	Below Average / 1	7
	Idaho	Average / 2	5
	Oregon	Average / 2	5
	Washington	Average / 3	6
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
Edison International	California	Average / 1	4
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 Energy	Connecticut	Below Average / 1	7
	Massachusetts	Average / 2	5
	New Hampshire	Average / 2	5
Evergy, 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
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 / 3	3
Proxy Group Average		Average / 2	4.86
Liberty Utilities (Granite State Electric) Corp.	New Hampshire	Average / 2	5

Notes

[1] State Regulatory Evaluations, Regulatory Research Associates, December 28 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

SIZE PREMIUM CALCULATION

Proxy Group Market Capitalization and Market-to-Book Ratio

Company	Ticker	[1]	[2]
		Market Capitalization (\$ billions)	Market-to-Book Ratio
ALLETE, Inc.	ALE	\$ 3.66	1.37
Alliant Energy Corporation	LNT	\$ 13.76	2.20
Ameren Corporation	AEE	\$ 22.79	2.23
American Electric Power Company, Inc.	AEP	\$ 48.59	2.00
Avista Corporation	AVA	\$ 3.14	1.40
Duke Energy Corporation	DUK	\$ 79.20	1.64
Edison International	EIX	\$ 25.43	1.90
Entergy Corporation	ETR	\$ 22.29	1.84
Eversource Energy	ES	\$ 28.95	1.89
Evergy, Inc.	EVRG	\$ 14.35	1.49
IDACORP, Inc.	IDA	\$ 5.39	1.94
NextEra Energy, Inc.	NEE	\$ 163.94	4.24
NorthWestern Corporation	NWE	\$ 3.34	1.31
OGE Energy Corporation	OGE	\$ 7.89	1.78
Otter Tail Corporation	OTTR	\$ 2.52	2.13
Portland General Electric Company	POR	\$ 4.31	1.56
Xcel Energy Inc.	XEL	\$ 38.31	2.34
Median		\$ 14.35	1.89

Liberty Granite State

Rate Year 1 Rate Base (2023/2024) (\$millions)	[3]	\$ 195.93
Company-Projected Common Equity Ratio	[4]	55.00%
Implied Common Equity (\$millions)	[5]	\$ 107.76
Implied Market Capitalization (\$millions)	[6]	\$ 203.54
Market Capitalization of Proxy Group (median) (\$millions)	[7]	\$ 14,345.18
In % of Proxy Group Market Capitalization (median)	[8]	1.42%

Kroll Cost of Capital Navigator -- Size Premium

	[9]	[10]
Breakdown of Deciles 1-10	Market Capitalization of Largest Company (\$ millions)	Size Premium
1-Largest	\$ 2,203,381.29	-0.26%
2	\$ 31,316.51	0.45%
3	\$ 12,323.85	0.57%
4	\$ 5,916.02	0.58%
5	\$ 3,769.88	0.93%
6	\$ 2,365.08	1.16%
7	\$ 1,389.12	1.37%
8	\$ 782.38	1.18%
9	\$ 373.88	2.15%
10-Smallest	\$ 218.23	4.83%
Liberty Implied Market Capitalization	[6] \$ 203.54	4.83%
Proxy Group Market Capitalization (median)	[7] \$ 14,345.18	0.45%
Size Premium	[11]	4.38%

Notes:

[1]-[2] S&P Capital IQ Pro, equals 30-day average as of January 31, 2023

[3] Data provided by the Company

[4] Data provided by the Company

[5] Equals [3] x [4]

[6] Equals [5] x median market-to-book ratio of proxy group

[7] Equals median market capitalization of proxy group x 1000

[8] Equals [6] / [7]

[9]-[10] Kroll Cost of Capital Navigator - Size Premium: Annual Data as of 12/31/2022

[11] Size Premium of Liberty less Size Premium of Proxy Group

FLOTATION COST ADJUSTMENT

Company	Date [1]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
		Shares Issued (000)	Offering Price	Under-writing Discount [ii]	Offering Expense (\$000)	Net Proceeds Per Share	Total Flotation Costs (\$000)	Gross Equity Issue Before Costs (\$000)	Net Proceeds (\$000) [iii]	Flotation Cost Percentage
Algonquin Power & Utilities Corporation	11/8/2021	44,080	\$ 18.15	\$ 0.73	\$ 1,400	\$ 17.39	\$ 33,402	\$ 800,052	\$ 766,650	4.17%
Algonquin Power & Utilities Corporation	10/10/2019	23,000	\$ 13.50	\$ 0.53	\$ 400	\$ 12.96	\$ 12,510	\$ 310,500	\$ 297,991	4.03%
							\$ 45,912	\$ 1,110,552	\$ 1,064,640	4.13%

[i] Offering Completion Date

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

[iii] Algonquin Power & Utilities Corporation 2021 and 2019 SEC Form 10-K.

The flotation cost adjustment is derived by dividing the dividend yield by 1 - F (where F = flotation costs expressed in percentage terms), or by 0.9587, 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:

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

Company	Ticker	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	
		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	Cost of Equity: Mean Growth Rate	Cost of Equity Adjusted for Flotation Costs	
ALLETE, Inc.	ALE	\$2.60	\$64.09	4.06%	4.22%	4.40%	6.00%	8.70%	9.60%	8.10%	12.32%	12.50%	
Alliant Energy Corporation	LNT	\$1.81	\$54.38	3.33%	3.42%	3.57%	6.00%	5.55%	5.80%	5.78%	9.21%	9.36%	
Ameren Corporation	AEE	\$2.36	\$88.15	2.68%	2.77%	2.89%	6.50%	6.64%	6.90%	6.68%	9.45%	9.57%	
American Electric Power Company, Inc.	AEP	\$3.32	\$94.56	3.51%	3.62%	3.78%	6.50%	6.15%	6.10%	6.25%	9.87%	10.03%	
Avista Corporation	AVA	\$1.76	\$42.48	4.14%	4.24%	4.42%	3.50%	5.20%	5.20%	4.63%	8.87%	9.06%	
Duke Energy Corporation	DUK	\$4.02	\$102.85	3.91%	4.01%	4.19%	5.00%	5.65%	5.50%	5.38%	9.40%	9.57%	
Edison International	EIX	\$2.95	\$66.39	4.44%	4.55%	4.74%	6.49%	4.40%	3.00%	4.63%	9.18%	9.37%	
Entergy Corporation	ETR	\$4.28	\$109.55	3.91%	4.01%	4.19%	4.00%	6.19%	6.00%	5.40%	9.41%	9.58%	
Eversource Energy	ES	\$2.55	\$83.08	3.07%	3.17%	3.31%	6.50%	6.42%	6.50%	6.47%	9.64%	9.78%	
Eergy, Inc.	EVRG	\$2.45	\$62.50	3.92%	4.02%	4.19%	7.50%	2.43%	5.30%	5.08%	9.10%	9.27%	
IDACORP, Inc.	IDA	\$3.16	\$106.55	2.97%	3.02%	3.15%	4.50%	3.40%	3.40%	3.77%	6.79%	6.92%	
NextEra Energy, Inc.	NEE	\$1.70	\$82.50	2.06%	2.16%	2.26%	10.50%	10.21%	9.00%	9.90%	12.07%	12.16%	
NorthWestern Corporation	NWE	\$2.52	\$57.74	4.36%	4.43%	4.63%	3.50%	4.50%	1.70%	3.23%	7.67%	7.86%	
OGE Energy Corporation	OGE	\$1.66	\$39.21	4.22%	4.32%	4.51%	6.50%	1.90%	5.00%	4.47%	8.79%	8.97%	
Otter Tail Corporation	OTTR	\$1.65	\$60.44	2.73%	2.82%	2.94%	4.50%	9.00%	n/a	6.75%	9.57%	9.69%	
Portland General Electric Company	POR	\$1.81	\$48.17	3.76%	3.83%	4.00%	5.00%	1.39%	5.30%	3.90%	7.73%	7.89%	
Xcel Energy Inc.	XEL	\$1.95	\$69.89	2.79%	2.88%	3.00%	6.00%	7.01%	6.50%	6.50%	9.38%	9.51%	
Mean											9.32%	9.48%	
Median											9.38%	9.51%	
Flotation Cost Adjustment (Mean)												0.16%	[21]
Flotation Cost Adjustment (Median)												0.12%	[22]

Notes:

[1]-[4] Algonquin Power & Utilities Corp. 2021 SEC Form 10-K, at 11; Algonquin Power & Utilities Corp. 2019 SEC Form 10-K, at 7.

[5] Equals [8]/[1]

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

[7] Equals [1] x [2]

[8] Equals [7] - [6]

[9] Equals [6] / [7]

[10] Bloomberg Professional

[11] Bloomberg Professional, equals 30-day average as of January 31, 2023

[12] Equals [10] / [11]

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

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

[15] Value Line

[16] Yahoo! Finance

[17] Zacks Investment Research

[18] Equals Average of [15], [16], [17]

[19] Equals [13] + [18]

[20] Equals [14] + [18]

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

[22] Equals [20] (Median) - [19] (Median)

CAPITAL STRUCTURE ANALYSIS

Proxy Group Company	Ticker	Most Recent 8 Quarters (Q4/2020 - Q3/2022)				
		Common Equity Ratio	Long-Term Debt Ratio	Preferred Equity Ratio	Short-term Debt Ratio	Total Capitalization
ALLETE, Inc.	ALE	57.22%	42.69%	0.00%	0.10%	100.00%
Alliant Energy Corporation	LNT	51.34%	46.60%	0.79%	1.26%	100.00%
Ameren Corporation	AEE	52.39%	45.62%	0.62%	1.37%	100.00%
American Electric Power Company,	AEP	47.40%	51.00%	0.00%	1.60%	100.00%
Avista Corporation	AVA	48.10%	47.51%	0.00%	4.39%	100.00%
Duke Energy Corporation	DUK	52.33%	46.07%	0.00%	1.59%	100.00%
Edison International	EIX	41.38%	48.41%	4.55%	5.65%	100.00%
Entergy Corporation	ETR	46.19%	53.71%	0.10%	0.00%	100.00%
Evergy, Inc.	EVRG	57.96%	37.67%	0.00%	4.37%	100.00%
Eversource Energy	ES	53.09%	44.56%	0.72%	1.63%	100.00%
IDACORP, Inc.	IDA	54.07%	45.65%	0.28%	0.00%	100.00%
NextEra Energy, Inc.	NEE	60.17%	38.36%	0.00%	1.48%	100.00%
NorthWestern Corporation	NWE	47.68%	52.04%	0.00%	0.28%	100.00%
OGE Energy Corporation	OGE	53.03%	45.19%	0.00%	1.78%	100.00%
Otter Tail Corporation	OTTR	52.85%	44.56%	0.00%	2.59%	100.00%
Portland General Electric Company	POR	45.35%	53.38%	0.00%	1.27%	100.00%
Xcel Energy Inc.	XEL	53.84%	45.48%	0.00%	0.68%	100.00%
	Average	51.43%	46.38%	0.42%	1.77%	
	Median	52.39%	45.65%	0.00%	1.48%	
	Maximum	60.17%	53.71%	4.55%	5.65%	
	Minimum	41.38%	37.67%	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 subsidi

[2] Electric and Natural Gas operating subsidiaries with data listed as N/A from S&P Capital IQ have been excluded from the ai