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October 3, 2022

VIA ELECTRONIC FILING

Mr. Adam J. Teitzman
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Docket No. 20220069-GU
Florida City Gas – Rebuttal Testimony of Jennifer E. Nelson

Dear Mr. Teitzman:

Enclosed for filing on behalf of Florida City Gas ("FCG") in the above-referenced docket is the **Rebuttal Testimony of FCG witness Jennifer E. Nelson**, together with Exhibits JEN-11 through JEN-23.

A copy of this filing is being served in accordance with the attached certificate of service. If you or your staff have any question regarding this filing, please contact me at (561) 691-7144.

Respectfully submitted,

Christopher T. Wright
Authorized House Counsel No. 1007055

Enclosures

Cc: Ken Hoffman

CERTIFICATE OF SERVICE
20220069-GU

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by electronic mail this 3rd day of October 2022 to the following parties:

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s/ Christopher T. Wright
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BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 20220069-GU

FLORIDA CITY GAS

REBUTTAL TESTIMONY OF JENNIFER E. NELSON

Topic: Cost of Capital

Filed: October 3, 2022

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I. INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My name is Jennifer E. Nelson. I am an Assistant Vice President at Concentric Energy Advisors. My business address is 293 Boston Post Road West, Marlborough, Massachusetts, 01752.

Q. On whose behalf are you submitting this testimony?

A. I am submitting this rebuttal testimony before the Florida Public Service Commission ("Commission") on behalf Pivotal Utility Holdings, Inc. d/b/a Florida City Gas ("FCG" or the "Company").

Q. Are you the same Jennifer E. Nelson who filed direct testimony in this proceeding on May 31, 2022?

A. Yes, I am.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to respond to the direct testimony of Mr. David J. Garrett, who testifies on behalf of the Office of Public Counsel ("OPC"), and Mr. Christopher C. Walters, who testifies on behalf of Federal Executive Agencies ("FEA"), as their testimonies relate to the Company's Cost of Capital.[1]

Positions not addressed in my rebuttal testimony should not be construed to mean I agree with those positions raised by the Intervenor Witnesses.

[1] Hereinafter, OPC witness Garrett and FEA witness Walters will be collectively referred to as "Intervenor Witnesses."

Q. Are you sponsoring or co-sponsoring any exhibits in your rebuttal testimony?

A. Yes. I am sponsoring the following exhibits:

- JEN-11: Constant Growth DCF Analysis
- JEN-12: Quarterly Growth DCF Analysis
- JEN-13: DCF-based Expected Market Return
- JEN-14: CAPM and Empirical CAPM Analyses
- JEN-15: Bond Yield Plus Risk Premium Analysis
- JEN-16: Capital Structure Analysis
- JEN-17: Recent Authorized ROEs and Equity Ratios
- JEN-18: Relationship between Industry Debt Ratios and Beta Coefficients
- JEN-19: Gross Domestic Product by Industry
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- JEN-21: Adjustments to OPC Witness Garrett's Implied Equity Risk Premium Analysis
- JEN-22: FEA Witness Walters' Corrected Beta Coefficients
- JEN-23: Adjustments to FEA Witness Walters' CAPM Analysis

II. <u>SUMMARY AND OVERVIEW OF REBUTTAL TESTIMONY</u>

Q. Please summarize the recommendations contained in your direct testimony and those of the Intervenor Witnesses regarding the appropriate cost of equity and capital structure for FCG.

A. In my direct testimony, I concluded that 10.75 percent is a just and reasonable return

on equity ("ROE") for FCG.[2] As my direct testimony discussed, my recommendation considers the results of three widely accepted methodologies in light of the current capital market environment and certain risks faced by the Company. With respect to the Company's capital structure, I concluded that the Company's requested investor-supplied capital structure of 59.60 percent common equity and 40.40 percent debt is consistent with the proportions of investor-supplied capital that finances the regulated natural gas operations of the proxy group and is therefore reasonable and should be approved.[3]

As explained in my direct testimony, the cost of equity cannot be precisely quantified, nor is it the result of a defined mathematical formula. Because the cost of equity is not directly observable, no single model is more reliable than all others in all market conditions.[4] One model's results may be reasonable in one market environment but insufficient in another market environment. Each model's results, therefore, must be viewed within the context of the current market environment and other relevant benchmarks.

Consistent with standard investor practice, it is important to consider a variety of methodologies and data points, as it puts into context both the quantitative and qualitative analyses and the associated recommendations. As such, I have updated many of the analyses contained in my direct testimony and provide additional analyses

[2] Direct Testimony of Jennifer E. Nelson, at 5-6.

[3] Direct Testimony of Jennifer E. Nelson, at 6.

[4] Direct Testimony of Jennifer E. Nelson, at 8.

in response to issues raised by the Intervenor Witnesses.

Q. Please provide an overview of your response to the Intervenor Witnesses' ROE and capital structure recommendations.

A. Quite simply, the Intervenor Witnesses' ROE and capital structure recommendations are below any reasonable measure of FCG's cost of equity and do not satisfy the *Hope* and *Bluefield* comparable risk, financial integrity, and capital attraction standards. Moreover, the Intervenor Witnesses' ROE and capital structure recommendations are particularly unreasonable when viewed in the context of the many market-based indicators of increasing capital costs and returns currently available to other natural gas utilities. Despite increases in government and utility bonds, market volatility, and inflation, the Opposing Witnesses disregard this current market data that indicate higher costs of capital and recommend the Commission reduce the Company's authorized ROE by 79 to 94 basis points.

OPC witness Garrett's 9.25 percent ROE recommendation, in particular, is fundamentally disconnected from his own analyses and conclusions, and cannot be reconciled with his opinion that the "actual" cost of equity is 8.00 percent. Aside from his position that regulatory commissions have been systematically incorrect over decades, he provides no empirical support for his specific 9.25 percent ROE recommendation. As such, OPC witness Garrett's recommendation is unsupported and should be given no weight.

With respect to the capital structure, the Intervenor Witnesses' capital structure

recommendations are significantly more leveraged than the Company's requested capital structure based on an improper review of capital structures at the publicly traded holding company level. Although OPC witness Garrett estimates a 109-basis point increase in the Company's cost of equity if his capital structure recommendation is approved, his overall ROE recommendation remains insufficient and would fail to meet the *Hope* and *Bluefield* capital attraction, financial integrity, and comparable risk standards.

Figure 1 below summarizes the ROE and equity ratio recommendations submitted by the witnesses in this proceeding.

Figure 1: Summary of ROE Results and Recommendations

	DCF Results	CAPM Results	Risk Premium Results	Investor-Supplied Equity Ratio	ROE Recommendation (Range)
Mr. Garrett (OPC)	7.10% - 8.00%	7.9%	N/A	48.7%	9.25% (7.10% - 9.00%)
Mr. Walters (FEA)	9.00% (7.99% - 9.31%)	9.40% (6.71% - 10.97%)	9.80% (9.27% - 10.42%)	≤50.00%	9.40% (9.00% - 9.80%)
Ms. Nelson - Direct (FCG)	8.05% - 10.87%	10.12%- 13.37%	9.73% - 9.80%	59.60%	10.75%
Ms. Nelson - Rebuttal (FCG)	8.50% - 11.11%	10.29%- 12.00%	9.75% - 9.88%	59.60%	10.75%

The fact that the Intervenor Witnesses' recommendations are similar and within a narrow range is not an indication of their reliability or reasonableness. Instead, it is due to their reliance on inputs that are flawed and contradictory to sound financial theory, biasing their ROE estimates downward. Moreover, the Intervenor Witnesses' 9.25 percent to 9.40 percent ROE recommendations are particularly unreasonable when

viewed in the context of: (1) the many market-based indicators of increasing capital costs, (2) the Company's significantly smaller size relative to the proxy group and the effect of flotation costs, and (3) returns currently available to other natural gas utilities.

Overall, it is my opinion that, if adopted, the Intervenor Witnesses' recommendations would be viewed as a departure from the Commission's practices, increasing the Company's regulatory and financial risk, and thus diminishing FCG's ability to compete for capital. Accepting their recommendations would likely have the counterproductive effect of increasing the Company's overall cost of capital, ultimately to the detriment of customers.

Q. Have you updated the ROE analyses filed with your Direct Testimony?

A. Yes, I have updated my Constant Growth and Quarterly Growth Discounted Cash Flow ("DCF"), Capital Asset Pricing Model ("CAPM"), Empirical CAPM ("ECAPM"), and Bond Yield Plus Risk Premium analyses to reflect data as of August 31, 2022.[5] I also updated the capital structure analysis to reflect data for the three years ended 2021.[6] I applied this data to the same group of proxy companies used in my Direct Testimony. My updated results are presented in Section VIII below.

Q. Do the updated analyses change your conclusions regarding the appropriate ROE and capital structure for FCG?

A. No, they do not. As shown in Figure 1 above, my updated analytical results continue

[5] *See* Exhibit JEN-11 through Exhibit JEN-15. As explained in Section VIII, I have reverted to my usual practice of averaging the forward-looking DCF-based expected market return estimates from *Value Line* and Bloomberg.

[6] Exhibit JEN-16.

to support an ROE of 10.75 percent. Given the Company's significantly smaller size relative to the proxy group, the effect of flotation costs, as well as the current higher interest rate and inflationary market environment, my recommended ROE of 10.75 percent continues to be reasonable, if not conservative. The updated capital structure analysis presented in Exhibit JEN-16 continues to support the Company's proposed capital structure as being consistent with the proportions of long-term capital that finances the regulated natural gas operations of the proxy group.

Q. How is the remainder of your rebuttal testimony organized?

A. The remainder of my rebuttal testimony is organized as follows:

- Section III – Responds to the Intervenor Witnesses' discussion regarding the trends in authorized ROEs and the current capital market environment;
- Section IV – Responds to the Intervenor Witnesses' capital structure recommendations;
- Section V – Responds to OPC witness Garrett;
- Section VI – Responds to FEA witness Walters;
- Section VII – Summarizes my updated ROE analytical results; and;
- Section VIII – Provides my conclusions and recommendations.

III. TRENDS IN AUTHORIZED ROES AND THE CURRENT CAPITAL MARKET ENVIRONMENT

A. Trend in Authorized ROEs

Q. The Intervenor Witnesses reference authorized ROEs for utilities in other jurisdictions.[7] Do you agree with their characterizations of the trend in authorized ROEs and the relevance of the trend on the Company's cost of equity?

A. No, I do not. National average authorized ROEs must be considered in the proper context in order to be useful. While I agree that investors consider ROEs authorized in other states when assessing the adequacy of returns available to utilities, I have several concerns with the nationwide average authorized ROE data presented by the Intervenor Witnesses.

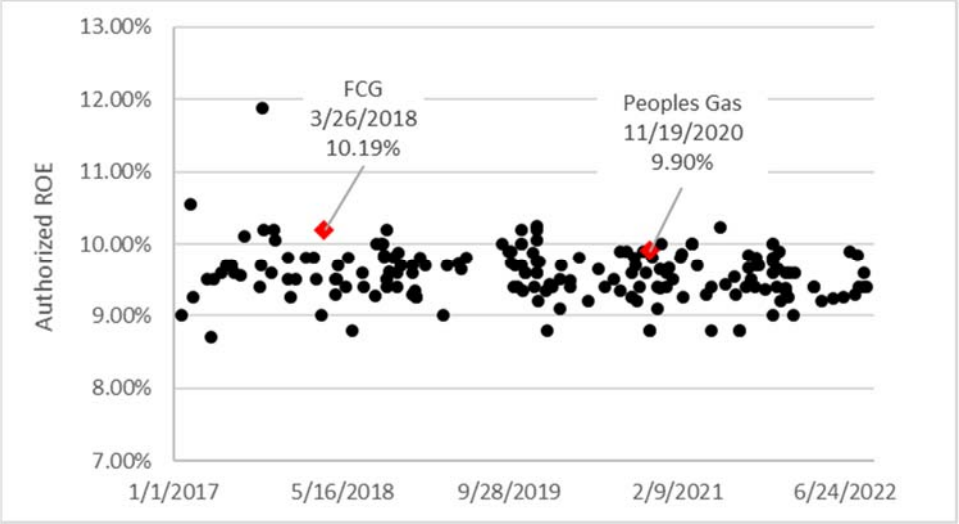
First, annual average data obscures variations in returns and does not address the number of cases nor the jurisdictions issuing orders within a given year. For example, one year may have fewer cases decided, and a relatively large portion of those cases decided by a single jurisdiction.

Second, I disagree that there has been a downward trend in ROEs as suggested by the Intervenor Witnesses. Indeed, FEA witness Walters' Figure CCW-1 shows that the average authorized ROE for both electric and natural gas utilities has been relatively stable since 2014. Further, as shown in Figure 2 (below), there has been no discernible downward trend in authorized ROEs for natural gas distribution utilities over the last

[7] Direct Testimony of FEA witness Walters, at 4-5; Direct Testimony of OPC witness Garrett, at 14.

five years.

Figure 2: Authorized ROE for Natural Gas Utilities (2017 – 2022)[8]



Third, authorized ROEs must be viewed within the context of the economic and capital market environment in which they were decided. Market conditions at the time the authorized returns were established may be very different than conditions going forward. For example, ROEs authorized when interest rates were very low in 2020 and 2021 are not a reasonable basis of comparison for evaluating the authorized ROE when bond yields have increased and are expected to continue increasing as the Federal Reserve tightens its monetary policy. As such, references to a trend in authorized ROEs beginning ten or twenty years ago must be appropriately viewed within the context of the economic and capital market environment in which they were decided. The current and forecasted economic and capital market environment in which this ROE will be decided cannot be ignored as suggested by the Intervenor Witnesses.

[8] Source: Regulatory Research Associates, January 1, 2017 – August 31, 2022. Excludes Limited Issue Rate Rider proceedings.

Q. How do recent authorized ROEs in more constructive jurisdictions such as the Commission compare ROEs authorized in less constructive jurisdictions?

A. As shown in Figure 3 below, authorized ROEs in jurisdictions ranked as "Above Average," by Regulatory Research Associates ("RRA"), such as the Commission, are higher than those authorized in less constructive jurisdictions.

Figure 3: Authorized ROEs for Natural Gas Utilities by RRA Ranking (2017-2022)[9]

	Above Average	Average	Below Average
Mean	9.91%	9.48%	9.63%
Median	9.90%	9.48%	9.60%
Maximum	10.55%	10.20%	11.88%
Minimum	9.20%	8.70%	9.10%

I note that the lowest 9.20 percent authorized ROE noted in Figure 3 above as the lowest ROE authorized for an "Above Average" jurisdiction relates to a December 20, 2019 decision for Washington Gas Light in Virginia. At the time of that decision, the Virginia Corporation Commission ("VCC") was ranked by RRA as "Above Average/3". However, three months after this decision, RRA lowered its ranking of the VCC to "Average/1." Excluding this ROE, the lowest ROE for a natural gas utility in the "Above Average" ranking is 9.60 percent, which is well above the Intervenor Witnesses' recommendations. The Intervenor Witnesses' recommendations are below the average and median authorized ROEs for natural gas utilities in "Average" and "Below Average" ranked jurisdictions.

[9] Source: Regulatory Research Associates. Natural gas distribution rate cases completed through August 31, 2022.

The Commission is currently ranked by RRA as "Above Average/2." If the Intervenor Witnesses' recommendations were adopted, it would represent a significant departure in Florida's constructive regulatory climate, increasing the Company's regulatory risk and therefore its cost of capital. As explained in my direct testimony at pages 49-52, the regulatory environment is one of the most important factors considered by the investment community and directly affects a utility's access to and the cost of capital. As such, it is important that Florida's perception as a constructive regulatory environment be maintained.

Q. What is your response to OPC witness Garrett's conclusion that utility authorized ROEs have generally been above the market cost of equity since 1990?[10]

A. Although OPC witness Garrett attempts to characterize his conclusion that authorized returns have been above the market required return as an undisputable fact, it is simply the outcome of his subjective analysis that is driven by his own flawed inputs and assumptions. As explained on page 8 of my direct testimony, the forward-looking cost of equity cannot be precisely quantified, even for the market. As such, his "Market Cost of Equity" is simply his subjective opinion driven by flawed and unreasonable inputs as explained below. Further, OPC witness Garrett's conclusions, if accepted, would suggest that all utility commissions, as well as all investors in the market, have been wrong for decades. OPC witness Garrett's conclusions are erroneous, unsupported, and should be rejected.

[10] Direct Testimony of OPC witness Garrett, at 13-14.

Q. Please further explain how OPC witness Garrett's analysis regarding authorized ROEs relative to the Market Cost of Equity is flawed and inaccurate.

A. There are several flaws with OPC witness Garrett's analysis and conclusion. For background, OPC witness Garrett's analysis is presented in his Figure 3 and Exhibit DJG-13. The orange dashed line in his Figure 3 (the "Market Cost of Equity") is the data presented in Column [7] in his Exhibit DJG-13, which is the sum of Column [5] (the risk-free rate) and Column [6] (the Risk Premium). As explained in the footnotes of his Exhibit DJG-13, the source of this data is the NYU School of Business, presumably Dr. Aswath Damodaran's website that OPC witness Garrett references frequently throughout his testimony.

The first flaw in his analysis is that the risk-free rate applied used to develop his Market Cost of Equity estimates is the 10-year Treasury bond yield. In my experience, the 30-year Treasury bond yield is often used as the risk-free rate in utility regulatory proceedings. Comparing authorized ROEs that are based on analyses that use a higher risk-free rate (*i.e.*, the 30-year Treasury bond yield typically used in utility regulatory proceedings) to the risk-free rate applied to estimate his "Market Cost of Equity" (*i.e.*, based on the 10-year Treasury bond yield) is an apples-to-oranges comparison.

The more critical flaw is his annual Risk Premium estimates, which are the output of Dr. Damodaran's Implied Equity Risk Premium model and are highly dependent upon the inputs and assumptions in that model. Dr. Damodaran's Implied Equity Risk Premium model is fairly complex. In my opinion, any analyst who applies Dr.

Damodaran's estimates should understand all the inputs and assumptions into his model to vet the reasonableness of those assumptions before relying substantially on the outputs of that model. My simplified understanding of Dr. Damodaran's model is that it applies a multi-stage DCF analysis for the S&P 500 Index in which the first stage of growth relies on an estimate of analysts' earnings growth rate for the S&P 500 Index for the first five years, and a terminal stage of growth equal to the 10-year Treasury bond yield for years six through perpetuity. I also understand that Dr. Damodaran assumes the 10-year Treasury bond yield as the discount rate. The assumed terminal growth rate is an especially critical input because the large majority of the cash flows that are discounted depend substantially on it. In my opinion, Dr. Damodaran's assumptions are not reasonable or consistent with the cost of equity analyses that I see typically applied in utility regulatory proceedings. These concerns should not be construed to mean I am criticizing Dr. Damodaran's model for academic purposes; rather, I simply do not believe Dr. Damodaran's Implied Equity Risk Premium model is useful for utility ratemaking purposes given its underlying assumptions. Moreover, I do not believe that it is appropriate to simply accept the inputs and assumptions used in Dr. Damodaran's Implied Equity Risk Premium model for all cost of equity analyses.

Q. Do you have any additional thoughts regarding OPC witness Garrett's "Market Cost of Equity" estimates?

A. Yes, I do. As noted above, OPC witness Garrett's position that authorized ROEs have been above the Market Cost of Equity for decades requires one to assume that all utility commissions, as well as all the investors in the market, have been wrong for decades. I find that presumption to be highly implausible. Because utility commissions consider

a wide range of market information, including both quantitative and qualitative data and analyses, I find it unlikely that all utility commissions, including this one, have been systematically incorrect in setting authorized returns over such a long period of time.

Additionally, if it were true that regulatory commissions were systematically authorizing ROEs for less risky utilities well above the market required return as OPC witness Garrett asserts, the discrepancy would have been arbitraged away over the last 30 years, consistent with the efficient market hypothesis OPC witness Garrett subscribes to.[11] In other words, if investors believed they could earn a significantly higher return for a less risky asset, they would move from more risky assets in the market to utility stocks, thus pushing down the cost of equity for utilities and increasing the market cost of equity. Because that has not happened, it implies OPC witness Garrett's analysis and conclusions are unsound.

As explained on pages 33-34 of my direct testimony, the long-term average total return on the market has been approximately 12.33 percent over the last 96 years and has been relatively stable. Over the long-term, realized returns should converge on expectations;[12] as such, it is highly improbable that investors are currently requiring returns on the overall market in the range of only 5 to 6 percent, as suggested by OPC witness Garrett's Exhibit DJG-13. In contrast, utility authorized ROEs generally reflect

[11] Direct Testimony of OPC witness Garrett, at 28.

[12] *See, e.g.,* Roger A. Morin, Ph.D., New Regulatory Finance, at 157 (2006).

a discount to the long-term average realized market returns of approximately 15-25 percent consistent with utility Beta coefficients (*i.e.,* 0.75-0.85). In other words, OPC witness Garrett's "Market Cost of Equity" estimates are disconnected from observed data and cannot be reconciled. OPC witness Garrett's conclusions reflect one person's subjective inputs and assumptions of one specific model and should not be construed as fact.

Q. What is your response to OPC witness Garrett's claims that "capital costs and awarded ROEs were much higher several decades ago than they are currently?"[13]

A. As capital costs have declined over the last three decades, authorized ROEs have also declined, that point is not disputed. OPC witness Garrett's concern appears to be that authorized ROEs have not fallen as much as interest rates. Apparently, OPC witness Garrett believes that capital costs and the cost of equity move in lockstep or in a one-to-one relationship, which is incorrect. Nonetheless, over time they have generally moved in the same direction. However, as shown in Figure 2 above, there is no discernable downward trend in authorized ROEs for natural gas distribution rate over the past five years as interest rates have stayed within a relatively narrow range. Now that interest rates have begun rising, it is reasonable and appropriate to expect that utility authorized ROEs should also begin rising.

Q. Please comment on FEA witness Walters' Table CCW-1 and the authorized ROEs for natural gas utilities during the first half of 2022.

A. I have concerns with FEA witness Walters' reference to authorized ROEs for natural gas utilities during the first half of 2022. First, the sample size of ROE decisions

[13] Direct Testimony of OPC witness Garrett, at 60.

between January and June 2022 is small. In fact, of the rate cases covered by RRA (FEA witness Walters' data source), there were only nine natural gas utility rate cases between January and June 2022 in which an ROE was determined. Further, three of the nine ROE decisions were from New York, a jurisdiction that routinely authorizes ROEs and equity ratios well below national averages based on a formula unique to the New York jurisdiction. I also note that between June 30 and August 31, 2022, there have been seven additional ROE determinations, which have averaged 9.55 percent or 22 basis points higher than the 9.33 percent observed in FEA witness Walters' Table CCW-1.

Second, the sixteen natural gas utility rate cases that have been decided between January and August 2022 were largely filed before the Federal Reserve began its monetary policy tightening and raising interest rates, and before inflation started its rapid increase. As such, the market conditions that existed during those proceedings may not necessarily be comparable to the market conditions experienced today.

Third, even the New York Public Service Commission, which routinely authorizes ROEs and equity ratios well below national averages as explained above, has recognized increasing capital costs in their authorized ROE decisions for natural gas utilities over the first half of the year. As shown in Figure 4 below, the ROEs authorized for the New York natural gas utilities increased 25 basis points from between January and June 2022. The 9.25 percent ROE authorized for Corning Natural Gas on June 16, 2022, reflected a 45-basis point increase over its prior ROE of 8.80

percent authorized a little more than a year earlier in May 2021.

Figure 4: New York Natural Gas ROEs Authorized in 2022

Company	Date of Final Order	Authorized ROE
Niagara Mohawk Power Corp.	1/20/2022	9.00%
Orange & Rockland	4/14/2022	9.20%
Corning Natural Gas Corp.	6/16/2022	9.25%

Q. Are the Intervenor Witnesses' recommendations consistent with those recently authorized for natural gas utilities elsewhere in the U.S.?

A. No, they are not. As noted above, the Intervenor Witnesses' ROE recommendations range from 9.25 percent to 9.40 percent. These recommendations rank in the bottom quarter of ROEs authorized for natural gas utilities over the last five years, as shown in Figure 5 below.

Figure 5: Percentile Ranking of Intervenor Witness Recommendations' Relative to Natural Gas Authorized ROEs 2017-2022

Witness	ROE Recommendation	Percentile Rank
Mr. Garrett (OPC)	9.25%	11.20%
Mr. Walters (FEA)	9.40%	24.70%

In other words, approximately 75.00 percent to 89.00 percent of ROEs authorized for natural gas utilities over the last five years were above the Intervenor Witnesses' ROE recommendations. I do not believe investors perceive FCG to be materially less risky than other natural gas utilities such that they would reduce their return requirements for FCG so far below those awarded for other natural gas utilities. Additionally, as noted earlier, the Intervenor Witnesses' recommendations are far removed from approved

returns in constructive jurisdictions like Florida.

Q. What is the practical implication of setting a return for FCG that is far below those authorized for other natural gas utilities?

A. The significant difference between the Intervenor Witnesses' ROE recommendations and those available to other natural gas utilities raises a very practical concern. FCG must compete with other companies, including utilities and the other NextEra Energy affiliates, for the long-term capital needed to provide utility service. Given the choice between two similarly-situated utilities, one with a return that falls far below industry levels, and another whose authorized return more closely aligns with those available to other utilities, investors will choose the latter.

Q. Have recent events emphasized the importance for a utility to maintain a strong financial profile?

A. Yes. The Intervenor Witnesses justify their ROE recommendation, in part, on their premise that FCG is a low-risk utility.[14] While utilities are generally considered to be less risky than other sectors, that does not mean they are risk-free. As the COVID-19 pandemic and Winter Storm Uri and the financial implications stemming from those events show, high impact adverse events can and do happen. A utility with a strong financial profile has a higher likelihood of withstanding adverse events and accessing capital at reasonable terms during constrained markets to the benefit of customers. Financial strength is especially critical during periods of market dislocation, as experienced in 2020 and during the Great Recession of 2008-2009 for example. In

[14] Direct Testimony of FEA witness Walters, at 64-65, 67; Direct Testimony of OPC witness Garrett, at 17.

fact, S&P noted that the utility sector's credit ratings weakened sharply in 2020:

> [T]he utility industry performed poorly from a credit quality perspective. *The negative outlooks or CreditWatch negative listings doubled and downgrades outpaced upgrades for the first time in a decade by about 7 to 1*.[15]

That trend continued in 2021, with S&P noting that "[f]or the second consecutive year, rating downgrades outpaced upgrades for the investor-owned North American regulated utility industry, causing the median rating on the industry to fall to the 'BBB' category."[16]

The depth and duration of the COVID-19 pandemic could have been more severe, and utilities must be prepared for unexpected adverse events with a margin of safety. Doing so enables utilities to provide safe and reliable service at a reasonable cost in all market environments to the benefit of customers.

Q. Do you agree with FEA witness Walters' conclusion that natural gas utility credit ratings have improved?[17]

A. No, I do not. Comparisons to 2009 when the U.S. was in the depths of the greatest economic downturn in the previous 75 to 80 years are not a relevant or meaningful benchmark. As the U.S. came out of the recession, it is not surprising utility credit ratings would improve. The more appropriate review would be to more recent years when economic conditions were more stable. For example, in 2017, 100 percent of the

[15] S&P Global Ratings, *North American Regulated Utilities' Negative Outlook Could See Modest Improvement*, at 1 (January 20, 2021).

[16] S&P Global Ratings, *For The First Time Ever, The Median Investor-Owned Utility Ratings Falls To The 'BBB' Category*, at 1 (January 20, 2022).

[17] Direct Testimony of FEA witness Walters, at 7.

natural gas utilities in FEA witness Walters' Table CCW-3 were rated BBB+ or higher. Since then, the percentage of A-rated utilities has fallen from 67 percent to 51 percent, and the percentage of BBB-rated natural gas utilities has increased from 33 percent to 50 percent. This is consistent with the increase in downgrades in 2020 and 2021 noted by S&P above. Therefore, I disagree with FEA witness Walters' characterization that utility credit ratings have improved.

B. Capital Market Environment

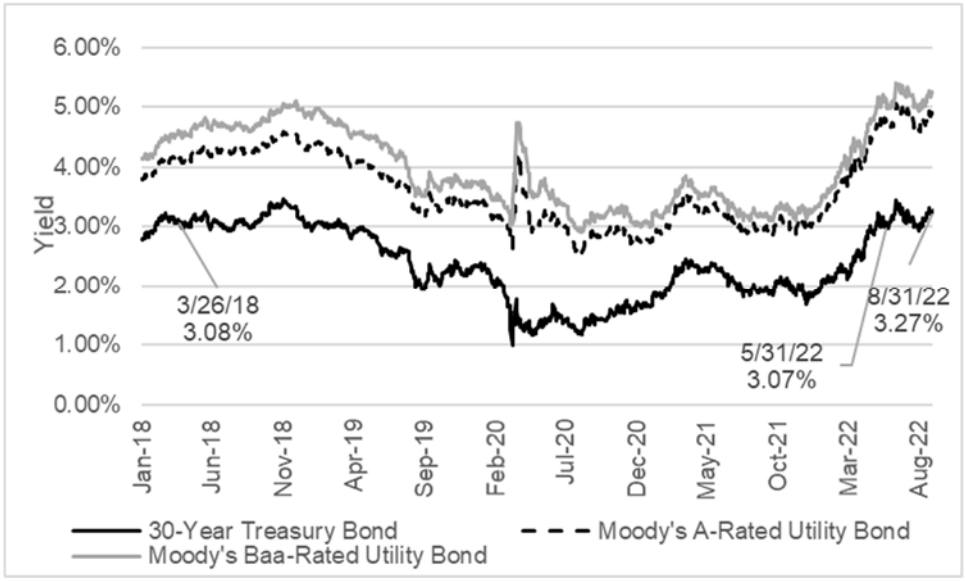
Q. Please briefly summarize the Intervenor Witnesses' positions regarding the current capital market environment and its implications for the Company's cost of equity?

A. While the Intervenor Witnesses generally agree with the facts presented in my direct testimony regarding higher interest rates and inflation, they largely dismiss them, suggesting, without any support, that they will be temporary or will not have a material effect on FCG. As discussed in my direct testimony, there are numerous market-based indicators that capital costs have risen since the Company's last rate case, including: (1) higher interest rates, including the 30-year Treasury bond yield and utility bond yields; (2) higher inflation; (3) higher utility Beta coefficients, including the proxy group; (4) an increase in the spread between utility bond yields and the 30-year Treasury bond yield; and (5) continued elevated market volatility. Neither of the Intervenor Witnesses have disputed these facts; rather, they simply dismiss them and conclude that capital costs are low and will remain low.

Q. What has been the trend in bond yields and inflation since you filed your Direct Testimony?

A. Government bond yields and utility bond yields have continued to increase, as shown in Figure 6 below.

Figure 6: 30-Year Treasury Bond Yield and Utility Bond Yields (2018-2022)[18]



The 30-year Treasury bond yield has increased 20 basis points since my direct testimony was filed on May 31, 2022, and 19 basis points since the Commission's order in FCG's last rate case in March 2018. Utility bond yields have risen approximately 25 to 30 basis points between May 31, 2022 and August 31, 2022, and are also approximately 70 basis points above the levels seen at the time of the Commission's order in the Company's last rate case.[19]

[18] Source: Bloomberg Financial.

[19] Source: Bloomberg Financial.

Further, inflation remains elevated at the highest levels in the last 40 years, and above the levels experienced at the time of the Company's last rate case was concluded, as shown in Figure 7 below.

Figure 7: Year-over-Year Inflation Rates (March 2018 to July 2022)[20]

	March 2018	May 2022	July 2022
Consumer Price Index	2.3%	8.5%	8.5%
Producer Price Index	2.9%	11.0%	9.8%
Personal Consumption Expenditures Price Index	2.2%	6.3%	6.3%

Q. Do you agree with OPC witness Garrett's contention that inflation disproportionately affects utility customers rather than utility shareholders?[21]

A. No, I do not. OPC witness Garrett misses a key point: that capital costs are a cost to the utility and not just to its customers. As explained in my direct testimony, inflation directly affects a utility's capital costs, both debt and equity costs.[22] As noted in a recent Regulatory Research Associates ("RRA") article, rate cases around the country cite inflationary concerns that utilities face, including rising insurance premiums and labor and materials cost escalation, with highest year-over-year inflation seen in the South region.[23] These cost pressures are further exacerbated on the capital-intensive nature of utilities, with large capital investments required across the country to address aging infrastructure and grid modernization plans. Because utilities have an obligation to serve, they cannot delay capital investments until inflation subsides, or they risk the

[20] Sources: U.S. Bureau of Labor Statistics; Federal Reserve Bank of St. Louis, FRED Database.

[21] Direct Testimony OPC witness Garrett, at 5.

[22] Direct Testimony of Jennifer E. Nelson, at 70.

[23] RRA Regulatory Focus. "Inflation rearing its head in electric, gas general rate cases nationwide." September 7, 2022.

ability to continue providing safe and reliable service. Failing to reflect higher capital costs in the authorized rate of return caused by higher inflation would not provide FCG with a reasonable opportunity to earn its cost of equity, violating the *Hope* and *Bluefield* standards.

Q. FEA witness Walters asserts that "robust valuations" are "evidence" that utilities can access capital "at relatively low cost."[24] What is your response?

A. FEA Witness Walters' position fails to acknowledge that because utilities are capital intensive enterprises, their "robust" valuations are strongly related to the interest rate environment. As shown in Figure 8 below, between 2000 and 2008, utility valuations as measured by the proxy group relied on by me and the Intervenor Witnesses were within a relatively confined range. However, as the Federal Reserve deliberately reduced interest rates to provide extraordinary support for the U.S. economy in the wake of the Great Recession in 2008 and later during the COVID-19 pandemic in 2020, utility valuations increased by more than 2.5 times over the valuation levels seen immediately prior to the 2008 Great Recession.

[24] Direct Testimony of FEA witness Walters, at 9.

Figure 8: Proxy Group Equity Valuation vs. 30-Year Treasury Yields (2000-2022)[25]

As Figure 8 above shows, there is a strong, statistically significant inverse relationship between the 30-year Treasury yield and natural gas utility valuations. A simple linear regression of the two variables indicates that the 30-year Treasury yield explains approximately 64.00 percent of the variation in natural gas utility valuations (as measured by FEA witness Walters' and my proxy group).

Because the recent low level of interest rates was the result of the Federal Reserve's monetary policy deliberately put in place to support the U.S. economy during volatile, crisis-induced market environments, it is difficult to conclude that utilities' "robust" valuations reflect investors' perceptions that utilities' cost of equity is low. As

[25] Source: S&P Capital IQ, Yahoo! Finance; Price level of FEA witness Walters' and my proxy group is calculated as an Index.

explained in my direct testimony, low interest rates are often associated with higher market volatility, which suggests an *increase* in the cost of equity, not a decrease.[26] Importantly, the Federal Reserve is aggressively unwinding its expansionary monetary policies. Historically, utility valuations have often declined as interest rates rise, as indicated by the negative relationship between the two.

Q. What is your response to FEA witness Walters' position that higher levels of volatility in the overall market do not indicate a similar increased level of risk for utilities?[27]

A. FEA witness Walters conflates my discussion of increased market volatility (and therefore increased risk in the market as a whole) with the presumption that utilities are generally regarded as less risky.[28] As explained in my direct testimony, however, both the utility sector and the S&P 500 lost approximately 30.00 percent of its value at the onset of the COVID-19 pandemic.[29] Additionally, the returns from the companies in my proxy group have been more volatile (*i.e.*, riskier) than the S&P 500. As shown in Figure 20 on page 66 of my direct testimony, the proxy group's relative volatility ratio has been above 1.0. As that chart also demonstrates, the proxy companies' returns have been more correlated with returns of the S&P 500 Index. That is, the proxy companies have been trading in a more similar pattern as the S&P 500 Index. Although FEA witness Walters' position may be based on past conventional wisdom that utilities are always defensive stocks, that is not always the case. Indeed, utilities have been more

[26] Direct Testimony of Jennifer E. Nelson, at 60-61.

[27] Direct Testimony of FEA witness Walters, at 66-67.

[28] Direct Testimony of FEA witness Walters, at 67.

[29] Direct Testimony of Jennifer E. Nelson, at 59.

volatile, and therefore riskier, than the broad market since at least February 2020. That data supports an increase in the cost of equity.

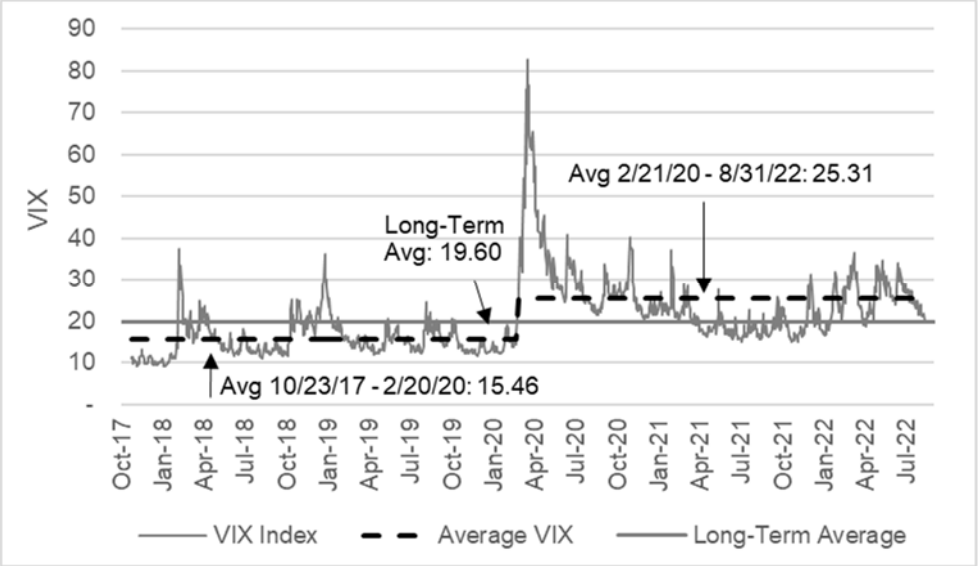
Lastly, as explained in my direct testimony and as FEA witness Walters agrees,[30] the CAPM theory is based on the premise that investors are compensated for taking on undiversifiable, or market, risk. Because market risk as measured by the Volatility Index ("VIX") has increased, it indicates higher investor return requirements under the CAPM theory.

Q. Has market volatility remained elevated since you filed your direct testimony?

A. Yes. As shown in Figure 9 below, the VIX has generally been above its long-term average throughout 2022. Since mid-February 2020, market volatility has been, on average, about 30 percent above its long-term average (19.60). As Figure 9 also shows, the current VIX levels are, on average, about 63.70 percent higher than the average level experienced between 2017-mid-February 2020 (15.46).

[30] Direct Testimony of FEA Witness Walters, at 64.

Figure 9: VIX (2017-2022)



IV. CAPITAL STRUCTURE

Q. What are the Intervenor Witnesses' recommendations with respect to the Company's capital structure?

A. OPC witness Garrett recommends a financial capital structure consisting of 51.30 percent debt and 48.70 percent equity based on investor-supplied capital because, according to him, utility capital structures should be more heavily weighted toward debt.[31] OPC witness Garrett's recommendation is based on his review of the capital structure of companies in other industries and the proxy companies at the publicly traded holding company level in 2021. Similarly, FEA witness Walters also reviews recent authorized equity ratios and the capital structures at the publicly traded holding company level, recommending a capital structure that contains "no higher than 50.0%"

[31] Direct Testimony of OPC witness Garrett, at 71, 80.

common equity.[32]

Q. Do you agree with the Intervenor Witnesses' approach and conclusions?

A. No, I do not. As explained below, companies (including subsidiary companies) are financed in light of the specific risks and funding requirements associated with their individual operations. OPC witness Garrett acknowledges as much, noting that utility capital structures are established "based on the operational and market risk factors that apply to the individual utility."[33] However, his capital structure recommendation is based, in part, on the proxy group average debt-to-equity ratio at the publicly traded holding company level – not on FCG's individual operational and market risk factors.

The proper point of comparison is the mix of investor-supplied capital in place at the *regulated* utility operating companies, not at the publicly-traded holding companies. The nature of utility operations, and the corresponding nature of the assets providing utility service, create common financing objectives and constraints addressed by financing practices at the operating company level. The Intervenor Witnesses, however, recommend increasing the Company's financial leverage by reference to the publicly traded holding companies and other industry capital structures, which would increase the regulated utilities' financial risk and, in turn, its cost of capital to the detriment of customers.

[32] Direct Testimony of FEA witness Walters, at 2.

[33] Direct Testimony of OPC witness Garrett, at 78.

Q. Please explain in more detail why the Intervenor Witnesses' capital structure recommendations are improper.

A. OPC witness Garrett's recommendation is based on the proxy group publicly traded holding company average 2021 debt-to-equity ratio of 1.13. Similarly, FEA witness Walters' recommendation is based on his review of the proxy group publicly traded holding company equity ratios in 2021. Notwithstanding the fact that the Intervenor Witnesses' recommendations are based on an improper analysis of capital structures at the publicly traded holding company level, their recommendations presume that FCG should be financed with the same proportions of equity and debt as the "average" natural gas utility in 2021. However, as explained below, utility capital structures vary widely based on the unique needs of each company and the assets being financed. While I agree that reviewing the actual and authorized capital structures in place at other natural gas utilities can inform the reasonableness of a utility's capital structure, the Intervenor Witnesses have not demonstrated that the Company's requested capital structure deviates substantially from sound utility practice.[34]

Q. For context, please summarize the factors utilities generally consider in their financing practices.

A. Companies (including subsidiary companies) are financed in light of the specific risks and funding requirements associated with their unique individual operations. Capital structure management is dynamic, complex, and must satisfy multiple objectives subject to multiple constraints. It therefore is important to understand utility financing

[34] An example would be if an operating subsidiary was financed with 100 percent equity. *See also*, David C. Parcell, The Cost of Capital – A Practitioner's Guide, at 47 (2020 Edition).

practice, including the principles and constraints that drive financing decisions, and how that practice is reflected in the cost of capital. As explained below, utility financing practices reflect the nature of regulation and utilities' investments made under the regulatory compact. Although regulated utilities face common financing principles and constraints, the unique risks and operations of each utility result in a wide variation of capital structures.

In many respects, the nature of regulation determines the nature of utility assets, and how they are financed. In exchange for the obligation to serve, equity investors expect utilities to have a reasonable opportunity to earn a fair return on prudent investments over the life of the investments. It is the nature of regulation, therefore, that enables utilities to finance large, essentially irreversible, investments that are recovered over decades. Moreover, because the obligation to serve is not contingent on capital market conditions, utility capital structures (and the financial strength they support) are established to ensure capital access not only during normal markets, but when markets are constrained as well. When markets are constrained, only those utilities with sufficient financial strength can attract capital at reasonable terms, to customers' benefit. That financial strength provides utilities with critically important financing flexibility. Relying more heavily on debt, as the Intervenor Witnesses propose, increases the risk of refinancing maturing obligations during less accommodating market environments at likely higher costs, which reduces financing flexibility. Financing flexibility, therefore, has a cost. As Moody's explains:

> Liquidity and access to financing are of particular importance in this sector. Utility assets can often have a very long useful life – 30, 40

> or even 60 years is not uncommon, as well as high price tags…Utilities are among the largest debt issuers in the corporate universe and typically require consistent access to the capital markets to assure adequate sources of funding and to maintain financial flexibility.[35]

Because of utilities' obligation to serve, financial flexibility brought about by the access to both long-term capital and short-term liquidity is critical for utilities' financial integrity and their ability to continually attract capital. The requirement to access the capital markets in all market conditions contrasts with the financial needs of other entities without the legal obligation to serve. Unregulated companies may adjust the timing and amount of major capital expenditures to align with economic cycles and defer decisions and investments to better match market conditions; whereas utilities have limited options to do so. Ensuring the financial strength required to access capital because of reduced spending flexibility, therefore, is critically important not only to utilities and shareholders, but to customers as well.

Q. Are there recent examples within the proxy group that demonstrate the importance of a strong balance sheet and financial profile to maintain efficient access to capital?

A. Yes, there are. In February of 2021, Winter Storm Uri hit Texas and the midwestern U.S., knocking out electric power to millions of customers and constraining natural gas supplies, which pushed customer demand and natural gas commodity costs to record highs. Because of their obligation to serve, natural gas utilities cannot delay or defer purchasing natural gas in the winter, as many customers rely on natural gas to heat their homes. Consequently, as Moody's noted, the surge in natural gas commodity costs

[35] Moody's Investor Service, *Rating Methodology: Regulated Electric and Gas Utilities*, at 25 (June 23, 2017).

"strained liquidity for utilities in Texas, Oklahoma, Kansas, and neighboring states."[36] Two of the proxy companies, Atmos Energy Corporation and ONE Gas, Inc., each reported more than $2 billion in additional natural gas commodity costs attributed to Winter Storm Uri.[37] However, each was able to issue more than $2 billion in low-cost debt,[38] which may not have been possible but for their A-rated credit ratings,[39] strong balance sheets, and expectation for constructive regulatory treatment in recovering the natural gas commodity costs.[40] In this situation, Atmos Energy Corporation's and ONE Gas's customers benefited from these companies' strong balance sheets – each of which had approximately 58 percent to 60 percent equity in their regulated operating company capital structures as of December 31, 2020 (*see* Exhibit JEN-10).

Adverse events can happen unpredictably, and Florida is no stranger to severe weather events. As such, it is important that utilities maintain a strong financial profile that enables efficient access to capital when needed in all market environments.

Lastly, the examples of Atmos Energy and ONE Gas, Inc. raise another problem with the Intervenor Witnesses' analyses: their conclusion regarding the appropriateness of

[36] S&P Capital IQ Pro, "Gas utilities 'most severely affected' by winter storm prices, Moody's says," March 8, 2021.

[37] S&P Capital IQ Pro, "Gas utilities 'most severely affected' by winter storm prices, Moody's says," March 8, 2021.

[38] S&P Capital IQ Pro, "Atmos Energy completes senior notes offering," March 9, 2021; "One Gas to pay $2.2B for gas purchases, secures $2.5B term loan facility," February 22, 2021.

[39] Nonetheless, both companies were downgraded. S&P downgraded Atmos Energy Corporation from A to A- on February 22, 2021. S&P downgraded ONE Gas Inc. two notches from A to BBB+ on February 23, 2021.

[40] *See, e.g.*, S&P Capital IQ Pro, "Gas utilities face multibillion-dollar financing needs after storm price surge," February 22, 2021.

the proxy group average publicly traded holding company equity ratio is skewed by relying only data from 2021. As discussed on page 76 of my direct testimony, it is important to review capital structures over several periods rather than a point in time to avoid misleading conclusions drawn from temporary or abnormal data. In other words, the proxy group average equity ratio in 2021, which the Intervenor Witnesses' recommendations rely upon,[41] is skewed by the fact that two of the six proxy companies uncharacteristically took on significant debt in order to maintain safe and reliable service in an emergency. By focusing only on 2021 and not reviewing capital structures over a longer period, the Intervenor Witness both mistakenly draw the conclusion that it is reasonable to set FCG's capital structure based on abnormal data in 2021. I disagree with that conclusion.

Q. Why are the Intervenor Witnesses' comparisons to the capital structures in place for the proxy group at the publicly traded holding company level an improper measure of the appropriate capital structure for FCG?[42]

A. Comparisons to the capital structures at the proxy group publicly traded holding company level are apples-to-oranges comparisons. Because capital at the publicly traded holding company level may finance unregulated operations, comparisons to the publicly traded holding company capital structure leads to flawed and misleading conclusions. As explained earlier, regulated utilities' obligation to serve presents a unique set of constraints that affect regulated utilities' financing practices relative to unregulated operations, which reduces the financing flexibility critical for utilities.

[41] *See* FEA witness Walters Exhibit CCW-2 and OPC witness Garrett Exhibit DJG-14.

[42] OPC witness Garrett Exhibit DJG-14; FEA witness Walters Exhibit CCW-2.

Comparing the data in OPC witness Garrett Exhibit DJG-14 and my Exhibit JEN-10 (and updated in JEN-16), it is clear that the publicly-traded consolidated holding companies are financed differently than their regulated natural gas operating subsidiaries. The reason is because the capital at the publicly-traded holding company level finances a variety of business segments (both regulated and unregulated) each with different risk profiles. Moreover, several of the proxy group holding companies also have electric or water utility operations, which would be contained within the consolidated capital structures and have a different risk profile than natural gas operations. For these reasons, the proper comparison of the Company's capital structure is to the capital structures that finance the proxy companies' *regulated natural gas* operations.

Q. FEA witness Walters reviews the annual average authorized equity ratio from 2010 to 2022 to support his capital structure recommendation. Is the Company's requested equity ratio consistent with the range of recent authorized equity ratios?

A. Yes, it is. As explained above, setting the authorized capital structure based on annual averages implies all utilities should be financed as an average utility, when in fact the range of authorized equity ratios is wide. The Company's requested equity ratio is within the range of authorized equity ratios between 2019 and 2022, which ranges from 46.26 percent and 60.18 percent.

Q. FEA witness Walters refers to a 2016 Order from the Minnesota Public Utilities Commission that found the "[p]roxy-group averages have much higher probative value than proxy-group ranges."[43] Do you have a response?

A. Yes. I respectfully disagree with the Minnesota Public Utilities Commission's finding in that case. As noted above, utilities are financed according to their unique risks and circumstances of the assets being financed and, therefore, it is reasonable to expect a wide range of utility capital structures. The mere fact that a utility's capital structure deviates from the average does not automatically demonstrate it is unreasonable. Moreover, setting utility capital structures to the average assumes that all utilities have the same risks and underlying assets and should be financed with the same proportions of equity and debt, which is clearly not the case.

Q. OPC witness Garrett reviews the debt ratios of a variety of industry sectors to support his more leveraged capital structure recommendation.[44] Do you agree with his analysis and conclusions?

A. No, I do not. There are several issues with OPC witness Garrett's analysis. First, the natural gas utility sector is not in OPC witness Garrett's list of industries with debt ratios of at least 56 percent. Moreover, the debt ratio data in his analysis is at the publicly traded holding company level. As explained earlier, utility debt ratios at the publicly traded holding company level are an improper benchmark to evaluate the reasonableness of FCG's requested capital structure.

[43] Direct Testimony of FEA witness Walters, at 69.
[44] Direct Testimony of OPC witness Garrett, at 73-75; Exhibit DJG-15.

Second, OPC witness Garrett's data does not support the premise of his conclusions. OPC witness Garrett argues that utilities can "afford" to have higher debt ratios because they "have large amounts of fixed assets, stable earnings, and low risk relative to other industries."[45] He argues that low risk companies, such as utilities, should "operate with relatively high levels of debt". OPC witness Garrett concludes that the companies contained in his Figure 15 are "generally well-established industries with large amounts of capital assets" and are therefore comparable to public utilities.[46] However, many of the industries contained in OPC witness Garrett's Figure 15 contradict his conclusions. For example, based on the Beta coefficients, the Air Transport and Hotel/Gaming industries are significantly more risky than public utilities and certainly are not considered to have "stable" earnings. Yet, these industries are two of the top three industries with the highest debt ratios.

Nonetheless, I tested OPC witness Garrett's theory that low-risk industries should have higher debt ratios. If it's true that business risk is a primary driver of debt ratios, as suggested by OPC witness Garrett, there should be a strong, inverse relationship between the Beta coefficient and debt ratios. In other words, companies with low Beta coefficients (*i.e.*, low risk) would have higher debt ratios. However, that is not the case. As shown in Exhibit JEN-18, I downloaded the long-term debt ratio and Beta coefficient for all U.S. firms covered by *Value Line* and calculated the average debt ratio and Beta coefficient for each industry. I then performed a linear regression in

[45] Direct Testimony of OPC witness Garrett, at 71.

[46] Direct Testimony of OPC witness Garrett, at 74.

which the long-term debt ratio was the dependent variable, and the Beta coefficient was the independent variable. The result was that the R-square was 0.6 percent, and the slope coefficient was positive, not negative as would be expected if OPC witness Garrett's premise was true. Stated differently, industries of higher risk correspond to higher debt ratios, not lower.[47] However, the regression was not statistically significant. In other words, OPC witness Garrett's premise is not supported by the data and there is no relationship between debt ratios and Beta coefficients. Consequently, his theory – and the conclusion he draws from it – is not sound and should be rejected.

Q. OPC witness Garrett refers to previous capital structures of Gulf Power Company and Peoples Gas System to support his objection to the Company's request for the same capital structure as its parent FPL.[48] Are his comparisons to Gulf Power Company and Peoples Gas System appropriate?

A. No, they are not. OPC witness Garrett appears to suggest that because the approved equity ratios of FCG and Gulf Power Company, which were previously both owned by Southern Company, were not the same, this therefore indicates that using the same capital structure as the regulated utility's parent is not appropriate. The flaw with his argument is that prior to its recent merger and consolidation with and into FPL, Gulf Power Company was its own legal entity and issued its own debt. FCG, on the other hand, does not and has not issued or held its own debt. As a result, FCG used the capital structure of its parent company in its last base rate case in Docket No. 20170179-GU as explained on page 75 of my direct testimony.

[47] This makes intuitive sense because companies with higher debt leverage have higher financial risk.
[48] Direct Testimony of OPC witness Garrett, at 79.

With respect to Peoples Gas System and Tampa Electric Company, which are owned by the same parent, I acknowledge that it does not appear their authorized equity ratios have been identical, and I have not done an in-depth analysis for any differences in their proposed equity ratios, differences in their authorized equity ratios, or the reasons for such differences. However, I agree with OPC witness Garrett that the equity ratios for both companies appear to be very similar since at least 2009. The minor differences in the authorized equity ratios between Tampa Electric Company and Peoples Cas System certainly do not support OPC witness Garrett's recommended capital structure for FCG that is significantly more leveraged.

Finally, as explained in my direct testimony, the Company's request to apply the parent company's capital structure for ratemaking purposes is consistent with the Commission's precedent and the FERC's precedent, which Intervenor Witnesses do not refute.

Q. What are your conclusions regarding FCG's requested capital structure?

A. There simply is no basis to conclude that the Company's requested equity ratio of 59.60 percent on an investor-supplied basis deviates substantially from sound utility practice. As discussed above:

- FCG's requested capital structure reflects its specific financing requirements and risk profile, and enables it to maintain its financial strength, which translates into favorable access to capital for the benefit of customers;
- The Company's requested capital structure is reasonable compared to the

range of equity ratios for the regulated natural gas operating companies held by the proxy group as well as to authorized equity ratios for natural gas utilities in other jurisdictions; and

- The Company's requested capital structure is based on its actual financing from its parent and is consistent with regulatory precedent and guidance regarding capital structure determinations for companies that do not issue their own debt or have their own credit ratings.

For these reasons, the Intervenor Witnesses' recommendations should be rejected. FCG's requested capital structure is reasonable and appropriate and should be approved by the Commission.

V. RESPONSE TO OPC WITNESS GARRETT

Q. Please summarize OPC witness Garrett's recommendation regarding the Company's cost of equity.

A. OPC witness Garrett believes the Company's "actual" cost of equity is "about 8.00 percent," using the Constant Growth DCF model (7.10 percent to 8.00 percent) and the CAPM (8.00 percent).[49] However, OPC witness Garrett disregards the results of his analytical approaches and instead recommends a 9.25 percent ROE, which reflects his acknowledgement that "the 'end result' should be just and reasonable" to satisfy the standards set in the U.S. Supreme Court's ("Supreme Court") *Hope* and *Bluefield* decisions.[50] If OPC witness Garrett's conclusion is that a cost of equity of 8.00 percent

[49] Direct Testimony of OPC witness Garrett, at 6, 67 and Exhibit DJG-12.

[50] Direct Testimony of OPC witness Garrett, at 6.

would not satisfy the Supreme Court's "end result" doctrine, I agree. Nor would it satisfy *Hope* and *Bluefield's* "comparable earnings," "financial integrity," "capital attraction" standards. In fact, there is no correlation at all between his analysis and his 9.25 percent recommendation. For that reason, the Commission should give no weight to his analyses or ultimate ROE recommendation. In the end, the results of his ROE analyses, and his overall 9.25 percent ROE recommendation, are far too low to be reasonable and would only serve to increase the Company's risk and, therefore, its cost of capital to the detriment of customers.

Q. Are OPC witness Garrett's analytical results and recommendation reasonable measures of the Company's cost of equity?

A. No, they are not. As discussed in more detail below, there are significant inconsistencies in OPC witness Garrett's testimony and analytical models. For example, OPC witness Garrett's DCF model is based on inappropriate growth rates that are not reflective of the proxy group or his dividend yields, and his CAPM relies on an excessively low Market Risk Premium that is at odds with actual observed market risk premia. Those flawed assumptions drive his analyses to produce unreasonably low ROE estimates.

ROE estimates of 8.00 percent and lower have little practical value in determining the Company's ROE. No regulatory commission that I am aware of has authorized an ROE of 8.00 percent for a natural gas utility in more than 40 years. As noted earlier, even his 9.25 percent ROE recommendation falls in the bottom 11th percentile of authorized ROEs for natural gas utilities in the last five years and is well below the

range of ROEs authorized for natural gas utilities in constructive regulatory jurisdictions. OPC witness Garrett's 9.25 percent ROE recommendation far exceeds both his highest analytical result and the 8.00 percent return that he concludes most likely represents the "actual" cost of equity. That is, it is impossible to reconcile his analytical results with his recommendation. In my opinion, OPC witness Garrett's 9.25 percent ROE recommendation has no empirical basis and, therefore, should be given no weight.

Q. Please summarize the principal areas with which you disagree with OPC witness Garrett's analyses and conclusions.

A. The principal areas in which I disagree with OPC witness Garrett include: (1) his interpretation of the Company's risk profile; (2) the growth rate assumptions used in his DCF analyses; (3) the Market Risk Premium applied in his CAPM; (4) the relevance and interpretation of the Bond Yield Plus Risk Premium approach; (5) the risks associated with FCG's relatively small size; and (6) the inclusion of flotation costs. I discuss each of these points below.

A. <u>Utility Risk Profiles and the Cost of Equity</u>

Q. As a general matter, what is your response to OPC witness Garrett's repeated references to utilities being low risk investments that are "relatively insulated from overall market conditions"?[51]

A. If OPC witness Garrett's point is that utility Beta coefficients tend to be less than 1.00 (that is, by that measure they are less risky than the overall market), that point has never

[51] Direct Testimony of OPC witness Garrett, at 27.

been in dispute. However, regulation does not insulate utilities from either business or market risks.

To that point, his proxy group average Beta coefficient is 0.83, meaning that, on average, for every 100-basis point change in the market return, the proxy group's returns change 83 basis points. Although that reflects a smaller change than the market, it certainly does not support the position that utility investors are insulated from market changes and are "exposed to little market risk." In other words, although utilities may be lower in risk than the overall market, they are not risk-free. OPC witness Garrett's simple observation that utility Beta coefficients are less than 1.0 does not justify his 8.00 percent cost of equity, nor his 9.25 percent ROE recommendation.

Lastly, as shown in Figure 20 on page 66 of my direct testimony, the proxy group's relative volatility to the overall market has been above 1.00 since at least January 2019, indicating that the proxy group's returns have been more volatile than the overall market (as measured by the S&P 500 Index). As also shown in Figure 20 on page 66 of my direct testimony, the relative correlation with the overall market increased substantially after the onset of the COVID-19 pandemic. Given the recent volatility and high correlation between utilities and the overall market, OPC witness Garrett's assumption that utility stocks are low risk and are "relatively insulated from market conditions" is not an accurate reflection of investors' current perceptions of utility risk. Because both market risk and relative utility risk has increased, it indicates an increase in the cost of equity, not a decrease.

Q. OPC witness Garrett suggests company-specific risks should not be reflected in the Company's cost of equity because those risks are diversifiable.[52] Do you have a response?

A. Yes. OPC witness Garrett's position that investors do not expect to be compensated for firm-specific risk contradicts his position that "[r]isk is among the most important factors for the Commission to consider when determining the allowed return."[53] On page 17 of his direct testimony, OPC Witness Garrett emphasizes this essential financial principle fundamental to the cost of capital, observing:

> Risk is the most important factor when determining the awarded return. The awarded return should be commensurate with those returns on investments of corresponding risk.

OPC Witness Garrett's position that diversification eliminates firm-specific risk stems from the Modern Portfolio Theory underlying the CAPM.[54] However, the objective in this proceeding is to estimate the cost of equity for one enterprise, FCG, which necessarily requires an assessment of FCG's risk relative to a group of peers that are comparable in risk. The objective is not to evaluate the diversification attributes of adding FCG to an investment portfolio. As OPC witness Garrett acknowledges, within a portfolio each investment will have a unique risk profile – some higher, some lower – which indicates that the return required for each investment will differ.[55] The fact that investors can mitigate exposure to risk through diversification, however, does not mean they ignore firm-specific risk in their return requirements for each investment

[52] Direct Testimony of OPC witness Garrett, at 22-23.

[53] Direct Testimony of OPC witness Garrett, at 20.

[54] Notably, the assumption regarding diversification is not an assumption underlying the DCF or Risk Premium models.

[55] Direct Testimony of OPC witness Garrett, at 22.

within a portfolio.

B. Constant Growth and Quarterly DCF Models

Q. Please briefly describe OPC witness Garrett's Constant Growth DCF analyses and results.

A. OPC witness Garrett applies an annual form of the Constant Growth DCF Model, which produces an ROE estimate of 7.10 percent. For the dividend yield component, OPC witness Garrett relies on the annualized current quarterly dividend and 30-day average stock prices (based on "adjusted" closing stock prices) as of July 14, 2022.[56] To estimate expected growth, OPC witness Garrett looks to three measures, including: (1) nominal GDP, (2) real GDP, and (3) the current risk-free rate.[57,58] Of those, he chooses the highest estimate, 3.80 percent.[59] Separately, OPC witness Garrett derives an ROE estimate of 8.0 percent based on *Value Line's* projected dividend growth estimates, which averages 4.8 percent for the proxy group.[60] He, however, deems these short-term analyst growth rates to be "unreasonably high." He states that the resulting 8.0 percent ROE should not be considered, despite recommending a final ROE above both his recommended DCF ROE estimate of 7.1 percent and calculated cost of equity estimate of 8.0 percent.[61]

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[56] OPC witness Garrett Exhibit DJG-3.

[57] OPC witness Garrett Exhibit DJG-5.

[58] OPC witness Garrett's erroneous consideration of the risk-free rate as a proxy for sustainable long-term growth for utilities ignores the fact that utilities are not risk-free assets, such as government bonds. Utility stocks are capital-intensive in nature with a large number of risks for which investors must be compensated for.

[59] Direct Testimony of OPC witness Garrett, at 43; OPC witness Garrett Exhibit DJG-5.

[60] OPC witness Garrett Exhibit DJG-6.

[61] Direct Testimony of OPC witness Garrett, at 44.

Given that current inflation is at 8.60 percent, OPC witness Garrett's measure of sustainable growth using nominal GDP growth of 3.80 percent implies negative growth in real terms. In my opinion, it is unlikely an investor would be willing to assume the risks of equity ownership in exchange for negative real growth or even only modestly greater growth than OPC witness Garrett's estimate of expected long-term inflation. Under those conditions, investors would likely prefer debt securities, with their higher yield[62] and considerably less risk of capital loss (if held to maturity) than common equity, with a lower yield, higher volatility,[63] and little prospect of meaningful capital appreciation. As such, OPC witness Garrett's sustainable growth DCF results should be rejected.

Q. What are your general concerns with the growth rates on which OPC witness Garrett's DCF analysis relies?

A. None of OPC witness Garrett's growth rate estimates (presented in his Exhibit DJG-5) are appropriate measures of growth for his DCF analysis. Because his growth rates are generic in nature, they fail to account for the individual and unique risks and prospects faced by the proxy companies. OPC witness Garrett assumes a single, perpetual growth rate of 3.80 percent for all his proxy companies, taking the highest of his three estimates.[64] Two of his three estimates are based on one source for GDP, as he cited

[62] For example, as of August 31, 2022, utility bond yields were 4.93 percent and 5.25 percent for A-rate utility bonds and Baa-rated utility bonds, respectively. This compares to OPC witness Garrett's average dividend yield of the proxy group of 3.20 percent.

[63] For example, the Beta coefficients for debt currently range from 0.20 for Aaa-rated debt to 0.60 for Ba-rated debt, and up to 0.90 for Caa-rated debt. In other words, the proxy group Beta coefficients are currently higher (and therefore are riskier) than Ba-rated bonds, which are below investment grade. *See* Kroll Cost of Capital Navigator, accessed September 21, 2022.

[64] OPC witness Garrett Exhibit DJG-5.

the nominal GDP and real GDP rate from Congressional Budget Office. These are essentially the same metric, as nominal GDP is simply real GDP plus inflation. As explained below, and in my response to FEA witness Walters, utility growth is not limited by GDP growth. Therefore, I disagree with the use of GDP growth as a measure of long-term growth in the DCF model.

Q. Please explain why OPC Witness Garrett's 3.80 percent growth rate assumed for all companies in his DCF analysis is improper.

A. OPC witness Garrett's 3.80 percent growth rate is not based on any measure of company-specific growth, or even growth in the utility industry in general. Rather, the sole purpose of the proxy group is to calculate the dividend yield. Under the DCF model's strict assumptions, however, expected growth and dividend yields are related. That is, the market price of an individual stock reflects investors' perceptions of the unique risks and prospects (including earnings growth) of that individual company. They are not based exclusively on generic economic indicators such as GDP growth or the current risk-free rate. OPC witness Garrett's assumption that one growth rate applies to all companies, even though dividend yields vary across those companies, directly contradicts the very financial theory underlying the DCF model and investor practice.

Q. On page 45 of his testimony, OPC witness Garrett argues that the growth estimates included in your Discounted Cash Flow analyses violate the principle that "no company can grow at a greater rate than the economy" over the long term. Do you have a response?

A. Yes, I do. The DCF model assumes the growth rate component equals the expected

rate of capital appreciation. Therefore, the appropriate growth rate applied in the DCF model is the investors' growth expectation embodied in the valuation of the firm (*i.e.*, stock price appreciation). The relevant question, therefore, is whether investors rely on analysts' growth rates in valuing their investment opportunities, not OPC witness Garrett's opinion as to whether they are economically "sustainable". OPC witness Garrett has not demonstrated that investors rely on his generic measures of growth rather than analysts' growth rate expectations. In fact, numerous academic studies have shown that investors do rely on analysts' earnings growth forecasts and that they are better predictors of stock prices.[65]

Moreover, in practice, long-term growth in GDP is not an upper limit for terminal growth as asserted by the Intervenor Witnesses. GDP is a measure of the value of the total output of goods and services in an economy; it is simply the sum of all private industry and government output in the United States, and its growth rate is simply an average of the value of those industries. To illustrate, Exhibit JEN-19 presents the compound annual growth rate ("CAGR") of the industries that comprise GDP from 1947 to 2021. Of the 15 industries represented, five industries, including utilities, grew faster than the overall GDP, and ten industries grew slower than the overall GDP. That is, as a component of GDP, utilities have, over the long-term, grown at a faster pace than the overall level of GDP. Importantly, the earnings growth estimates that I have applied, as well as FEA witness Walters, are below utilities' long-term historical GDP growth, on average; thus, demonstrating their reasonableness.

[65] Direct Testimony of Jennifer E. Nelson, at 24-25.

Q. Is there additional evidence that equity growth exceeds GDP growth in the long-term?

A. Yes. As explained earlier, the long-term growth component in the DCF model reflects the return expected from capital appreciation. According to Kroll, the long-term average historical rate of capital appreciation for the S&P 500 between 1926 and 2021 has been 8.20 percent,[66] well above long-term historical GDP growth and the Intervenor Witnesses' GDP growth estimates. Consequently, long-term equity growth has not been limited by GDP growth. Additionally, as noted earlier, the projected earnings growth rates assumed by FEA witness Walters and me are below the long-term average capital appreciation growth rate, demonstrating their reasonableness. As such, the Intervenor Witnesses' ROE estimates and the GDP growth analyses upon which they are based, should be rejected.

Q. Has the Commission previously found that GDP growth is not an appropriate measure of growth in the DCF model?

A. Yes. In Order No. PSC-2021-0206-FOF-WS in Docket No. 20200139-WS, the Commission found that using GDP growth as a measure of long-term growth in the DCF model "is inappropriate because it is not based on any measure of growth in the utility industry."[67]

[66] Source: Kroll 2022 SBBI Yearbook, at 145.
[67] Order No. PSC-2021-0206-FOF-WS, at 95.

Q. OPC witness Garrett includes a Constant Growth DCF analysis using projected dividend growth rates from *Value Line*. Do you agree with the use of dividend growth rates in the DCF model?

A. No, I do not. As explained in my direct testimony, over the long term, dividend growth can only be sustained by earnings growth.[68] Additionally, *Value Line* is the only source I am aware of that publishes dividend growth rate projections. The fact that dividend growth rate projections are not widely reported by other sources further supports the conclusion that earnings growth is the most meaningful measure of growth among the investment community. In other words, if investors relied heavily on projections of dividend growth, more sources would offer that data. Further, as explained in my direct testimony, academic research has shown that analysts' consensus earnings forecasts are better at predicting the valuation of common stocks, including the 1989 study by Myron Gordon, *et.al*., cited by FEA witness Walters.[69] Lastly, when providing guidance to investors regarding the total return targets in their investor presentations, companies define the total return as the dividend yield plus *earnings* growth, and not as dividend, book value, or sustainable growth estimates.[70] This demonstrates that companies recognize investors are most concerned with earnings growth when making investment decisions.

[68] Direct Testimony of Jennifer E. Nelson, at 24.

[69] Direct Testimony of Jennifer E. Nelson, at 24-25. *See also*, Direct Testimony of FEA witness Walters, at 26. The 1989 Gordon study was provided by FEA witness Walters as CCW Confidential Workpaper 14.

[70] *See e.g.,* ALLETE Inc., March 16, 2021, Investor Presentation, at 14; Alliant Energy, June 1, 2021, Investor Presentation, at 3; American Electric Power Company, Inc., August 12, 2021, Investor Presentation at 7; Duke Energy Corporation, May 10, 2021, Earnings Review and Business Update, at 13; Xcel Energy, September 10, 2021, Investor Presentation, at 2.

C. Capital Asset Pricing Model

Q. Please summarize OPC witness Garrett's CAPM analysis and results.

A. OPC witness Garrett's CAPM estimate relies on a risk-free rate of 3.20 percent, a Market Risk Premium of 5.60 percent, and Beta coefficients as reported by Value Line. Those assumptions combine to produce an average CAPM estimate of 7.90 percent.[71]

Q. Do you agree with OPC witness Garrett's CAPM analysis?

A. No, I disagree with OPC witness Garrett's sole reliance on historical Treasury yields to estimate the risk-free rate, as well as the various approaches he uses to estimate the Market Risk Premium.

Q. Turning to the risk-free rate component of the CAPM, do you agree with OPC witness Garrett's use of the 30-year average Treasury yield?

A. Although I agree it is appropriate to consider the current average 30-year Treasury yield, it also is important to reflect forward-looking expectations of the risk-free rate because the cost of equity is forward-looking. Doing so ensures that the CAPM results reflect not only current interest rates, but also investors' expectations of interest rates, which may be different. For that reason, I relied on both the current 30-day average 30-year Treasury yield and the projected near-term 30-year Treasury yield as reported by *Blue Chip Financial Forecasts*.[72] Moreover, the use of forward-looking data more closely aligns with the Company's forward test year and proposed four-year rate plan.

[71] OPC witness Garrett Exhibit DJG-11.

[72] Direct Testimony of Jennifer E. Nelson, at 31.

Q. Turning now to the Market Risk Premium, how did OPC witness Garrett derive his estimate?

A. OPC witness Garrett estimates the Market Risk Premium by reviewing: (1) surveys of expected market risk premia from IESE Business School; (2) Dr. Damodaran's average implied equity risk premium; (3) the "normalized" market risk premium reported by Kroll (formerly Duff & Phelps); and (4) and the results of his own "Implied Equity Risk Premium" calculation based on Dr. Damodaran's model.[73] Based on those results, OPC witness Garrett concludes that the average of his four estimates, 5.60 percent, is appropriate.[74]

Q. What is your concern with the use of Kroll's 5.50 percent Market Risk Premium?

A. My primary concern is that it is not clear that Kroll develops its Market Risk Premium in relation to its normalized risk-free rate. The Market Risk Premium is calculated as the difference between the expected market return and risk-free rate; therefore, it is a function of the expected market return and risk-free rate at a point in time. Consequently, the Market Risk Premium and risk-free rate are not independent of each other, they are interrelated. In fact, academic studies have shown that the two are inversely related.[75] As the risk-free rate decreases, the Market Risk Premium increases and vice versa.

However, as shown in Figure 10 below, there is no clear relationship between Kroll's recommended Equity Risk Premium and risk-free rate. Whereas, as explained above,

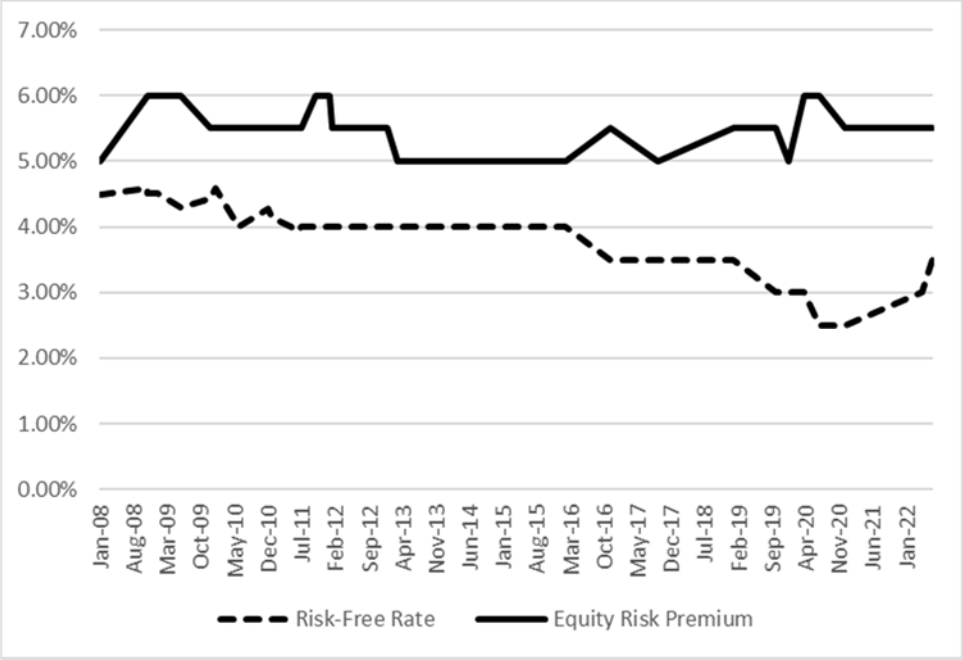
[73] Direct Testimony of OPC witness Garrett, at 55 and Exhibit DJG-10.

[74] Direct Testimony of OPC witness Garrett, at 55 and Exhibit DJG-10.

[75] Direct Testimony of Jennifer E. Nelson, at 41, footnote 36, 42-43.

academic studies indicate that the two lines should move in opposite directions, Figure 10 shows they do not.

Figure 10: Kroll Recommended Equity Risk Premium and Risk-Free Rate (2008-2022)[76]



The conclusion that there is no clear relationship between the two variables is supported by statistical analysis. To assess whether there is a relationship, I ran a linear regression in which Kroll's Equity Risk Premium was the dependent variable and the risk-free rate was the independent variable. The R-square was 0.09 percent, which indicates that Kroll's Risk-Free Rate explains only 0.09 percent of the change in the Equity Risk Premium. This runs counter to the fundamental fact that the Market Risk Premium is a function of the Risk-Free rate, as noted earlier. Moreover, the slope coefficient is

[76] Source: Kroll Cost of Capital Navigator.

positive which signifies that the two are positively related (*i.e.*, move in the same direction) and not inversely related (*i.e.*, move in opposite directions), again contrary to academic literature. However, the slope coefficient was not statistically significant, which means we can't have any confidence in the statistical results. This is not to suggest that Kroll is not a valid or credible source of data. Rather, it suggests that the usefulness of their Equity Risk Premium recommendation is questionable given it does not comport with academic and financial theory.

Q. What is your concern with the use of surveys such as the IESE Business School Survey OPC witness Garrett considers?

A. My issue with relying on surveys is that it is not clear how the survey respondents derived the Market Risk Premium in their response (*e.g.*, the source for their information) or the risk-free rate on which they relied, nor does the survey establish for what purpose the respondents applied the Market Risk Premium estimate. We do not know what capacity the survey respondents are serving in their responses – are they responding as an individual investor or are they responding with the rate of return requirements in their line of business? In other words, we cannot verify their inputs and assumptions to assess the relevance and appropriateness of those assumptions to the cost of equity estimation in the regulatory setting.

Q. Please now describe OPC witness Garrett's implied market risk premium methodology.

A. As OPC witness Garrett describes, his implied market risk premium method develops the Internal Rate of Return that sets the current value of the market index equal to the projected value of cash flows associated with owning the market index. OPC witness

Garrett observes that Dr. Damodaran "promotes the implied ERP method."[77] Although there are some differences, OPC witness Garrett's approach is similar to the model Dr. Damodaran provides on his website.[78]

OPC witness Garrett's method is a two-stage form of the DCF model, which calculates the present value of cash flows over the five-year initial period, together with the terminal price (based on the Gordon Model[79]), to be received in the last (*i.e.,* terminal) year. The model's principal inputs include the following assumptions:

- Over the coming five years, the S&P 500 Index will appreciate at a rate equal to the compound growth rate in "Operating Earnings" from 2011 through 2021;
- Cash flows associated with owning the S&P 500 Index will be equal to the historical average Earnings, Dividends, and Buyback yields, applied to the projected Index value each year; and
- Beginning in the terminal year, the S&P 500 Index will appreciate, in perpetuity, at a rate equal to the 30-day average yield on 30-year Treasury securities, as of July 14, 2022.[80]

As discussed below, reasonable changes to those assumptions have a considerable effect on OPC witness Garrett's calculated expected market return.

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[77] Direct Testimony of OPC witness Garrett, at 54.

[78] *See,* http://pages.stern.nyu.edu/~adamodar

[79] Direct Testimony of OPC witness Garrett, at 52-53.

[80] OPC witness Garrett Exhibits DJG-7, DJG-9. The model also assumes that all payments are received at year-end, rather than during the year. That assumption also tends to understate the Implied Risk Premium.

Q. Please explain your concerns with OPC witness Garrett's implied equity risk premium calculation.

A. OPC witness Garrett's implied equity risk premium estimate is based on a series of questionable assumptions, none of which are consistent with, or relevant to, investor practice or their use in regulatory proceedings. Further, a small set of very reasonable adjustments produces a market return estimate more consistent with (yet still below) the historical experience he considers relevant. The revised results continue to produce ROE estimates far below any reasonable measure, underscoring the sensitive nature of OPC witness Garrett's analyses and the tenuous nature of the conclusions he draws from them.

Q. Do you have any observations regarding OPC witness Garrett's assumed first-stage growth rate?

A. Yes. OPC witness Garrett's 7.09 percent growth rate relates only to geometric (or compound) growth in operating earnings, and does not reflect capital appreciation, or growth in dividends or stock buy backs.[81] If OPC witness Garrett's position is that historical growth rates are meant to reflect expected growth, they should also reflect year-to-year variation (that is, uncertainty). That is best accomplished using the arithmetic average growth rate rather than the compound growth rate. I therefore calculated the arithmetic average of the four metrics included in OPC witness Garrett's exhibit. The average growth rate, 10.71 percent, produced an estimated market return of about 9.91 percent,[82] higher than OPC witness Garrett's 9.00 percent implied market

[81] OPC witness Garrett Exhibit DJG-9.

[82] Exhibit JEN-21.

return, but still well below historical experience.

Q. How did OPC witness Garrett develop his assumed terminal growth rate?

A. The terminal growth rate represents investors' expectations of the rate at which the broad stock market will grow, in perpetuity, beginning in the terminal stage. OPC witness Garrett assumes terminal growth, beginning six years from now and extending indefinitely into the future, is equal to the average yield on 30-year Treasury securities over the 30 days ended July 14, 2022. Because OPC witness Garrett's model assumes the first stage lasts for five years (and the terminal stage is perpetual), the results are highly sensitive to the assumed terminal growth rate. To put that effect in perspective, the terminal value (which is directly related to the terminal growth rate) represents approximately 82.28 percent of the "Intrinsic Value" in OPC witness Garrett's analysis.[83]

Q. Is OPC witness Garrett's terminal growth rate assumption reasonable?

A. No, it is not. OPC witness Garrett followed Dr. Damodaran's approach, which is to use the risk-free rate as the terminal growth rate that Dr. Damodaran refers to as the "default" assumption.[84] In terms of historical experience, over the long term, the broad economy has grown at a long-term compound average growth rate of approximately 6.04 percent.[85] As noted earlier, Kroll reports the long-term rate of capital appreciation on large company stocks to be 8.20 percent.[86]

[83] Exhibit JEN-21. Please note that regardless of the assumed first and terminal-stage growth rates, the terminal stage consistently represents approximately 82.00 percent of the Intrinsic Value.

[84] *See*, http://pages.stern.nyu.edu/~adamodar/.

[85] Source: Bureau of Economic Analysis for the years 1929 to 2021.

[86] Kroll, 2022 SBBI Yearbook, at 145.

Assuming long-term inflation will be approximately 2.00 percent[87] implies perpetual real growth will be quite low.[88] That is, OPC witness Garrett's long-term growth rate of 3.21 percent assumes that real growth will be close to just 1.00 percent in perpetuity. Nowhere in his testimony has OPC witness Garrett explained the fundamental, systemic changes that would so dramatically reduce long-term economic growth, nor has he demonstrated that investors expect real growth of 1.00 percent for riskier equities in perpetuity. Given that equities are riskier than government bonds, it is highly improbable that investors' return requirements would be based on expected growth at a rate equal to the risk-free rate, particularly in times of historically high inflation.

Q. Have actual observed Market Risk Premia been consistent with the Market Risk Premia estimates produced by Dr. Damodaran and OPC witness Garrett's implied equity risk premia models?[89]

A. No, they have not. As shown in Figure 11 below, Dr. Damodaran's annual implied equity risk premium has been far removed from actual observed market risk premia in recent years.

[87] For example, in line with the Federal Reserve's target rate of inflation. *See also*, OPC witness Garrett Exhibit DJG-5. Inflation estimated by subtracting real GDP of 1.8 percent (row ([1]) from Nominal GDP of 3.8 percent (row [2])

[88] 1.12% = [(1.0321/1.02)-1].

[89] OPC witness Garrett states that his implied equity risk premium approach is based on Dr. Damodaran's method. *See* Direct Testimony of OPC witness Garrett, at 54.

Figure 11: Dr. Damodaran's Annual Implied Equity Risk Premium vs. Observed Market Risk Premium[90]

Year	Dr. Damodaran's Implied Equity Risk Premium	Actual Market Risk Premium
2010	5.20%	10.81%
2011	6.01%	-1.71%
2012	5.78%	13.54%
2013	4.96%	29.51%
2014	5.78%	10.28%
2015	6.12%	-1.09%
2016	5.69%	9.66%
2017	5.08%	19.16%
2018	5.96%	-7.20%
2019	5.20%	28.94%
2020	4.72%	16.98%
2021	4.24%	26.98%
Average	**5.40%**	**12.99%**

Q. How do you respond to OPC witness Garrett's position that your Market Risk Premium estimates are "unreasonably high"?[91]

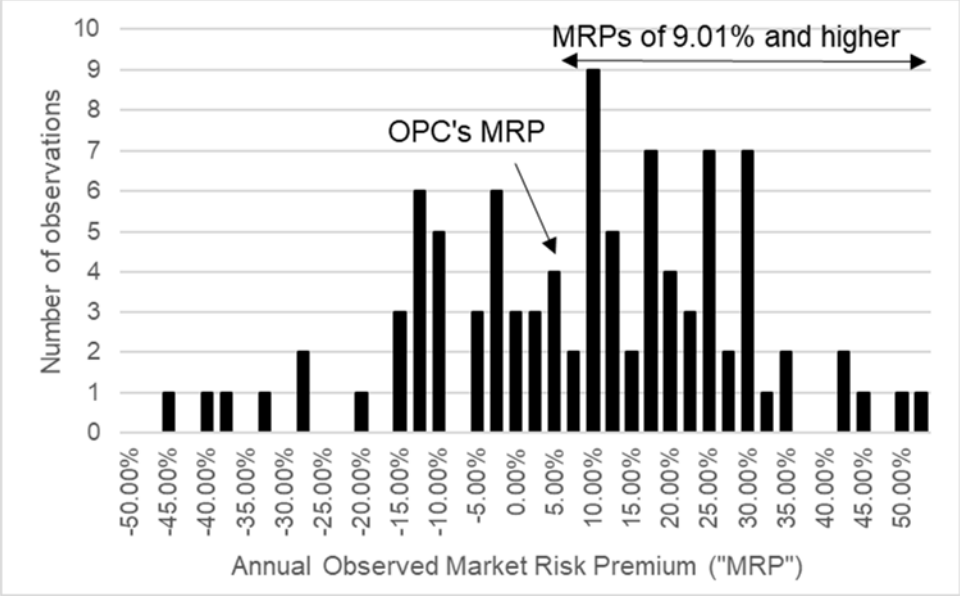
A. As shown in Figure 10 on page 36 of my direct testimony, my Market Risk Premium estimates range from 9.01 percent to 12.27 percent. To assess the frequency with which my and OPC witness Garrett's Market Risk Premium estimates have occurred, I gathered the annual observed Market Risk Premium for the last 96 years (1926-2021) reported by Kroll to calculate the annual observed Market Risk Premium. I then developed a chart to count the number of years the annual Market Risk Premium fell within specific ranges. As shown in Figure 12 below, the Market Risk Premia in the

[90] Sources: https://pages.stern.nyu.edu/~adamodar/New_Home_Page/home.htm; Kroll, 2022 SBBI Yearbook, Appendix A-1 and A-7.

[91] Direct Testimony of OPC witness Garrett, at 57.

range of OPC witness Garrett's estimates have occurred very infrequently over the last 96 years, whereas Market Risk Premia of 9.01 percent (the lowest of my estimates) and higher have occurred in 48 of 96 years (*i.e.,* half the time). In other words, looking to the last nearly 100 years, Market Risk Premia in the range of my estimates (and higher) are common occurrences, and therefore are not unreasonable.

Figure 12: Frequency Distribution of Observed Market Risk Premium (1926-2021)[92]



Q. What is your response to OPC witness Garrett's position that the Beta coefficients derived from *Value Line* may lead to "overestimated" results?[93]

A. Commercial providers of Beta coefficients, including *Value Line*, provide adjusted Beta coefficients using the Blume adjustment.[94] Marshall Blume observed a tendency

[92] Source: Kroll, 2022 SBBI Yearbook, Appendix A-1, A-7. *See* Exhibit JEN-20.

[93] Direct Testimony of OPC witness Garrett, at 49.

[94] *See*, http://www.valueline.com/Tools/Educational_Articles/Stocks/Using_Beta.aspx

of raw Beta coefficients to change gradually over time. Given the commercial use and longstanding acceptance of adjusted Beta coefficients, adjusted Beta coefficients are the proper measure of systematic risk in the CAPM. In my experience, the substantial majority of ROE witnesses in utility rate cases (including OPC Witness Garrett) rely on Blume-adjusted Beta coefficients, such as those published by *Value Line*. Despite his concerns regarding that adjustment, OPC witness Garrett relies on *Value Line* Beta coefficients to produce his CAPM-based estimate of 7.90 percent. I do not consider that result "too high".

With respect to OPC witness Garrett's reference to the Vasicek adjustment, as I explain in my response to FEA witness Walters below, the issue of whether the Vasicek adjustment is "preferable" is not settled. Further, if there was consensus from the investment community that Vasicek-adjusted Beta coefficients were superior, they would be widely used and reported by independent sources. Because that is not the case, it appears that the investment community does not agree with the Intervenor Witnesses' positions.

Q. What is your response to OPC witness Garrett's argument that, because you rely on adjusted Beta coefficients, the ECAPM is unnecessary?

A. OPC witness Garrett's position is mistaken. The ECAPM is not an adjustment to the Beta coefficient. Rather, it is an adjustment to the alpha parameter. The alpha adjustment in the ECAPM effectively increases the intercept but reduces the slope of

the Security Market Line.[95] As explained in my direct testimony, the Security Market Line described by the CAPM formula is not as steeply sloped as predicted, an effect not addressed by the "Blume" adjustment applied in *Value Line's* and Bloomberg's Beta coefficients.[96] As Dr. Morin states (emphasis added):

> Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend, an ECAPM analysis results in double-counting. **This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta**. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. **Both adjustments are necessary**.[97]

In a 2011 study by Stéphane Chrétien and Frank Coggins, the authors studied the CAPM's ability to estimate the risk premium for the utility industry in particular subgroups of utilities, including a group of U.S. natural gas utilities.[98] The study considered the traditional CAPM approach, the Fama-French three-factor model, and

[95] *See, e.g.*, Bente Villadsen, Michael J. Vilbert, Dan Harris, A. Lawrence Kolbe, Risk and Return for Regulated Industries, at 82 (2017). *See*, Direct Testimony of Jennifer E. Nelson, at 38.

[96] *See*, Direct Testimony of Jennifer E. Nelson, at 38. The Security Market Line is represented in Figure 8.

[97] Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 191. (emphasis added)

[98] Stéphane Chrétien and Frank Coggins, *Cost of Equity for Energy Utilities: Beyond The CAPM*, Energy Studies Review, Vol. 18, No. 2 (2011).

a model similar to the ECAPM. In the study, the ECAPM relied on adjusted Beta coefficients similar to the approach applied by *Value Line*. As Chrétien and Coggins found, the ECAPM significantly outperformed the traditional CAPM model at predicting the observed risk premium for the various utility subgroups. Their model showed that the CAPM underestimated the risk premium for U.S. natural gas distribution utilities by as much as 7.39 percent, which was statistically significant. For these reasons, OPC witness Garrett's criticisms of the ECAPM are without merit and should be rejected.

D. Bond Yield Plus Risk Premium Analysis

Q. Please summarize OPC witness Garrett concerns with your application of the Bond Yield Plus Risk Premium analysis.

A. OPC witness Garrett disagrees with the analysis because he believes "these types of risk premium 'models' are merely clever devices used to perpetuate the discrepancy between awarded ROEs and market-based cost of equity."[99] OPC witness Garrett further believes the Bond Yield Plus Risk Premium analysis is unnecessary because we already have a "real risk premium model to use, the CAPM".[100] He then asserts "the risk premium models used by utility witnesses are almost exclusively found in the texts and testimonies of such witnesses."[101] Lastly, OPC witness Garrett suggests that my Bond Yield Plus Risk Premium analysis contradicts my position that cost of equity is

[99] Direct Testimony of OPC witness Garrett, at 60-61.

[100] Direct Testimony of OPC witness Garrett, at 61.

[101] Direct Testimony of OPC witness Garrett, at 61.

a forward-looking concept.[102]

Q. What is your response to OPC witness Garrett on those points?

A. I disagree. Authorized returns reflect the same type of market-based analyses at issue in this proceeding. Because authorized returns are publicly available (the proxy companies disclose authorized returns, by jurisdiction, in their SEC Form 10-Ks),[103] it is reasonable to conclude that data is reflected, at least to some degree, in investors' return expectations and requirements. From that perspective, ROE recommendations that are far removed from prevailing levels, such as OPC witness Garrett's, should be reconciled, in part, by reference to differences in risk. I do not believe OPC witness Garrett's recommendation reasonably does so.

Further, although there is no disagreement that every case has its unique set of issues and circumstances, reviewing over 1,200 natural gas distribution cases over many economic cycles (1980 through August 2022) and using that data to develop the relationship between the Equity Risk Premium and interest rates, as I have, mitigates that concern. As such, OPC witness Garrett's concerns that authorized returns may be influenced by factors other than objective market drivers is unfounded.

[102] Direct Testimony of OPC witness Garrett, at 60.

[103] *See*, *for example*, Atmos Energy Corporation, SEC Form 10-K for the fiscal year ended September 30, 2021, at 7; New Jersey Resources Corporation, SEC Form 10-K for the fiscal year ended September 30, 2021, at 97; NiSource Inc., SEC Form 10-K for the year ended December 31, 2021, at 8; Northwest Natural Holdings, SEC Form 10-K for the year ended December 31, 2021, at 39; ONE Gas, Inc., SEC Form 10-K for the year ended December 31, 2021, at 7; and Spire Inc., SEC Form 10-K for the fiscal year ended September 30, 2021, at 121-123.

Q. Is OPC witness Garrett correct when he asserts that Bond Yield Plus Risk Premium models are not covered in financial texts, but almost exclusively found in texts written by utility witnesses?[104]

A. No, OPC witness Garrett's statement is incorrect in several respects. First, the Bond Yield Plus Risk Premium approach is covered in basic finance texts.[105]

Second, the point made by my Risk Premium approach, which is that the Equity Risk Premium is inversely related to interest rates, is also the subject of published academic research cited on page 41 (footnote 36) of my direct testimony. Although OPC witness Garrett believes such research is only provided by utility witnesses, one of the articles cited in my direct testimony (footnote 36) was written by Staff members of the Virginia Corporation Commission (*i.e.*, Maddox, Pippert, and Sullivan). Those authors also found that the Equity Risk Premium is not stable over time and increases as interest rates decrease. In short, OPC witness Garrett's assertion that the Risk Premium approach is not covered in finance texts and is a construct of utility witnesses is entirely incorrect and should be given no weight.

Lastly, OPC witness Garrett's statement that Risk Premium models are "almost" exclusively found in utility witness' testimony is inaccurate. For example, FEA witness Walters performs a Risk Premium analysis based on authorized ROEs. As additional examples, I have recently seen regulatory commission staff witnesses

[104] Direct Testimony of OPC Witness Garrett, at 61.

[105] *See, e.g.,* Eugene F. Brigham, Louis C. Gapenski, Financial Management, Theory and Practice, 1994, The Dryden Press., at 341.

include Risk Premium analyses in Texas (PUC Dockets 52195 and 49494), North Carolina (Docket G-9, Sub 743), and Arkansas (Docket No. 19-008-U). I am not sure what OPC witness Garrett means by "almost exclusively," but his assertions that the method is used to "justify a cost of equity that is much higher than one that would be dictated by market forces"[106] and "perpetuate the discrepancy between awarded ROEs and market-based cost of equity"[107] are simply unsupported and incorrect.

Q. What is your response to OPC witness Garrett's position that your Bond Yield Plus Risk Premium analysis is not forward-looking?[108]

A. OPC witness Garrett is incorrect. As discussed earlier, the approach quantifies the longstanding principle that the Equity Risk Premium is not constant but varies over time and with market conditions. The analysis uses a regression analysis of historical data to model the relationship between the Equity Risk Premium and 30-year Treasury yields over a 40-year period. Applying forward-looking (that is, projected) interest rates produce a forward-looking estimate of the Equity Risk Premium. Therefore, the model and its results are, in fact, forward-looking.

E. Small Size Risk

Q. Please summarize OPC witness Garrett's concern with the small size analysis.

A. OPC witness Garrett disagrees that a size premium exists and recommends the Commission reject a size premium.[109]

[106] Direct Testimony of OPC witness Garrett, at 61.
[107] Direct Testimony of OPC witness Garrett, at 61.
[108] Direct Testimony of OPC witness Garrett, at 60.
[109] Direct Testimony of OPC witness Garrett, at 64.

Q. Are you aware of empirical analyses of the size premium in addition to the studies included in your direct testimony?

A. With respect to the evidence regarding the size effect of utility companies, I cite to several articles on pages 45-46 of my direct testimony supporting the existence of a size premium for utility companies. Additionally, a study by T.M. Zepp concludes that size premia do exist. The Zepp study is highly relevant as it focuses specifically on the utility industry and the effect of the size premium in a regulated environment.[110]

Additionally, the 2011 study by Stéphane Chrétien and Frank Coggins referenced earlier considered the Fama-French three-factor model that explicitly included an adjustment to the CAPM for risk associated with size. Chrétien and Coggins found that the Beta coefficient on the size variable for a group of U.S. natural gas utilities was positive and statistically significant, supporting the position that small size risk is relevant for regulated utilities.[111]

Moreover, Kroll's *2021 Cost of Capital Navigator* presents a Size Study based on the relationship of various measures of size and return. Relative to the relationship between average annual return and the various measures of size, Kroll states:

> The "size" of a company is one of the most important risk elements to consider when developing cost of equity estimates for use in valuing a business simply because size has been shown to be a *predictor* of equity returns. In other words, there is a significant (negative) relationship between size and historical equity returns –

[110] Thomas M. Zepp, *Utility stocks and the size effect – revisited*, The Quarterly Review of Economics and Finance, 43 (2003)

[111] Chrétien, Stéphane, and Frank Coggins. *Cost Of Equity For Energy Utilities: Beyond The CAPM.* Energy Studies Review, vol. 18, no. 2, at 31.

> as size *decreases*, returns tend to *increase*, and vice versa. Traditionally, researchers have used market value of equity (*i.e.*, "market capitalization" or "market cap") as a measure of size in conducting historical rate of return research. [112]

Lastly, I have not explicitly accounted for the size premium in my recommended ROE. Rather, I have used the analyses to consider where, within the range of analytical results, is a just and reasonable ROE for FCG.[113]

Q. What is your response to OPC witness Garrett's reference to studies that assert that the size premium has disappeared?[114]

A. OPC witness Garrett has taken the conclusions from certain of these studies out of context. For example, OPC witness Garrett cites to Ibbotson (the former publisher of the historical data on returns now published by Kroll) as support for the argument that the size premium has disappeared. However, the passage cited by OPC witness Garrett is simply an acknowledgment that some have argued the small size premium no longer exists. In the paragraph immediately preceding the passage cited by OPC Witness Garrett, Ibbotson refutes those arguments, explaining:

> Because investors cannot predict when small-cap returns will be higher than large-cap returns, it has been argued that they do not expect higher rates of return for small stocks. As was illustrated earlier in this chapter, even over periods of many years, investors in small stocks do not always earn returns that are higher than those of investors in large stocks. By simple definition, one cannot expect risky companies to always outperform less risky companies; otherwise they would not be risky. Over the long-term, however, investors do expect small stocks to outperform large stocks.[115]

In the current 2022 version of this publication, Kroll explains further (emphasis in

[112] Kroll, 2022 Cost of Capital Navigator, "Size as a Predictor of Equity Returns", page 1.

[113] Direct Testimony of Jennifer E. Nelson, at 48.

[114] Direct Testimony of OPC witness Garrett, at 63-64.

[115] Morningstar, Inc., 2015 Ibbotson Stocks, Bonds, Bills, and Inflation Classic Yearbook, at 112.

original):

> The increased risk faced by investors in small stocks is quite real. It is important to note, however, that the risk/return profile is over the *long-term*. The long-term expected return for any asset class can be quite different from short-term expected returns. Investors in small-cap stocks should expect losses and periods of underperformance relative to large-cap stocks. While this might lead some market observers to speculate that there is no size premium, statistical evidence suggests that periods of smaller stocks' underperformance should be expected. The evidence also suggests that the longer small-cap companies are given to "race" against large-cap companies, the greater the chance that small-cap companies outpace their larger counterparts.[116]

Kroll goes on to demonstrate that the period over which the size premium is analyzed is a significant factor in whether small-cap stocks outperform large-cap stocks. Over the entire period covered by Kroll (1926-2021), the percentage of periods in which small-cap stocks outperformed large-cap stocks increased as the holding period increased, as shown in Figure 13 below:

Figure 13: Small-Cap Companies' Performance Minus Large-Cap Companies Performance (1926-2021)[117]

Holding Period	Small Stocks Outperform	Large Stocks Outperform
1 Month	50%	50%
60 Months (5 Years)	55%	45%
120 Months (10 Years)	66%	34%
240 Months (20 Years)	88%	12%
360 Months (30 Years)	96%	4%

To be clear, Ibbotson (and now Kroll) fully supports the inclusion of the size premium in the cost of equity estimation and is the source of the small size decile study used in

[116] Kroll 2022 SBBI Yearbook, at 155.

[117] Source: Kroll 2022 SBBI Yearbook, Exhibit 7.3, at 156.

my small size analysis. To imply that Ibbotson concludes that the size premium does not exist is out of context and disingenuous.

Q. Do you have additional evidence supporting the existence of the higher risk and therefore returns for smaller companies?

A. Yes, I do. Kroll, a source on which the Intervenor Witnesses both rely to develop their Market Risk Premium, reports a clear relationship over time between size and risk. In its 2022 SBBI Yearbook, Kroll reported the following summary statistics of annual returns over the 1926 to 2021 period shown in Figure 14 below.

Figure 14: Summary Statistics of Annual Returns, 1926-2021[118]

	Total Return (Geometric Mean)	Total Return (Arithmetic Mean)	Standard Deviation
Large Capitalization Stocks	10.5%	12.3%	19.6%
Small Capitalizations Stocks	12.1%	16.3%	31.2%

The standard deviation of returns measures the variation, or volatility, in annual returns, with a higher standard deviation indicating greater volatility (*i.e.,* risk). As Figure 14 above shows, over the long-term, the standard deviation in returns for small capitalization stocks has been higher (*i.e.*, more volatile) than those for large capitalization stocks. Additionally, average total returns have been higher for small capitalization stocks, which is consistent with the fundamental risk-return relationship.

Further, Kroll breaks down the data shown in Figure 14 above into deciles based on market capitalization. As Figure 15 below shows, the long-term geometric and

[118] Kroll, 2022 SBBI Yearbook, Exhibit 7.1, at 154.

arithmetic mean returns from 1926 to 2021, as well as the standard deviation of returns over that same period, generally increase as size decreases.

Figure 15: Annual Average Returns and Standard Deviation of Returns by Decile[119]

Size Decile	Annual Arithmetic Mean Return	Annual Geometric Mean Return	Annual Standard Deviation of Returns
1st	11.54%	9.83%	18.74%
2nd	13.04%	10.85%	21.13%
3rd	13.68%	11.23%	22.94%
4th	13.82%	10.99%	25.05%
5th	14.47%	11.46%	25.65%
6th	14.83%	11.52%	26.58%
7th	15.51%	11.85%	28.46%
8th	15.80%	11.43%	32.20%
9th	16.93%	11.74%	36.30%
10th	20.04%	13.37%	41.47%

Additionally, Kroll's decile study shows that as companies decrease in market capitalization (*i.e.*, size), the Beta coefficient increases, which supports the principle that risk increases as size decreases. Figure 16 below reproduces Kroll's Beta coefficients for each size decile.

[119] Source: Kroll 2022 CRSP Deciles Size Study, Cost of Capital Navigator as of December 31, 2021. The 1st decile consists of the largest companies based on market capitalization and the 10th decile consists of the smallest companies based on market capitalization.

Figure 16: Beta Coefficients by Size Decile[120]

Size Decile	OLS Beta Coefficient	Sum Beta
1st	0.92	0.92
2nd	1.04	1.06
3rd	1.11	1.14
4th	1.13	1.20
5th	1.17	1.25
6th	1.18	1.28
7th	1.25	1.39
8th	1.30	1.48
9th	1.34	1.54
10th	1.39	1.67

Figures 15 and 16 above demonstrate that, as company size decreases, (1) the annual average long-term historical return (on both an arithmetic and geometric basis) increases, and (2) the volatility of those returns (*i.e.*, risk), as measured by the standard deviation and the Beta coefficients, increases. In other words, the smaller the company, the greater the volatility in returns and the higher the average observed annual return over the long-term, which is consistent with the basic financial principle of risk and return. Consequently, actual data regarding historical returns and volatility of those returns support the existence of a return premium for small companies.

Q. Does Kroll's decile study include utility companies?

A. Yes. Kroll's decile size study includes all companies on the New York Stock Exchange ("NYSE"), NYSE American ("NYSE MKT", a market for small capitalization stocks), and the NASDAQ. It excludes close-ended mutual funds, preferred stocks, real estate investment trusts, foreign stocks, American Depositary Receipts, unit investment

[120] Source: Kroll 2022 CRSP Deciles Size Study, Cost of Capital Navigator as of December 31, 2021. The 1st decile consists of the largest companies based on market capitalization and the 10th decile consists of the smallest companies based on market capitalization.

trusts, and Americus trusts.[121]

Q. What is your conclusion regarding the appropriateness of recognizing the incremental risk associated with FCG's small size in the authorized ROE?

A. As OPC witness Garrett observes, risk is one of the most important factors when determining the cost of equity and the authorized ROE. However, OPC witness Garrett's position that the Commission should ignore the incremental risk associated with its significantly smaller size contradicts the fundamental financial principle that the cost of equity is a function of risk. Failure to recognize FCG's incremental risk associated with its significantly smaller size in the authorized ROE would violate this principle and would not provide FCG with a reasonable opportunity to earn its cost of equity.

F. Flotation Costs

Q. Please summarize OPC witness Garrett's concern with the flotation costs.

A. OPC witness Garrett disagrees with the inclusion of flotation costs, arguing that including flotation costs should be considered a way to "increase an already inflated ROE proposal."[122]

Q. Do you agree with OPC witness Garrett's conclusions on flotation costs?

A. No, I do not. Flotation costs are legitimate costs associated with issuing equity, including out-of-pocket costs for preparing, filing, underwriting, and other costs of issuing equity. These costs reduce the net proceeds a company receives from an equity

[121] Kroll CSRP Deciles Size Study Methodology, Cost of Capital Navigator, pages 1-2.

[122] Direct Testimony of OPC witness Garrett, at 64-67.

issuance. For the same reasons that debt issuance costs are recovered through the cost of debt, equity issuance costs should also be recovered. Failing to allow for the recovery of flotation costs inhibits a utility's ability to fully earn its authorized ROE, diminishing its ability to efficiently attract capital.

Further, contrary to OPC witness Garrett's position, flotation costs are not expenses and, therefore, are not included on the income statement or the Company's expense schedules. Like rate base or long-term debt issuance costs, flotation costs are incurred over time and remain part of the cost structure well beyond the test year. Therefore, they are properly included on the balance sheet.

Lastly, I understand that the Commission has allowed recovery of flotation costs through the authorized ROE in previous rate cases as noted on page 58 of my direct testimony.

Q. Please reiterate why is it important to recognize flotation costs in the authorized ROE?

A. As explained in my direct testimony, to attract and retain investors, a regulated utility must have a reasonable opportunity to earn a return that is competitive to returns available to other investments of similar risk and compensatory to investors. To the extent a company is denied the opportunity to recover equity issuance costs, actual returns will fall short of expected (or required) returns, diminishing its ability to attract capital on reasonable terms.

Q. Is OPC witness Garrett's position that "the market already accounts for flotation costs"[123] correct?

A. No, it is not. The models used to estimate the cost of equity assume no friction; therefore, an adjustment must be made to reflect equity issuance costs.

VI. RESPONSE TO FEA WITNESS WALTERS

Q. Please summarize FEA witness Walters' recommendation regarding the Company's cost of equity?

A. FEA witness Walters recommends an ROE of 9.40 percent, the midpoint of his 9.00 percent to 9.80 percent recommended range.[124] FEA witness Walters sets his recommendation by reference to: (1) his Constant Growth and Multi-Stage DCF models (with median and average results ranging from 7.99 percent to 9.31 percent);[125] (2) his Risk Premium study (ranging from 9.27 percent to 10.42 percent);[126] and (3) his CAPM analyses (ranging from 6.71 percent to 10.97 percent).[127] The low end of his recommended range is set by reference to his DCF-based ROE recommendation (9.00 percent), and the high end set by reference to his Risk Premium-based ROE recommendation (9.80 percent).[128]

[123] Direct Testimony of OPC witness Garrett, at 65-66.
[124] Direct Testimony of FEA witness Walters, at 2, 51.
[125] Direct Testimony of FEA witness Walters, at 36, Table CCW-8.
[126] Direct Testimony of FEA witness Walters, at 41, Table CCW-9.
[127] Direct Testimony of FEA witness Walters, at 50, Table CCW-11.
[128] Direct Testimony of FEA witness Walters, at 51, Table CCW-12.

Q. What are the principal analytical areas in which you disagree with FEA witness Walters' ROE analyses?

A. The principal areas in which I disagree with FEA witness Walters include: (1) certain inputs and assumptions applied in his DCF analyses; (2) the assumptions and methods underlying his Risk Premium analyses; and (3) his application of the CAPM.

A. Application of the Discounted Cash Flow Model Analyses

Q. Please summarize FEA witness Walters' DCF analyses.

A. FEA witness Walters uses two DCF models, a constant growth DCF model (using both analysts' projected earnings growth and sustainable growth rates) and a Multi-Stage DCF ("MSDCF") model. In both analyses, he applies stock price data for the 13-week period ending July 8, 2022. For FEA witness Walters' long-term growth rate component in his Analysts' Growth Constant Growth DCF model, he uses three- to five-year projected earnings growth rates from Zacks, S&P Global Market Intelligence ("MI"), and Yahoo! Finance. His Sustainable Growth Constant Growth applies an estimate of projected retention growth from *Value Line*. FEA witness Walters uses projected GDP growth from *Blue Chip Financial Forecasts* as the terminal growth rate in his MSDCF analysis. Using these inputs, he derives DCF-based ROE estimates ranging from 9.02 percent to 9.31 percent for his Constant Growth DCF models, and between 7.99 percent and 8.19 percent for his MSDCF model.[129] From these results, FEA witness Walters concludes that a reasonable DCF-based ROE estimate is 9.00

[129] Direct Testimony of FEA witness Walters, at 36.

percent.[130]

Q. Do you have any general comments about FEA witness Walters' DCF-based estimate of 9.00 percent?

A. Yes, I do. FEA witness Walters' 9.00 percent DCF-based estimate (which forms the bottom end of his recommended range and accounts for 50 percent of his ultimate 9.40 percent recommendation) is approximately equal to the mean and median results of each of his three approaches shown in his Table CCW-8. ROE estimates of 7.99 percent and 8.19 percent are far removed from any reasonable estimate of FCG's ROE, do not meet any of the *Hope* and *Bluefield* standards for a fair return, and should be given no weight.

Q. Are there aspects of the DCF analysis with which you and FEA witness Walters agree?

A. Yes. I agree with FEA witness Walters' position that analysts' projected EPS growth rates are the best predictor of future stock returns.[131] As explained in my response to OPC witness Garrett, this conclusion is supported by academic literature, including the 1989 Gordon study cited by FEA witness Walters. Accordingly, analysts' projected EPS growth rates are the most appropriate for use in the DCF model. Therefore, my primary disagreements are with FEA witness Walters' Sustainable Growth DCF and MSDCF analyses.

[130] Direct Testimony of FEA witness Walters, at 36.

[131] Direct Testimony of FEA witness Walters, at 26.

Q. Do you agree with FEA witness Walters' position that the growth rates applied in the DCF model are limited by forecasted Gross Domestic Product ("GDP") growth?[132]

A. No, I do not. FEA witness Walters' MSDCF analysis is premised on the assumption that analysts' projected EPS growth rates are unsustainable because a utility stock cannot grow at a faster pace than the growth in the overall economy.[133] Therefore, he concludes that the projected GDP growth rate is the maximum long-term sustainable growth rate, which he applies as the terminal growth rate in his MSDCF analysis. As explained in my response to OPC witness Garrett and further discussed below, the premise of FEA witness Walters' MSDCF analysis does not hold, rendering the analysis and its results unsupported.

Using electricity sales as a proxy for utility sales, FEA witness Walters' MSDCF analysis is based on his presumption that utility growth is linked to sales growth as utilities invest capital to meet demand, which depends ultimately on economic growth.[134] While this assumption may have been true decades ago, it does not currently hold as utilities are investing more capital in non-revenue producing investment, such as infrastructure replacement and grid modernization. These non-revenue producing investments generally do not increase customer growth or sales. As the U.S. Energy Information Administration ("EIA") noted in a recent article:

> Distribution spending has outpaced growth in both the number of electric customers and in retail electricity sales because much of the

[132] Direct Testimony of FEA witness Walters, at 27-28, 32-33.

[133] Direct Testimony of FEA witness Walters, at 32-33.

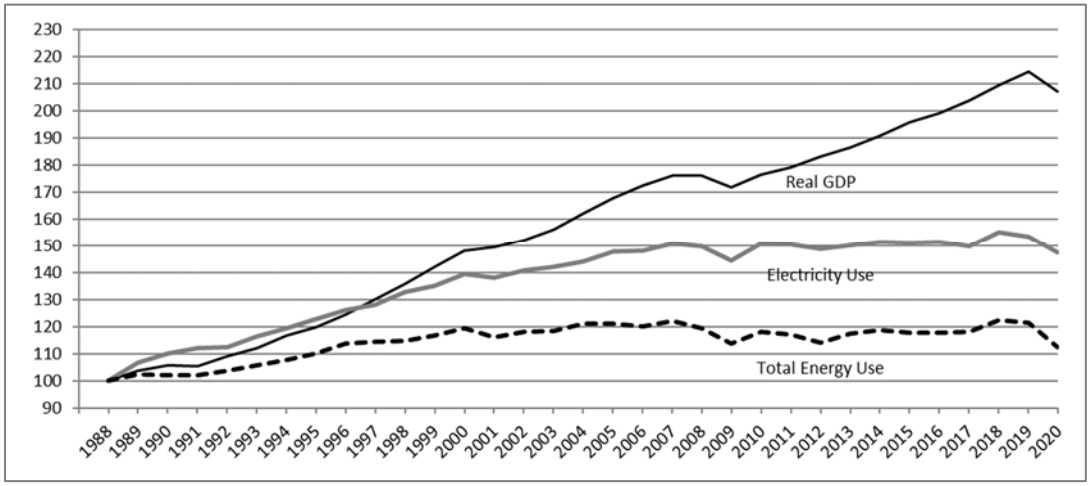
[134] Direct Testimony of FEA witness Walters, at 32.

> increased distribution spending in the last 20 years has been on projects that are not directly related to customer growth or increased sales. These investments are not driven by an increase in the number of customers or sales. These projects include replacing aging equipment, modernizing and upgrading maintenance and billing technology, and fortifying distribution structures against weather-related damage.[135]

These statements hold true for natural gas utilities as well because capital expenditures for gas utilities, including FCG, substantially include infrastructure replacement programs to upgrade and replace old distribution mains and services, which do not increase sales. Furthermore, states are placing more emphasis on energy efficiency and conservation investments, which have resulted in flat or declining sales. FEA witness Walters' Exhibit CCW-8 supports the EIA's finding that, over approximately the last 20 years, electricity sales and total energy use have ***not*** been linked to U.S. economic growth, contradicting the premise of his Multi-Stage DCF analysis. In fact, FEA witness Walters' Exhibit CCW-8 shows electricity sales have been flat since approximately 2006, while real GDP has climbed (reproduced as Figure 17 below).

[135] U.S. Energy Information Administration, "Major Utilities' spending on the electric distribution system continues to increase," *Today in Energy*, May 27, 2021. https://www.eia.gov/todayinenergy/detail.php?id=48136

Figure 17: Exhibit CCW-8 - Electricity Sales and Real GDP (1988 – 2020)



The fact is utilities' earnings growth is primarily linked to rate base growth. Since non-revenue producing investments have been significant drivers of rate base growth over the last 20 years, the link between utility earnings and sales has decoupled. Consequently, FEA witness Walters' Multi-Stage DCF estimates should be rejected as his own data does not support the premise underlying his terminal growth rate that utility growth is linked to sales and is limited by GDP growth.

Q. What are your concerns with FEA witness Walters' sustainable growth DCF analysis and results?

A. The underlying premise of the "retention growth" calculation is that future earnings increase as the retention ratio[136] (*i.e.*, the portion of earnings not paid out in dividends) increases. However, that premise has been proven unreliable. A 2003 study by Arnott and Asness found that, over the course of 130 years of data, future earnings growth is associated with high, rather than low, dividend payout ratios. Since the payout ratio is

[136] The retention ratio (*b*) = (1- the dividend payout ratio).

the inverse of the retention ratio, Arnot and Asness's study indicates that future earnings growth is negatively related to the retention ratio. In other words, there is a *negative*, not a *positive* relationship between earnings growth rates and the retention ratio. Because the underlying premise of the sustainable growth model does not hold, sustainable growth rates should not be relied on in the DCF model.

Additionally, the 1989 study by Myron Gordon cited by FEA witness Walters indicates that sustainable growth rates are a less reliable predictor of future stock returns relative to analysts' projected earnings growth rates. Therefore, the DCF results produced by those growth rates are unsupported, including by FEA witness Walters' own evidence.

Q. FEA witness Walters criticizes your Quarterly Growth DCF analysis asserting it "overstates" the fair rate of return.[137] What is your response?

A. I disagree with FEA witness Walters. FEA witness Walters' position appears to be that the return earned from quarterly compounding of dividends is separate and incremental to investors' required return and that "the return available to investors from reinvesting dividends is not a cost to the utility."[138] However, since dividends are paid quarterly, investors unquestionably consider the cash flow effects of such quarterly payments when determining their required returns.

The Quarterly Growth DCF model is a refinement of the Constant Growth DCF model relied upon by the ROE witnesses in this proceeding. As noted in my direct testimony,

[137] Direct Testimony of FEA witness Walters, at 52.

[138] Direct Testimony of FEA witness Walters, at 54-55.

rather than assuming annual cash flows, the model incorporates investors' expectations of quarterly dividends, reinvested at the investor-required ROE.[139] In that regard, the Quarterly DCF model is not fundamentally different than the annual form of the model (on which FEA witness Walters relies); both assume that cash flows are reinvested at the required rate of return. The only difference, then, relates to the timing of the cash flows.

Since utilities pay dividends on a quarterly basis, it is more precise and consistent with the DCF model's fundamental structure to use the Quarterly DCF model to estimate the market-required Cost of Equity.[140] The stock prices paid by investors (an input in both the Constant Growth and Quarterly Growth DCF models) assume the quarterly timing of dividend payments; therefore, a proper DCF-based Cost of Equity estimate must also reflect the actual timing of quarterly dividends. As Dr. Roger Morin explains:

> Clearly, given that dividends are paid quarterly and that the observed stock price reflects the quarterly nature of dividend payments, the market-required return must recognize quarterly compounding, for the investor receives dividend checks and reinvests the proceeds on a quarterly schedule... The annual DCF model inherently understates the investors' true return because it assumes all cash flows received by investors are paid annually.[141]

As explained in my direct testimony, although the half-year dividend growth adjustment applied in the Constant Growth DCF analysis is meant to approximate the payment of quarterly dividends, it is a conservative, simplifying assumption that does

[139] Direct Testimony of Jennifer E. Nelson, at 27-28.

[140] Direct Testimony of Jennifer E. Nelson, at 27-28.

[141] Roger A. Morin, Ph.D., New Regulatory Finance, Public Utility Reports, Inc., at 344 (2006).

not fully reflect the quarterly receipt and reinvestment of dividends.[142] As such, it underestimates the cost of equity for quarterly-dividend-paying companies, such as utilities. In other words, the Quarterly Growth DCF model does not add an incremental cost as FEA witness Walters suggests; it is a more precise estimate of the investor-required return cost of equity. As such, FEA witness Walters' position is unsupported and should be rejected.

Q. What is your recommendation regarding FEA witness Walters' DCF estimates?

A. The underlying premises of FEA witness Walters' Constant Growth DCF analysis using sustainable growth rates and his MSDCF analysis do not hold and are unsupported by the evidence and academic studies. Therefore, I recommend that the Commission give no weight to these results.

B. Application of the Risk Premium Method

Q. Please briefly describe FEA witness Walters' Risk Premium analyses.

A. FEA witness Walters develops two Risk Premium based approaches. Both approaches are based on his definition of the Risk Premium as the difference between the average annual authorized equity returns for electric utilities and a measure of long-term bond yields for each year between 1986 and 2022.[143] FEA witness Walters' first approach to estimating the Risk Premium looks to the 30-year Treasury yield, and his second approach considers A-rated utility bond yields.[144]

[142] Direct Testimony of Jennifer E. Nelson, at 27-28.

[143] Direct Testimony of FEA witness Walters, at 36-37.

[144] Direct Testimony of FEA witness Walters, at 36-37.

In developing his risk premium estimates, FEA witness Walters reviews risk premiums over five-year and ten-year rolling averages. Based on this review, he concludes that risk premium estimates "between the 50th and 75th percentile of the rolling five-year average risk premiums" are "appropriate in the current market," which produces risk premiums ranging from 5.68 percent to 6.44 percent for his analysis using Treasury bond yields.[145] Combining this range of risk premium estimates with a projected 30-year Treasury bond yield of 3.80 percent from *Blue Chip Financial Forecasts,* produces ROE estimates of 9.48 percent to 10.24 percent.

Using the same approach with his utility bond yield analysis, FEA witness Walters calculates that the third quartile of the utility bond yield risk premium ranges from 4.24 percent to 5.33 percent.[146] Combining this range of risk premium estimates with the 13-week average utility A-rated and Baa-rated utility bond yields as of July 8, 2022, FEA witness Walters calculates ROE estimates of 9.27 percent to 10.07 percent using A-rated utility bond yields and 9.62 percent to 10.42 percent using Baa-rated utility bond yields.[147]

Q. Do you have any concerns with FEA witness Walters' Risk Premium analyses?

A. Yes, I have two concerns with his analyses. First, FEA witness Walters' method understates the required risk premium in the current market because it fails to adequately reflect the inverse relationship between the Equity Risk Premium and bond yields. Second, he does not apply projected utility bond yields even though he applies

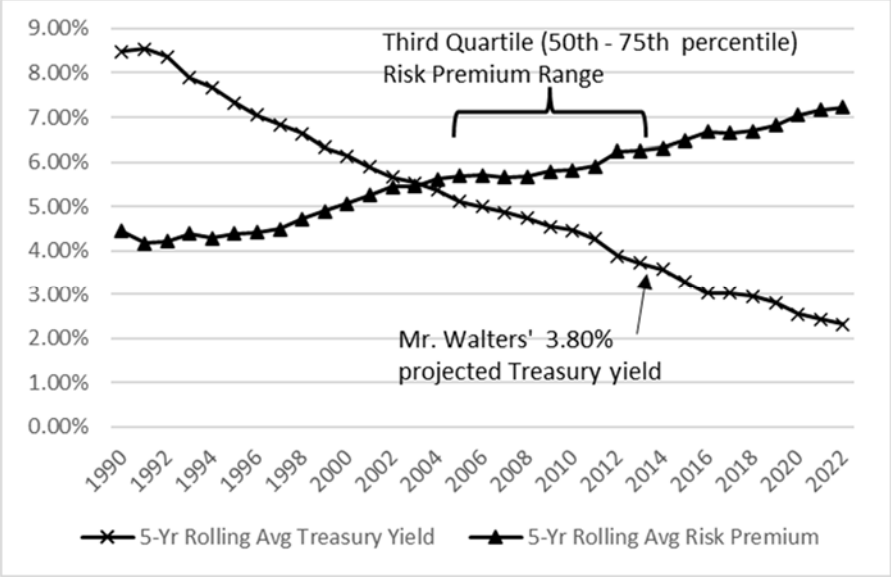
[145] Direct Testimony of FEA witness Walters, at 40.
[146] Direct Testimony of FEA witness Walters, at 40.
[147] Direct Testimony of FEA witness Walters, at 40.

a projected 30-year Treasury bond yield. Because the cost of equity is forward-looking, FEA witness Walters should have also considered projected utility bond yields in the Risk Premium analysis.

Q. Please elaborate how FEA witness Walters' risk premium analysis fails to fully reflect the inverse relationship between his risk premium and bond yields.

A. As shown in Figure 18 below, which demonstrates a clear inverse relationship between the risk premium and bond yields, FEA witness Walters' "Third Quartile" risk premium range understates the appropriate risk premium with his projected 30-year Treasury bond yield of 3.80 percent. As such the low end of his Risk Premium ROE estimates are biased downward.

Figure 18: FEA witness Walters' Treasury Yield-Based Risk Premium Analysis[148]



In other words, FEA witness Walters' 3.80 percent projected 30-year Treasury bond yield reflects approximately the 30th percentile of his historical Treasury bond yield

[148] FEA witness Walters Exhibit CCW-11; five-year rolling averages.

data. Therefore, the 70th percentile (*i.e.*, 100% - 30%) of his risk premium range more accurately reflects the inverse relationship shown in Figure 18 above.

The same is true for FEA witness Walters' analysis using utility bond yields. His A-rated and Baa-rated utility bond yields of 4.74 percent and 5.09 percent are in the 25th to 29th percentile of his historical utility bond yields. As such, the low end of his risk premium estimates (*i.e.,* between the 50th and 70th percentile) understate the cost of equity. If FEA witness Walters believes the 50th percentile of his risk premium estimates is appropriate, then he should also use the 50th percentile of his bond yields to calculate the ROE.

Q. Have you updated FEA witness Walters' Risk Premium analysis to incorporate projected A-rated and Baa-rated utility bond yields?

A. Yes, I have. *Blue Chip Financial Forecasts* dated July 1, 2022 (the source of FEA witness Walters' 3.80 percent projected Treasury yield) publishes average near-term projected Aaa-rated and Baa-rated Corporate bond yields of 5.10 percent and 6.20 percent, respectively.[149] Applying FEA witness Walters' 2022 utility to Corporate A/Aaa and Baa spreads of 0.45 percent and -0.02 percent,[150] respectively, to the *Blue Chip Financial Forecast* estimates results in a projected A-rated utility bond yield of 5.55 percent and a projected Baa-rated utility bond yield of 6.18 percent.[151] I note that the projected bond yields of 5.55 percent and 6.18 percent reflect the 32nd and 48th

[149] Source: Blue Chip Financial Forecasts, Vol. 41, No. 7, July 1, 2022, at 2.

[150] *See* FEA Witness Walters Exhibit CCW-13.

[151] Projected A-rated utility bond yield: 5.55% = 5.10% + 0.45%; projected Baa-rated utility bond yield: 6.18% = 6.20% - 0.02%.

percentile of FEA witness Walters' historical utility bond yields and therefore are within the inverse of the percentile range of his utility bond yield risk premium estimates. In other words, adjusting his analysis to properly reflect forward-looking utility bond yields, as he does with his Treasury bond yield analysis, produces an ROE estimate of 9.79 percent to 10.42 percent.

Q. What would FEA witness Walters' Risk Premium-based ROE results be if his analysis was revised to use projected utility bond yields and the proper Risk Premium estimates that align with his bond yields?

A. Although FEA witness Walters' Risk Premium-based ROE recommendation is consistent with my Bond Yield Plus Risk Premium ROE estimates, the low end of his Risk Premium ROE results reflect assumptions that bias his results downward. Therefore, I recommend several adjustments to FEA witness Walters' Risk Premium analyses to correct certain deficiencies, as explained above.

First, because his projected Treasury bond yield and current utility bond yields are in the 25th to 30th percentile of his historical bond yields, they should only be combined with the high end (75th percentile) of his risk premium estimates (6.44 percent for his Treasury bond yield analysis and 5.33 percent for his utility bond yield analysis). Second, I also calculated projected utility bond yield estimates using FEA witness Walters' data and conservatively applied those to the low end (50th percentile) of his utility bond yield risk premium estimates (4.24 percent). As shown in Figure 19 below, those adjustments produce a range of updated ROE estimates of 9.79 percent to 10.42 percent, as much as 62 basis points above his 9.80 percent Risk-Premium based ROE

recommendation. The mean and median of FEA witness Walters' revised results are 10.19 percent and 10.24 percent, respectively.

Figure 19: FEA witness Walters' Revised Risk Premium ROE Results

Risk Premium Model	Bond Yield	Risk Premium	ROE
Treasury Bond Yield	3.80%	6.44%	10.24%
Current A-Rated Utility	4.74%	5.33%	10.07%
Current Baa-Rated Utility	5.09%	5.33%	10.42%
Projected A-Rated Utility	5.55%	4.24%	9.79%
Projected Baa-Rated Utility	6.18%	4.24%	10.42%
		Mean	**10.19%**
		Median	**10.24%**

C. Application of the Capital Asset Pricing Model

Q. Please briefly summarize FEA witness Walters' CAPM analysis and results.

A. FEA witness Walters' CAPM analysis combines three estimates of the Market Risk Premium and three estimates of the Beta coefficient, along with his projected risk-free rate of 3.80 percent from *Blue Chip Financial Forecasts*, to calculate nine CAPM estimates, summarized in Figure 20 below.

Figure 20: FEA witness Walters' CAPM Results, As Filed[152]

Market Risk Premium Description	Current *Value Line* Beta (0.83)	Historical *Value Line* Beta (0.74)	S&P MI Beta (0.58)
Kroll (D&P) Normalized Method	8.08%	7.56%	6.71%
Risk Premium Method	10.55%	9.78%	8.53%
DCF Method	10.97%	10.15%	8.82%

Based on that range of estimates, FEA witness Walters concludes that a reasonable

[152] Direct Testimony of FEA witness Walters, at 50, Table CCW-11; Exhibit CCW-16 page 1.

CAPM estimate is 9.40 percent.[153]

Q. What aspects of FEA witness Walters' CAPM analyses do you agree with?

A. I agree with the use of *Value Line* Beta coefficients and the use of a projected 30-year Treasury yield as the risk-free rate. Additionally, although I believe *Value Line's* current Beta coefficients appropriately reflect the proxy group's higher risk in the current market environment, I have also considered a longer-term perspective of historical Beta coefficients. However, I disagree with FEA witness Walters' Market Risk Premium estimates, and his use of MI Beta coefficients that use the Vasicek adjustment methodology. I also disagree with FEA witness Walters' criticisms of the ECAPM analysis.

Q. Please summarize the Market Risk Premium estimates FEA witness Walters applies in his CAPM analyses.

A. FEA witness Walters' first CAPM analysis applies Kroll's 5.50 percent Market Risk Premium and 3.50 percent "normalized" risk-free rate with each of his three Beta coefficient estimates. His second approach calculates an expected market return by combining the historical average real market return of 9.20 percent over the 1926-2021 period as reported by Kroll, combined with an expected inflation rate of 2.50 percent to calculate an expected market return of 11.93 percent. Subtracting his 3.80 percent projected risk-free rate results in a Market Risk Premium of 8.10 percent.[154]

FEA witness Walters' third Market Risk Premium is similar to my forward-looking

[153] Direct Testimony of FEA witness Walters, at 50.

[154] FEA Witness Walters Exhibit CCW-16, page 1.

Constant Growth DCF-based approach that calculates the expected market return of the S&P 500 Index. However, he applies the FERC's methodology that excludes non-dividend paying companies and companies with growth rates less than zero or greater than 20.00 percent. FEA witness Walters performs a second analysis using "all companies in the S&P 500 Index rather than just the dividend paying companies."[155] His analyses produce expected market returns of 12.29 percent for the analysis excluding non-dividend paying companies and 12.48 percent for the analysis including "all companies." Subtracting his 3.80 percent projected risk-free rate from these expected market return estimates results in Market Risk Premium estimates of 8.50 percent and 8.70 percent (rounded), with an average of 8.60 percent.[156]

Q. What is your response with the use of Kroll's 5.50 percent Market Risk Premium and "normalized" risk-free rate of 3.50 percent?

A. For the reasons explained in my response to OPC witness Garrett, Kroll's estimates contradict financial theory, resulting in CAPM ROE estimates that are far removed from any reasonable estimate of FCG's Cost of Equity. They should therefore be rejected. Notably, FEA witness Walters apparently agrees as it does not appear he gave the three CAPM estimates using Kroll's 9.00 percent market return (ranging from 6.71 percent to 8.08 percent) any weight in determining his 9.40 percent CAPM-based ROE estimate.

[155] Direct Testimony of FEA witness Walters, at 46.

[156] Direct Testimony of FEA witness Walters, at 46; Exhibit CCW-16, page 2.

Q. What are your concerns with FEA witness Walters' Market Risk Premium estimates using the DCF methodology?

A. I respectfully disagree with FEA witness Walters' approach, as it is internally inconsistent and does not fully reflect the expected market return as a whole. The purpose of the expected market return analysis is to estimate the return investors expect for the *market as a whole*, including high and low-growth companies, not to estimate the aggregate return for companies that pay dividends or those that FEA witness Walters believes have proper growth rates. At any point in time, the market as a whole includes companies that are both dividend and non-dividend paying, as well as those with negative and positive growth, even companies with very high or very low growth. Excluding companies because they are non-dividend paying, or because the expected growth rates do not meet arbitrary thresholds, results in an estimate of a *subset* of the market, not the market *as a whole*. A good analogy is an investment in a mutual fund or Exchange Traded Fund that tracks the S&P 500 Index. Every dollar invested in these funds is invested in *all* companies in the S&P 500 Index; the investor cannot pick and choose only dividend-paying companies, or only companies with growth rates she deems sustainable. Further, excluding companies that are believed to be unreasonable creates an internal inconsistency in the CAPM. A fundamental assumption of the CAPM is that the required return is proportional to the risk of the investment. Under the CAPM, the Beta coefficient is the measure of risk, and is calculated by comparing the subject security's returns to the overall market returns. Because the Beta coefficient is calculated relative to the overall market (*e.g.*, the S&P 500 Index or the New York Stock Exchange), it is important that the expected market return also reflect the overall

market. Therefore, it is inconsistent to combine Beta coefficients calculated relative to the entire market with a Market Risk Premium estimate calculated using only a subset of the market. Consequently, any credible estimate of the expected return on the market as a whole must include all companies.

Q. Please explain further why excluding non-dividend paying companies does not fully reflect the expected market return.

A. According to FEA witness Walters' workpapers, there are 118 companies in the S&P 500 Index that do not currently pay dividends, including some of the largest companies in the index in terms of market capitalization. Alphabet Inc. (the parent of Google), Amazon, Boeing, Disney, Facebook, Ford Motor Company, General Motors, PayPal, Tesla, and Netflix are among the 118 companies that are excluded from the analysis for not paying dividends. Because the approach calculates a market capitalization-weighted estimate of the market return, excluding these companies removes approximately $11.9 trillion (approximately 30 percent) from the total market capitalization, skewing the analysis. In my opinion, it is not reasonable exclude 30 percent of the market in calculating an expected market return that is meant to reflect the entire market.

Q. Does FEA witness Walters' DCF methodology using "all companies" alleviate your concern?

A. No, it does not. Although FEA witness Walters asserts that his second DCF approach includes "all companies," it only adds back the non-dividend paying companies. He still excludes companies with negative growth rates or growth rates greater than 20.00 percent, including Amazon, AT&T, Boeing, Chevron, Exxon Mobil, General Electric,

Mastercard, Tesla, and several of the largest airline companies. In total, excluding companies whose growth rates do not meet arbitrary growth rate thresholds removes approximately $9.7 trillion (or approximately 25 percent) of the total market capitalization of the S&P 500 Index. As with the exclusion of non-dividend paying companies, I do not believe it is reasonable or appropriate to skew the expected market return estimate based on arbitrary growth rate thresholds.

Q. FEA witness Walters suggests your expected market return is "inflated" because expected individual growth rates of certain companies exceed his measure of long-term sustainable growth.[157] What is your response?

A. I disagree. Determining whether a company's individual growth rate is sustainable is highly subjective and introduces bias in the analysis. FEA witness Walters' criticism focuses on individual company growth rates he deems as "too high"; however, he fails to acknowledge that my expected market return estimates also include growth rates that could be considered unsustainably low. The expected return on the market as calculated in my Exhibit JEN-4 includes 44 growth rates equal to or lower than FEA witness Walters' 2.50 percent inflation estimate (implying negative real growth). Twenty-seven of those are negative growth rates. That is, the analysis includes both high and low growth rates, and is not biased toward only high growth rates. In other words, by not attempting to evaluate the sustainability of each of the 500 individual companies' growth rate as FEA witness Walters does, I do not introduce bias into my expected market return analysis. More importantly, and as noted earlier, a proper market return estimate must include all companies in the analysis to avoid internal

[157] Direct Testimony of FEA witness Walters, at 52.

inconsistencies.

Q. What is your response to FEA witness Walters' reference to professional investor forecasts that indicate expected market returns range from 1.90 percent to 7.40 percent?[158]

A. I have several concerns with his references. First, FEA witness Walters' 9.40 percent ROE estimate is entirely at odds with the data he presents. In this instance, FEA witness Walters refers to the market return forecasts summarized in Figure 21, below.

Figure 21: Summary of FEA witness Walters' Market Return Forecast References[159]

Institution	Term (Yrs.)	Market Return Forecast
BlackRock Capital Management	30	7.40%
JP Morgan Chase	10 - 15	4.10%
Vanguard	10	2.30% – 4.30%
Research Affiliates	10	1.90% - 5.20%

According to these investment firms, the expected market return ranges from 1.90 percent to 7.40 percent for U.S. equities. FEA witness Walters, nonetheless, recommends an ROE of 9.40 percent, whereas if he really believed these expected returns were meaningful measures of investor-required returns, his CAPM ROE recommendation would range between 2.70 percent and 6.79 percent. These estimates simply have no meaningful value in determining FCG's Cost of Equity.

[158] Direct Testimony of FEA witness Walters, at 47.

[159] Direct Testimony of FEA witness Walters, Table CCW-10, at 47.

Q. Please summarize the three Beta coefficient estimates FEA witness Walters applies in his CAPM analysis.

A. FEA witness Walters reviews the average adjusted Beta coefficient for his proxy group from three sources: (1) *Value Line's* current Beta coefficient (0.83), (2) *Value Line's* average historical Beta coefficient since Q3 2014 (0.74), and (3) average Vasicek-adjusted Beta coefficient from S&P Global Market Intelligence ("MI") (0.58). In FEA witness Walters's view, *Value Line's* current Beta coefficients are "abnormally high and are unlikely to be sustained over the long-term" necessitating the use of the two alternative Beta coefficients.[160]

Q. What are your concerns with FEA witness Walters' MI Beta coefficient estimates that apply the Vasicek adjustment rather than the Blume adjustment?

A. While I agree MI is a reliable source of utility financial and rate case data, I disagree with FEA witness Walters' position that Beta coefficients calculated using the Vasicek adjustment are "superior" to those calculated using the Blume adjustment.[161] This is an overstatement. The conclusion as to which approach is "superior" remains open to debate and there is no consensus on that issue. As Duff & Phelps explains, "[w]hether betas tend to move toward market averages or industry averages over time is an issue open to debate."[162] Further, there is no evidence that Vasicek-adjusted Beta coefficients perform better than Blume adjusted Beta coefficients. If there was consensus in the financial community that the Vasicek adjustment methodology was "superior" to the Blume adjustment methodology, it would be more widely adopted by

[160] Direct Testimony of FEA witness Walters, at 43.
[161] Direct Testimony of FEA witness Walters, at 44.
[162] Duff & Phelps 2020 Valuation Handbook, p. 5-9.

well-known investor data resources, such as *Value Line* and Bloomberg. However, that is not the case. In my experience, the vast majority of the Beta coefficients used in regulatory proceedings by ROE witnesses employ the Blume adjustment methodology. Moreover, as discussed below, the Vasicek adjustment methodology requires more inputs and calculations and is more susceptible to subjective judgment than are the Beta coefficients independently reported by *Value Line* and Bloomberg that use the Blume adjustment methodology

Q. What issues did your review of FEA witness Walters' MI Beta coefficient workpaper raise?

A. As with any methodology of calculating the Beta coefficient, the reasonableness of the estimate depends greatly on the inputs and assumptions underlying the methodology. I reviewed FEA witness Walters' MI Beta Coefficient workpaper[163] that contains the backup support for his MI Beta coefficient calculation using S&P's Beta Generator model and found two primary concerns.

The first concern is that on the major holidays in which the stock market was closed (*e.g.*, Good Friday, Christmas, Independence Day), FEA witness Walters' workpaper lists an "NA" for the proxy companies' stock prices but lists a stock price for the S&P 500 Index. This results in several data points over the five-year period in which the weekly return for the proxy companies is calculated as 0 percent, but a non-zero weekly return is calculated for the S&P 500. Because the Beta coefficient is calculated based on the relative standard deviation and correlation between the proxy company and the

[163] FEA witness Walters' workpaper "CCW Confidential WP 16.xlsm".

S&P 500, a weekly return of 0 percent for the subject company may skew the results downward. The current version of S&P's Beta Generator model[164] shows that it includes prices for the proxy companies on holidays rather than "NA", allowing it to properly calculate weekly returns for those dates. As shown in Figure 22 below, the average Beta coefficients from MI applying the same inputs as FEA witness Walters are approximately 12 basis points higher than his Beta coefficients as filed. While I believe the corrected MI Beta coefficients remain too low in the current market, they are closer to FEA witness Walters' longer term historical Betas.

Figure 22: Corrected MI Beta Coefficients[165]

Proxy Company	Ticker	FEA witness Walters' MI Beta (As Filed)	Corrected MI Beta (accessed 9/14/2022)
Atmos Energy Corporation	ATO	0.58	0.68
New Jersey Resources Corporation	NJR	0.61	0.72
NiSource Inc.	NI	0.60	0.73
Northwest Natural Holding Company	NWN	0.53	0.65
ONE Gas, Inc.	OGS	0.60	0.71
Spire Inc.	SR	0.59	0.69
Average		**0.58**	**0.70**

The second issue relates to the sample group of comparable companies used in S&P's Vasicek adjustment methodology. S&P's Beta Generator model allows the analyst to select any comparable group, up to nine companies. FEA witness Walters included the six natural gas utilities in his and my proxy group. As S&P notes, the Vasicek

[164] Source: S&P Capital IQ Pro, downloaded September 14, 2022. It's possible that FEA witness Walters is working with an older version of S&P's Beta Generator model.

[165] Exhibit JEN-22; FEA witness Walters' Exhibit CCW-15.

adjustment "adjusts the raw beta via weights determined by the variance of the individual security versus the variance of a larger sample of comparable companies."[166] Because S&P's Beta generator model allows the analyst to select the sample group, the size and makeup of the chosen sample group is highly subjective and could substantially affect the results. In my opinion, S&P's Beta Generator model – and the Vasicek adjustment generally – is susceptible to debate over the proper size and selection of the comparable group used in the adjustment. Adjusted Beta coefficients from *Value Line* and Bloomberg, however, are simpler, independently reported, and easily verifiable; therefore, they are not exposed to these criticisms.

Q. Please summarize FEA witness Walters' concerns with your ECAPM analysis.

A. FEA witness Walters' principal concern with my ECAPM analysis is the use of adjusted Beta coefficients such as those published by *Value Line*.[167] As I have explained above in response to OPC Witness Garrett the Beta coefficient adjustment and the alpha adjustment are entirely different adjustments and concepts, and both adjustments are necessary.

Q. FEA witness Walters points to an Order from the Illinois Commerce Commission to suggest that the ECAPM is not an accepted methodology.[168] Is the ECAPM an accepted methodology?

A. Yes, it is. The ECAPM (sometimes referred to as the "Zero Beta CAPM") has been accepted by regulatory commissions in Alaska, Maryland, Mississippi, New York, and

[166] Direct Testimony of FEA Witness Walters, at 44.
[167] Direct Testimony of FEA witness Walters, at 60-62.
[168] Direct Testimony of FEA witness Walters, at 62.

North Carolina.[169] Additionally, I am aware the ECAPM has been presented by state regulatory commission staff in Maryland, Nevada, and by the Department of Commerce in Minnesota.[170] Consequently, I believe the ECAPM is an accepted approach and should be considered by the Commission.

Q. What would FEA witness Walters' CAPM-based ROE results be with the adjustments you recommend?

A. As discussed above, I suggest the following adjustments to FEA witness Walters' CAPM analyses. First, FEA witness Walters' CAPM results using Kroll's "normalized" Market Risk Premium and risk-free rate should be rejected. Second, although I disagree with the use of Vasicek-adjusted Beta coefficients, FEA witness Walters' corrected proxy group average adjusted Beta coefficients from S&P's Beta Generator model is 0.70. Lastly, although FEA witness Walters' DCF-based expected market return produces CAPM results within my recommended ROE range (with his corrected MI Beta coefficient), I also recommend his DCF-based expected market return be adjusted to include all companies, including non-dividend paying companies,

[169] *See,* Regulatory Commission of Alaska, Docket No. P-97-4, Order No. 151, at 146; Maryland Public Service Commission, Case No. 9311, Order No. 85724, at 105; Mississippi Public Service Commission, Docket No. 01-UN-0548, *Notice of Intent of Mississippi Power Company to Change Rates for Electric Service in its Certificated Areas in the Twenty-Three Counties of Southeast Mississippi*, Final Order, December 3, 2001, at 19; New York Public Service Commission, Case 16-G-0058, P*roceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of KeySpan Gas East Corporation d/b/a National Grid for Gas Service*, Order Adopting Terms of Joint Proposal and Establishing Gas Rate Plans, December 16, 2016, at 32; *In the Matter of Application of Virginia Electric and Power Company, d/b/a Dominion Energy North Carolina for Adjustment of Rates and Charges Applicable to Electric Service in North Carolina*, Docket No. E-22, Sub 562 Order Accepting Public Staff Stipulation in Part, Accepting CIGFUR Stipulation, Deciding Contested Issues, and Granting Partial Rate Increase, February 24, 2020, at 40.

[170] *See,* Maryland Public Service Commission, Case No. 9311, Order No. 85724, at 88; Minnesota Public Utilities Commission, MPUC Docket No. G011/GR-15-736, *Findings of Fact, Conclusions of Law, and Recommendation*, August 19, 2016, at 29; Public Utilities Commission of Nevada, Docket No. 12-02019, Second Modified Final Order, at 36.

and all growth rates. Correcting these deficiencies produces CAPM-based ROE results ranging from 9.45 percent to 12.72 percent, as summarized in Figure 23 below. FEA witness Walters' mean and median CAPM-based ROE results with my adjustments are 10.71 percent and 10.55 percent, respectively; with an average of 10.63 percent.

Figure 23: FEA witness Walters CAPM Results[171]

Market Risk Premium Description	**Current *Value Line* Beta (0.83)**	**Historical *Value Line* Beta (0.74)**	**S&P MI Beta (0.70)**
Risk Premium Derived	10.55%	9.78%	9.45%
FERC S&P 500 DCF Method (as filed)	10.97%	10.15%	9.80%
S&P 500 DCF Method – ALL companies	12.72%	11.70%	11.26%
Mean	**10.71%**		
Median	**10.55%**		
Average of Mean and Median	**10.63%**		

D. Summary of FEA witness Walters' Revised ROE Results

Q. Please summarize FEA witness Walters' ROE analyses with the adjustments you recommend.

A. As shown in Figure 24 below, sensible adjustments to FEA witness Walters' ROE analyses produce ROE results ranging from 9.23 percent to 10.63 percent, as much as 120 basis points above his 9.40 percent recommendation.

[171] Exhibit JEN-23.

Figure 24: Summary of FEA witness Walters' Revised ROE Results

ROE Methodology	Range	Average of Mean and Median ROE Estimate
Constant Growth DCF (Analysts' Growth)	9.14% - 9.31%	9.23%
Risk Premium	9.79% - 10.42%	10.22%
CAPM	9.45% - 12.72%	10.63%
Mean	**10.02%**	
Median	**10.22%**	
Average of Mean and Median	**10.12%**	

VII. CONSISTENCY OF ROE ANALYTICAL RESULTS

Q. Have you assessed the reliability of your ROE and capital structure analyses using the latest data?

A. Yes. To test the reliability of my analysis, as compared to that of the Intervenor Witnesses, I conducted the Constant Growth DCF, Quarterly Growth DCF, CAPM, ECAPM, Bond Yield Risk Premium, and capital structure analyses using data through August 31, 2022. I then applied the results to the same proxy group of companies analyzed in my direct testimony. Because the Bloomberg and *Value Line* DCF-based expected market return estimates are closer to the long-term average historical market return and both are below the expected market return estimates filed in my Direct Testimony, I have reverted to my usual practice of averaging the two together to calculate the expected market return. Figure 25 below summarizes my updated results.

Figure 25: Updated ROE Results[172]

Constant Growth DCF	**Low**	**Mean**	**High**
30-Day Average	8.50%	9.53%	10.76%
90-Day Average	8.52%	9.55%	10.79%
180-Day Average	8.62%	9.66%	10.85%
Quarterly Growth DCF	**Low**	**Mean**	**High**
30-Day Average	8.69%	9.75%	11.01%
90-Day Average	8.71%	9.77%	11.03%
180-Day Average	8.82%	9.89%	11.11%
CAPM		**Current 30-Year Treasury Yield (3.11%)**	**Projected 30-Year Treasury Yield (3.66%)**
Long-Term Historical Average Market Return and 10-year Beta Coefficients			
Proxy Group Average		10.29%	10.41%
Proxy Group Median		10.30%	10.42%
DCF-based Market Return and Value Line Beta Coefficients			
Proxy Group Average		11.51%	11.60%
Proxy Group Median		11.18%	11.29%
Empirical CAPM		**Current 30-Year Treasury Yield (3.11%)**	**Projected 30-Year Treasury Yield (3.66%)**
Long-Term Historical Average Market Return and 10-year Beta Coefficients			
Proxy Group Average		10.80%	10.89%
Proxy Group Median		10.81%	10.90%
DCF-based Market Return and Value Line Beta Coefficients			
Proxy Group Average		11.93%	12.00%
Proxy Group Median		11.68%	11.76%
Bond Yield Plus Risk Premium			
Current 30-Year Treasury Yield (3.11%)		9.75%	
Projected 30-Year Treasury Yield (3.66%)		9.88%	

As shown in Figure 25 above, my recommended ROE range of 10.75 percent remains

supported by the updated results. With respect to the Company's capital structure, as Exhibit JEN-16 shows, the Company's capital structure remains consistent with the proxy group.

VIII. CONCLUSION

Q. What is your conclusion regarding the ROE and capital structure for FCG?

A. Based on the analyses discussed throughout my direct and rebuttal testimonies, I continue to believe 10.75 percent is a reasonable and appropriate estimate of the Company's cost of equity. The results of my updated results shown in Figure 25 above, combined with my analyses of capital market data analysis, continue to support the reasonableness of my ROE estimates and my recommendations. Further, my analyses in response to the Intervenor Witnesses show their ROE recommendations are unreasonably low and modest adjustments produce more reasonable results.

As to the capital structure and cost of debt, a capital structure including 59.60 percent common equity and 40.40 percent long-term debt remains consistent with the capital structures in that fund the regulated natural gas operations of the proxy companies. Therefore, I conclude the capital structure and cost of debt are reasonable and should be approved.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

Constant Growth Discounted Cash Flow Model with Half Year Growth Adjustment
30 Day Average Stock Price

Company	Ticker	[1] Annualized Dividend	[2] Average Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Zacks Earnings Growth	[6] Yahoo! Earnings Growth	[7] Value Line Earnings Growth	[8] Average Earnings Growth	[9] Low ROE	[10] Mean ROE	[11] High ROE
Atmos Energy Corporation	ATO	$2.72	$116.57	2.33%	2.42%	7.50%	8.39%	7.50%	7.80%	9.92%	10.22%	10.82%
New Jersey Resources Corporation	NJR	$1.45	$45.56	3.18%	3.27%	6.00%	6.00%	5.00%	5.67%	8.26%	8.94%	9.28%
NiSource Inc.	NI	$0.94	$30.27	3.11%	3.23%	7.20%	7.30%	9.50%	8.00%	10.42%	11.23%	12.75%
Northwest Natural Holding Company	NWN	$1.93	$52.00	3.71%	3.80%	4.30%	4.30%	6.50%	5.03%	8.09%	8.84%	10.33%
ONE Gas, Inc.	OGS	$2.48	$81.93	3.03%	3.11%	5.00%	5.00%	6.50%	5.50%	8.10%	8.61%	9.63%
Spire Inc.	SR	$2.74	$73.73	3.72%	3.83%	5.00%	4.30%	9.00%	6.10%	8.10%	9.93%	12.88%
Proxy Group Mean				3.18%	3.28%	5.83%	5.88%	7.33%	6.35%	8.82%	9.63%	10.95%
Proxy Group Median				3.14%	3.25%	5.50%	5.50%	7.00%	5.88%	8.18%	9.43%	10.58%
Average of Mean and Median				3.16%	3.27%	5.67%	5.69%	7.17%	6.12%	8.50%	9.53%	10.76%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of 08/31/2022
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [8])
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7])) + Minimum([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7])) + Maximum([5], [6], [7])

Constant Growth Discounted Cash Flow Model with Half Year Growth Adjustment
90 Day Average Stock Price

Company	Ticker	[1] Annualized Dividend	[2] Average Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Zacks Earnings Growth	[6] Yahoo! Earnings Growth	[7] Value Line Earnings Growth	[8] Average Earnings Growth	[9] Low ROE	[10] Mean ROE	[11] High ROE
Atmos Energy Corporation	ATO	$2.72	$113.89	2.39%	2.48%	7.50%	8.39%	7.50%	7.80%	9.98%	10.28%	10.88%
New Jersey Resources Corporation	NJR	$1.45	$44.77	3.24%	3.33%	6.00%	6.00%	5.00%	5.67%	8.32%	9.00%	9.34%
NiSource Inc.	NI	$0.94	$29.79	3.16%	3.28%	7.20%	7.30%	9.50%	8.00%	10.47%	11.28%	12.80%
Northwest Natural Holding Company	NWN	$1.93	$52.02	3.71%	3.80%	4.30%	4.30%	6.50%	5.03%	8.09%	8.84%	10.33%
ONE Gas, Inc.	OGS	$2.48	$83.03	2.99%	3.07%	5.00%	5.00%	6.50%	5.50%	8.06%	8.57%	9.58%
Spire Inc.	SR	$2.74	$74.10	3.70%	3.81%	5.00%	4.30%	9.00%	6.10%	8.08%	9.91%	12.86%
Proxy Group Mean				3.20%	3.30%	5.83%	5.88%	7.33%	6.35%	8.83%	9.65%	10.97%
Proxy Group Median				3.20%	3.31%	5.50%	5.50%	7.00%	5.88%	8.20%	9.45%	10.60%
Average of Mean and Median				3.20%	3.30%	5.67%	5.69%	7.17%	6.12%	8.52%	9.55%	10.79%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of 08/31/2022
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [8])
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7])) + Minimum([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7])) + Maximum([5], [6], [7])

Constant Growth Discounted Cash Flow Model with Half Year Growth Adjustment
180 Day Average Stock Price

Company	Ticker	[1] Annualized Dividend	[2] Average Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Zacks Earnings Growth	[6] Yahoo! Earnings Growth	[7] Value Line Earnings Growth	[8] Average Earnings Growth	[9] Low ROE	[10] Mean ROE	[11] High ROE
Atmos Energy Corporation	ATO	$2.72	$111.95	2.43%	2.52%	7.50%	8.39%	7.50%	7.80%	10.02%	10.32%	10.92%
New Jersey Resources Corporation	NJR	$1.45	$43.49	3.33%	3.43%	6.00%	6.00%	5.00%	5.67%	8.42%	9.10%	9.43%
NiSource Inc.	NI	$0.94	$29.50	3.19%	3.31%	7.20%	7.30%	9.50%	8.00%	10.50%	11.31%	12.84%
Northwest Natural Holding Company	NWN	$1.93	$51.02	3.78%	3.88%	4.30%	4.30%	6.50%	5.03%	8.16%	8.91%	10.41%
ONE Gas, Inc.	OGS	$2.48	$82.18	3.02%	3.10%	5.00%	5.00%	6.50%	5.50%	8.09%	8.60%	9.62%
Spire Inc.	SR	$2.74	$70.81	3.87%	3.99%	5.00%	4.30%	9.00%	6.10%	8.25%	10.09%	13.04%
Proxy Group Mean				3.27%	3.37%	5.83%	5.88%	7.33%	6.35%	8.91%	9.72%	11.04%
Proxy Group Median				3.26%	3.37%	5.50%	5.50%	7.00%	5.88%	8.34%	9.59%	10.66%
Average of Mean and Median				3.27%	3.37%	5.67%	5.69%	7.17%	6.12%	8.62%	9.66%	10.85%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of 08/31/2022
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [8])
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7])) + Minimum([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7])) + Maximum([5], [6], [7])

Quarterly Growth Discounted Cash Flow Model
30 Day Average Stock Price

Company	Ticker	[1] Dividend 1	[2] Dividend 2	[3] Dividend 3	[4] Dividend 4	[5] Expected Dividend 1	[6] Expected Dividend 2	[7] Expected Dividend 3	[8] Expected Dividend 4	[9] Stock Price	[10] Zacks Earnings Growth	[11] Yahoo! Earnings Growth	[12] Value Line Earnings Growth	[13] Average Earnings Growth	[14] Low ROE	[15] Mean ROE	[16] High ROE
Atmos Energy Corporation	ATO	$0.68	$0.68	$0.68	$0.68	$0.73	$0.73	$0.73	$0.73	$116.57	7.50%	8.39%	7.50%	7.80%	10.10%	10.41%	11.02%
New Jersey Resources Corporation	NJR	$0.36	$0.36	$0.36	$0.36	$0.38	$0.38	$0.38	$0.38	$45.56	6.00%	6.00%	5.00%	5.67%	8.45%	9.14%	9.49%
NiSource Inc.	NI	$0.24	$0.24	$0.24	$0.24	$0.25	$0.25	$0.25	$0.25	$30.27	7.20%	7.30%	9.50%	8.00%	10.66%	11.50%	13.06%
Northwest Natural Holding Company	NWN	$0.483	$0.483	$0.483	$0.483	$0.51	$0.51	$0.51	$0.51	$52.00	4.30%	4.30%	6.50%	5.03%	8.29%	9.06%	10.61%
ONE Gas, Inc.	OGS	$0.58	$0.62	$0.62	$0.62	$0.61	$0.65	$0.65	$0.65	$81.93	5.00%	5.00%	6.50%	5.50%	8.22%	8.74%	9.78%
Spire Inc.	SR	$0.69	$0.69	$0.69	$0.69	$0.73	$0.73	$0.73	$0.73	$73.73	5.00%	4.30%	9.00%	6.10%	8.29%	10.19%	13.25%
Proxy Group Mean											5.83%	5.88%	7.33%	6.35%	9.00%	9.84%	11.20%
Proxy Group Median											5.50%	5.50%	7.00%	5.88%	8.37%	9.67%	10.81%
Averae of Mean and Median															8.69%	9.75%	11.01%

Notes:
[1] Source: Bloomberg Professional Service
[2] Source: Bloomberg Professional Service
[3] Source: Bloomberg Professional Service
[4] Source: Bloomberg Professional Service
[5] Equals Col. [1] x (1 + Col. [13])
[6] Equals Col. [2] x (1 + Col. [13])
[7] Equals Col. [3] x (1 + Col. [13])
[8] Equals Col. [4] x (1 + Col. [13])
[9] Source: Bloomberg Professional, equals indicated number of trading day average as of 08/31/2022
[10] Source: Zacks
[11] Source: Yahoo! Finance
[12] Source: Value Line
[13] Equals Average (Cols. [10], [11], [12])
[14] Implied Low DCF
[15] Implied Mean DCF
[16] Implied High DCF

Quarterly Growth Discounted Cash Flow Model
90 Day Average Stock Price

Company	Ticker	[1] Dividend 1	[2] Dividend 2	[3] Dividend 3	[4] Dividend 4	[5] Expected Dividend 1	[6] Expected Dividend 2	[7] Expected Dividend 3	[8] Expected Dividend 4	[9] Stock Price	[10] Zacks Earnings Growth	[11] Yahoo! Earnings Growth	[12] Value Line Earnings Growth	[13] Average Earnings Growth	[14] Low ROE	[15] Mean ROE	[16] High ROE
Atmos Energy Corporation	ATO	$0.68	$0.68	$0.68	$0.68	$0.73	$0.73	$0.73	$0.73	$113.89	7.50%	8.39%	7.50%	7.80%	10.16%	10.47%	11.08%
New Jersey Resources Corporation	NJR	$0.36	$0.36	$0.36	$0.36	$0.38	$0.38	$0.38	$0.38	$44.77	6.00%	6.00%	5.00%	5.67%	8.51%	9.20%	9.55%
NiSource Inc.	NI	$0.24	$0.24	$0.24	$0.24	$0.25	$0.25	$0.25	$0.25	$29.79	7.20%	7.30%	9.50%	8.00%	10.72%	11.55%	13.12%
Northwest Natural Holding Company	NWN	$0.48	$0.48	$0.48	$0.48	$0.51	$0.51	$0.51	$0.51	$52.02	4.30%	4.30%	6.50%	5.03%	8.29%	9.06%	10.61%
ONE Gas, Inc.	OGS	$0.58	$0.62	$0.62	$0.62	$0.61	$0.65	$0.65	$0.65	$83.03	5.00%	5.00%	6.50%	5.50%	8.18%	8.70%	9.74%
Spire Inc.	SR	$0.69	$0.69	$0.69	$0.69	$0.73	$0.73	$0.73	$0.73	$74.10	5.00%	4.30%	9.00%	6.10%	8.27%	10.17%	13.23%
Proxy Group Mean											5.83%	5.88%	7.33%	6.35%	9.02%	9.86%	11.22%
Proxy Group Median											5.50%	5.50%	7.00%	5.88%	8.40%	9.69%	10.84%
Averae of Mean and Median															8.71%	9.77%	11.03%

Notes:
[1] Source: Bloomberg Professional Service
[2] Source: Bloomberg Professional Service
[3] Source: Bloomberg Professional Service
[4] Source: Bloomberg Professional Service
[5] Equals Col. [1] x (1 + Col. [13])
[6] Equals Col. [2] x (1 + Col. [13])
[7] Equals Col. [3] x (1 + Col. [13])
[8] Equals Col. [4] x (1 + Col. [13])
[9] Source: Bloomberg Professional, equals indicated number of trading day average as of 08/31/2022
[10] Source: Zacks
[11] Source: Yahoo! Finance
[12] Source: Value Line
[13] Equals Average (Cols. [10], [11], [12])
[14] Implied Low DCF
[15] Implied Mean DCF
[16] Implied High DCF

Quarterly Growth Discounted Cash Flow Model
180 Day Average Stock Price

Company	Ticker	[1] Dividend 1	[2] Dividend 2	[3] Dividend 3	[4] Dividend 4	[5] Expected Dividend 1	[6] Expected Dividend 2	[7] Expected Dividend 3	[8] Expected Dividend 4	[9] Stock Price	[10] Zacks Earnings Growth	[11] Yahoo! Earnings Growth	[12] Value Line Earnings Growth	[13] Average Earnings Growth	[14] Low ROE	[15] Mean ROE	[16] High ROE
Atmos Energy Corporation	ATO	$0.68	$0.68	$0.68	$0.68	$0.73	$0.73	$0.73	$0.73	$111.95	7.50%	8.39%	7.50%	7.80%	10.21%	10.52%	11.13%
New Jersey Resources Corporation	NJR	$0.36	$0.36	$0.36	$0.36	$0.38	$0.38	$0.38	$0.38	$43.49	6.00%	6.00%	5.00%	5.67%	8.61%	9.31%	9.66%
NiSource Inc.	NI	$0.24	$0.24	$0.24	$0.24	$0.25	$0.25	$0.25	$0.25	$29.50	7.20%	7.30%	9.50%	8.00%	10.75%	11.59%	13.16%
Northwest Natural Holding Company	NWN	$0.48	$0.48	$0.48	$0.48	$0.51	$0.51	$0.51	$0.51	$51.02	4.30%	4.30%	6.50%	5.03%	8.37%	9.14%	10.69%
ONE Gas, Inc.	OGS	$0.58	$0.62	$0.62	$0.62	$0.61	$0.65	$0.65	$0.65	$82.18	5.00%	5.00%	6.50%	5.50%	8.21%	8.73%	9.77%
Spire Inc.	SR	$0.69	$0.69	$0.69	$0.69	$0.73	$0.73	$0.73	$0.73	$70.81	5.00%	4.30%	9.00%	6.10%	8.46%	10.36%	13.42%
Proxy Group Mean											5.83%	5.88%	7.33%	6.35%	9.10%	9.94%	11.31%
Proxy Group Median											5.50%	5.50%	7.00%	5.88%	8.54%	9.84%	10.91%
Averae of Mean and Median															8.82%	9.89%	11.11%

Notes:
[1] Source: Bloomberg Professional Service
[2] Source: Bloomberg Professional Service
[3] Source: Bloomberg Professional Service
[4] Source: Bloomberg Professional Service
[5] Equals Col. [1] x (1 + Col. [13])
[6] Equals Col. [2] x (1 + Col. [13])
[7] Equals Col. [3] x (1 + Col. [13])
[8] Equals Col. [4] x (1 + Col. [13])
[9] Source: Bloomberg Professional, equals indicated number of trading day average as of 08/31/2022
[10] Source: Zacks
[11] Source: Yahoo! Finance
[12] Source: Value Line
[13] Equals Average (Cols. [10], [11], [12])
[14] Implied Low DCF
[15] Implied Mean DCF
[16] Implied High DCF

Expected Market Return
Market DCF Method Based - Bloomberg EPS Growth

[1]
S&P 500 Est. Required Market Return
12.65%

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
Agilent Technologies Inc	A	37,962.00	0.11%	0.65%	11.00%	11.69%	0.0133%
American Airlines Group Inc	AAL	8,441.50	N/A	0.00%	N/A	N/A	N/A
Advance Auto Parts Inc	AAP	10,138.30	0.03%	3.56%	13.99%	17.80%	0.0054%
Apple Inc	AAPL	2,526,643.63	7.55%	0.59%	10.20%	10.82%	0.8162%
AbbVie Inc	ABBV	237,738.19	0.71%	4.19%	-1.48%	2.68%	0.0191%
AmerisourceBergen Corp	ABC	30,375.73	0.09%	1.26%	8.61%	9.91%	0.0090%
ABIOMED Inc	ABMD	11,787.13	N/A	0.00%	N/A	N/A	N/A
Abbott Laboratories	ABT	179,762.73	0.54%	1.83%	4.17%	6.04%	0.0324%
Accenture PLC	ACN	191,591.67	0.57%	1.35%	10.90%	12.32%	0.0705%
Adobe Inc	ADBE	174,769.92	0.52%	0.00%	14.53%	14.53%	0.0758%
Analog Devices Inc	ADI	77,938.24	0.23%	2.01%	10.80%	12.91%	0.0301%
Archer-Daniels-Midland Co	ADM	49,267.79	0.15%	1.82%	6.96%	8.84%	0.0130%
Automatic Data Processing Inc	ADP	101,556.51	0.30%	1.70%	13.20%	15.01%	0.0455%
Autodesk Inc	ADSK	43,547.39	0.13%	0.00%	23.38%	23.38%	0.0304%
Ameren Corp	AEE	23,904.48	0.07%	2.55%	7.70%	10.35%	0.0074%
American Electric Power Co Inc	AEP	51,476.15	0.15%	3.11%	6.06%	9.27%	0.0143%
AES Corp/The	AES	16,998.92	0.05%	2.48%	8.10%	10.68%	0.0054%
Aflac Inc	AFL	37,548.45	N/A	2.69%	N/A	N/A	N/A
American International Group Inc	AIG	39,351.53	0.12%	2.47%	-5.30%	-2.89%	-0.0034%
Assurant Inc	AIZ	8,433.09	0.03%	1.72%	17.47%	19.34%	0.0049%
Arthur J Gallagher & Co	AJG	38,190.71	0.11%	1.12%	10.00%	11.18%	0.0128%
Akamai Technologies Inc	AKAM	14,350.64	0.04%	0.00%	16.10%	16.10%	0.0069%
Albemarle Corp	ALB	31,385.89	0.09%	0.59%	37.17%	37.87%	0.0355%
Align Technology Inc	ALGN	19,034.92	0.06%	0.00%	8.11%	8.11%	0.0046%
Alaska Air Group Inc	ALK	5,521.88	0.02%	0.00%	71.60%	71.60%	0.0118%
Allstate Corp/The	ALL	32,570.67	0.10%	2.82%	3.17%	6.04%	0.0059%
Allegion plc	ALLE	8,353.39	0.02%	1.72%	8.54%	10.33%	0.0026%
Applied Materials Inc	AMAT	80,929.27	0.24%	1.11%	6.79%	7.93%	0.0192%
Amcor PLC	AMCR	17,883.13	0.05%	4.00%	5.35%	9.45%	0.0050%
Advanced Micro Devices Inc	AMD	137,007.42	0.41%	0.00%	32.60%	32.60%	0.1334%
AMETEK Inc	AME	27,586.09	0.08%	0.73%	12.80%	13.58%	0.0112%
Amgen Inc	AMGN	128,543.92	0.38%	3.23%	6.40%	9.73%	0.0374%
Ameriprise Financial Inc	AMP	28,989.57	0.09%	1.87%	8.40%	10.34%	0.0090%
American Tower Corp	AMT	118,282.38	0.35%	2.25%	11.17%	13.55%	0.0479%
Amazon.com Inc	AMZN	1,291,476.35	3.86%	0.00%	8.51%	8.51%	0.3281%
Arista Networks Inc	ANET	36,477.09	0.11%	0.00%	17.46%	17.46%	0.0190%
ANSYS Inc	ANSS	21,619.23	0.06%	0.00%	7.86%	7.86%	0.0051%
Aon PLC	AON	58,903.19	0.18%	0.80%	11.55%	12.40%	0.0218%
A O Smith Corp	AOS	7,252.53	0.02%	1.98%	10.00%	12.08%	0.0026%
APA Corp	APA	12,770.59	0.04%	1.28%	20.85%	22.26%	0.0085%
Air Products and Chemicals Inc	APD	55,993.16	0.17%	2.57%	12.58%	15.31%	0.0256%
Amphenol Corp	APH	43,737.70	0.13%	1.09%	11.02%	12.17%	0.0159%
Aptiv PLC	APTV	25,313.27	0.08%	0.00%	19.99%	19.99%	0.0151%
Alexandria Real Estate Equities Inc	ARE	25,029.97	0.07%	3.08%	-2.04%	1.01%	0.0008%
Atmos Energy Corp	ATO	15,860.95	0.05%	2.40%	8.25%	10.75%	0.0051%
Activision Blizzard Inc	ATVI	61,403.28	0.18%	0.60%	0.30%	0.90%	0.0017%
AvalonBay Communities Inc	AVB	28,093.45	0.08%	3.17%	14.28%	17.67%	0.0148%
Broadcom Inc	AVGO	201,549.60	0.60%	3.29%	14.76%	18.29%	0.1101%
Avery Dennison Corp	AVY	14,920.23	0.04%	1.63%	7.20%	8.89%	0.0040%
American Water Works Co Inc	AWK	26,986.13	0.08%	1.76%	7.83%	9.66%	0.0078%
American Express Co	AXP	113,961.70	0.34%	1.37%	11.13%	12.58%	0.0428%
AutoZone Inc	AZO	41,299.16	0.12%	0.00%	12.28%	12.28%	0.0152%
Boeing Co/The	BA	95,158.21	0.28%	0.00%	113.77%	113.77%	0.3234%
Bank of America Corp	BAC	270,064.38	0.81%	2.62%	6.00%	8.70%	0.0702%
Ball Corp	BALL	17,541.47	0.05%	1.43%	7.00%	8.48%	0.0044%
Baxter International Inc	BAX	28,937.49	0.09%	2.02%	8.86%	10.96%	0.0095%
Bath & Body Works Inc	BBWI	8,522.44	0.03%	2.14%	2.07%	4.24%	0.0011%
Best Buy Co Inc	BBY	15,917.13	0.05%	4.98%	2.81%	7.86%	0.0037%
Becton Dickinson and Co	BDX	71,988.92	0.22%	1.38%	4.60%	6.01%	0.0129%
Franklin Resources Inc	BEN	12,992.17	N/A	4.45%	N/A	N/A	N/A
Brown-Forman Corp	BF/B	22,531.47	0.07%	1.04%	10.09%	11.18%	0.0075%
Biogen Inc	BIIB	28,352.18	0.08%	0.00%	-0.68%	-0.68%	-0.0006%
Bio-Rad Laboratories Inc	BIO	11,948.48	0.04%	0.00%	8.40%	8.40%	0.0030%
Bank of New York Mellon Corp/The	BK	33,560.52	0.10%	3.56%	6.55%	10.23%	0.0103%
Booking Holdings Inc	BKNG	74,480.91	0.22%	0.00%	28.55%	28.55%	0.0635%
Baker Hughes Co	BKR	25,556.91	0.08%	2.85%	53.84%	57.46%	0.0439%
BlackRock Inc	BLK	100,470.95	0.30%	2.93%	6.60%	9.63%	0.0289%
Bristol-Myers Squibb Co	BMY	143,937.54	0.43%	3.20%	2.90%	6.15%	0.0265%
Broadridge Financial Solutions Inc	BR	20,078.58	0.06%	1.69%	12.10%	13.90%	0.0083%
Berkshire Hathaway Inc	BRK/B	365,356.18	N/A	0.00%	N/A	N/A	N/A
Brown & Brown Inc	BRO	17,805.90	N/A	0.65%	N/A	N/A	N/A
Boston Scientific Corp	BSX	57,708.36	0.17%	0.00%	9.81%	9.81%	0.0169%
BorgWarner Inc	BWA	8,928.53	0.03%	1.80%	20.60%	22.59%	0.0060%
Boston Properties Inc	BXP	12,449.46	0.04%	4.94%	-1.52%	3.38%	0.0013%
Citigroup Inc	C	94,530.82	0.28%	4.18%	-7.63%	-3.61%	-0.0102%
Conagra Brands Inc	CAG	16,523.99	0.05%	3.84%	8.00%	11.99%	0.0059%
Cardinal Health Inc	CAH	19,272.05	0.06%	2.80%	13.85%	16.84%	0.0097%

		[2]	[3]	[4]	[5]	[6]	[7]
Company	Ticker	Market Capitalization	Weight in Index	Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Carrier Global Corp	CARR	32,922.73	0.10%	1.53%	8.85%	10.45%	0.0103%
Caterpillar Inc	CAT	97,510.07	0.29%	2.60%	11.80%	14.55%	0.0424%
Chubb Ltd	CB	78,955.03	0.24%	1.76%	13.00%	14.87%	0.0351%
Cboe Global Markets Inc	CBOE	12,512.13	N/A	1.70%	N/A	N/A	N/A
CBRE Group Inc	CBRE	25,359.66	0.08%	0.00%	7.70%	7.70%	0.0058%
Crown Castle Inc	CCI	73,976.05	0.22%	3.44%	10.05%	13.66%	0.0302%
Carnival Corp	CCL	10,375.31	0.03%	0.00%	-4.47%	-4.47%	-0.0014%
Ceridian HCM Holding Inc	CDAY	9,128.32	0.03%	0.00%	58.30%	58.30%	0.0159%
Cadence Design Systems Inc	CDNS	47,590.39	0.14%	0.00%	17.22%	17.22%	0.0245%
CDW Corp/DE	CDW	23,085.98	0.07%	1.17%	13.10%	14.35%	0.0099%
Celanese Corp	CE	12,011.57	0.04%	2.45%	8.76%	11.32%	0.0041%
Constellation Energy Corp	CEG	26,652.52	0.08%	0.69%	35.55%	36.36%	0.0289%
CF Industries Holdings Inc	CF	20,615.54	0.06%	1.55%	-8.47%	-6.99%	-0.0043%
Citizens Financial Group Inc	CFG	18,180.19	0.05%	4.58%	-1.51%	3.04%	0.0016%
Church & Dwight Co Inc	CHD	20,333.91	0.06%	1.25%	6.17%	7.46%	0.0045%
CH Robinson Worldwide Inc	CHRW	14,141.24	0.04%	1.93%	9.30%	11.32%	0.0048%
Charter Communications Inc	CHTR	66,291.07	0.20%	0.00%	30.79%	30.79%	0.0610%
Cigna Corp	CI	86,485.13	0.26%	1.58%	9.40%	11.06%	0.0286%
Cincinnati Financial Corp	CINF	15,435.94	N/A	2.85%	N/A	N/A	N/A
Colgate-Palmolive Co	CL	65,236.53	0.19%	2.40%	5.11%	7.57%	0.0148%
Clorox Co/The	CLX	17,777.35	0.05%	3.27%	2.75%	6.07%	0.0032%
Comerica Inc	CMA	10,504.85	0.03%	3.39%	17.24%	20.92%	0.0066%
Comcast Corp	CMCSA	159,373.30	0.48%	2.98%	10.62%	13.76%	0.0655%
CME Group Inc	CME	70,308.69	0.21%	2.04%	6.70%	8.81%	0.0185%
Chipotle Mexican Grill Inc	CMG	44,335.15	0.13%	0.00%	28.54%	28.54%	0.0378%
Cummins Inc	CMI	30,365.45	0.09%	2.92%	8.40%	11.44%	0.0104%
CMS Energy Corp	CMS	19,599.84	0.06%	2.72%	7.89%	10.72%	0.0063%
Centene Corp	CNC	51,293.68	0.15%	0.00%	13.90%	13.90%	0.0213%
CenterPoint Energy Inc	CNP	19,845.99	0.06%	2.28%	5.00%	7.34%	0.0043%
Capital One Financial Corp	COF	40,615.62	0.12%	2.27%	20.21%	22.71%	0.0276%
Cooper Cos Inc/The	COO	14,181.14	0.04%	0.02%	9.50%	9.52%	0.0040%
ConocoPhillips	COP	139,333.46	0.42%	1.68%	14.00%	15.80%	0.0657%
Costco Wholesale Corp	COST	231,270.98	0.69%	0.69%	11.69%	12.41%	0.0858%
Campbell Soup Co	CPB	15,143.02	N/A	2.94%	N/A	N/A	N/A
Copart Inc	CPRT	28,437.57	N/A	0.00%	N/A	N/A	N/A
Camden Property Trust	CPT	13,689.91	0.04%	2.93%	8.99%	12.05%	0.0049%
Charles River Laboratories Internationa	CRL	10,439.63	0.03%	0.00%	14.60%	14.60%	0.0046%
Salesforce Inc	CRM	156,120.00	0.47%	0.00%	21.50%	21.50%	0.1003%
Cisco Systems Inc	CSCO	185,183.91	0.55%	3.40%	6.90%	10.42%	0.0576%
CSX Corp	CSX	67,770.28	0.20%	1.26%	9.23%	10.55%	0.0214%
Cintas Corp	CTAS	41,515.58	0.12%	1.13%	9.20%	10.39%	0.0129%
Catalent Inc	CTLT	15,830.85	0.05%	0.00%	13.62%	13.62%	0.0064%
Coterra Energy Inc	CTRA	24,591.84	0.07%	8.41%	55.04%	65.77%	0.0483%
Cognizant Technology Solutions Corp	CTSH	32,708.48	0.10%	1.71%	12.10%	13.91%	0.0136%
Corteva Inc	CTVA	44,556.41	0.13%	0.98%	12.24%	13.27%	0.0177%
Citrix Systems Inc	CTXS	13,039.97	0.04%	0.00%	8.30%	8.30%	0.0032%
CVS Health Corp	CVS	128,854.17	0.38%	2.24%	7.33%	9.65%	0.0372%
Chevron Corp	CVX	309,392.18	0.92%	3.59%	13.11%	16.94%	0.1565%
Caesars Entertainment Inc	CZR	9,245.66	0.03%	0.00%	-188.82%	-188.82%	-0.0521%
Dominion Energy Inc	D	68,098.75	0.20%	3.26%	6.75%	10.12%	0.0206%
Delta Air Lines Inc	DAL	19,922.02	0.06%	0.00%	108.27%	108.27%	0.0644%
DuPont de Nemours Inc	DD	27,870.19	0.08%	2.37%	10.45%	12.94%	0.0108%
Deere & Co	DE	111,633.55	0.33%	1.24%	13.94%	15.26%	0.0509%
Discover Financial Services	DFS	27,450.95	0.08%	2.39%	24.32%	27.00%	0.0221%
Dollar General Corp	DG	53,555.30	0.16%	0.93%	10.16%	11.13%	0.0178%
Quest Diagnostics Inc	DGX	14,611.90	0.04%	2.11%	-8.99%	-6.98%	-0.0030%
DR Horton Inc	DHI	24,723.27	0.07%	1.26%	11.58%	12.92%	0.0095%
Danaher Corp	DHR	196,344.68	0.59%	0.37%	18.19%	18.59%	0.1090%
Walt Disney Co/The	DIS	204,328.34	0.61%	0.00%	35.67%	35.67%	0.2177%
DISH Network Corp	DISH	5,063.94	0.02%	0.00%	-19.60%	-19.60%	-0.0030%
Digital Realty Trust Inc	DLR	35,532.25	0.11%	3.95%	14.53%	18.76%	0.0199%
Dollar Tree Inc	DLTR	30,383.77	0.09%	0.00%	16.17%	16.17%	0.0147%
Dover Corp	DOV	17,937.88	0.05%	1.62%	11.50%	13.21%	0.0071%
Dow Inc	DOW	36,626.52	0.11%	5.49%	10.57%	16.35%	0.0179%
Domino's Pizza Inc	DPZ	13,344.20	0.04%	1.18%	10.60%	11.84%	0.0047%
Duke Realty Corp	DRE	22,656.84	0.07%	1.90%	7.64%	9.62%	0.0065%
Darden Restaurants Inc	DRI	15,164.37	0.05%	3.91%	8.83%	12.91%	0.0058%
DTE Energy Co	DTE	25,252.33	0.08%	2.72%	5.57%	8.36%	0.0063%
Duke Energy Corp	DUK	82,320.70	0.25%	3.76%	5.40%	9.26%	0.0228%
DaVita Inc	DVA	7,786.98	0.02%	0.00%	9.37%	9.37%	0.0022%
Devon Energy Corp	DVN	46,241.98	0.14%	8.78%	24.78%	34.64%	0.0478%
DXC Technology Co	DXC	5,696.35	0.02%	0.00%	12.82%	12.82%	0.0022%
Dexcom Inc	DXCM	32,274.17	0.10%	0.00%	17.91%	17.91%	0.0173%
Electronic Arts Inc	EA	35,275.57	0.11%	0.60%	10.79%	11.42%	0.0120%
eBay Inc	EBAY	24,243.61	0.07%	1.99%	6.68%	8.74%	0.0063%
Ecolab Inc	ECL	46,689.75	0.14%	1.25%	15.07%	16.41%	0.0229%
Consolidated Edison Inc	ED	34,656.84	0.10%	3.23%	4.83%	8.14%	0.0084%
Equifax Inc	EFX	23,103.00	0.07%	0.83%	13.47%	14.35%	0.0099%
Edison International	EIX	25,849.65	0.08%	4.13%	3.84%	8.05%	0.0062%
Estee Lauder Cos Inc/The	EL	58,853.87	0.18%	0.94%	9.72%	10.71%	0.0188%
Elevance Health Inc	ELV	116,426.89	0.35%	1.06%	11.70%	12.82%	0.0446%
Eastman Chemical Co	EMN	11,175.62	0.03%	3.34%	10.03%	13.54%	0.0045%
Emerson Electric Co	EMR	48,332.86	0.14%	2.52%	10.87%	13.53%	0.0195%
Enphase Energy Inc	ENPH	38,800.30	0.12%	0.00%	43.99%	43.99%	0.0510%
EOG Resources Inc	EOG	71,087.26	0.21%	2.47%	11.50%	14.12%	0.0300%
EPAM Systems Inc	EPAM	24,467.03	0.07%	0.00%	19.77%	19.77%	0.0144%
Equinix Inc	EQIX	59,869.97	0.18%	1.89%	10.26%	12.24%	0.0219%
Equity Residential	EQR	27,524.32	0.08%	3.42%	17.14%	20.84%	0.0171%
Eversource Energy	ES	31,072.47	0.09%	2.84%	6.53%	9.47%	0.0088%

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
Essex Property Trust Inc	ESS	17,261.77	0.05%	3.32%	8.61%	12.07%	0.0062%
Eaton Corp PLC	ETN	54,423.71	0.16%	2.37%	10.85%	13.35%	0.0217%
Entergy Corp	ETR	23,454.10	0.07%	3.50%	6.54%	10.16%	0.0071%
Etsy Inc	ETSY	13,371.18	0.04%	0.00%	20.10%	20.10%	0.0080%
Evergy Inc	EVRG	15,726.13	0.05%	3.34%	4.62%	8.04%	0.0038%
Edwards Lifesciences Corp	EW	55,856.86	0.17%	0.00%	13.50%	13.50%	0.0225%
Exelon Corp	EXC	43,548.05	0.13%	3.07%	8.51%	11.72%	0.0152%
Expeditors International of Washington	EXPD	16,832.29	0.05%	1.30%	-4.30%	-3.03%	-0.0015%
Expedia Group Inc	EXPE	15,606.39	0.05%	0.00%	31.70%	31.70%	0.0148%
Extra Space Storage Inc	EXR	26,612.33	0.08%	3.02%	8.67%	11.82%	0.0094%
Ford Motor Co	F	60,188.63	0.18%	3.94%	33.60%	38.20%	0.0687%
Diamondback Energy Inc	FANG	23,695.18	0.07%	9.15%	7.17%	16.65%	0.0118%
Fastenal Co	FAST	28,923.59	0.09%	2.46%	11.30%	13.90%	0.0120%
Fortune Brands Home & Security Inc	FBHS	7,943.94	0.02%	1.82%	8.52%	10.42%	0.0025%
Freeport-McMoRan Inc	FCX	42,306.39	0.13%	2.03%	-12.34%	-10.44%	-0.0132%
FactSet Research Systems Inc	FDS	16,458.25	0.05%	0.82%	11.25%	12.12%	0.0060%
FedEx Corp	FDX	54,791.21	0.16%	2.18%	12.38%	14.69%	0.0240%
FirstEnergy Corp	FE	22,598.67	0.07%	3.94%	0.95%	4.91%	0.0033%
F5 Inc	FFIV	9,354.81	0.03%	0.00%	4.69%	4.69%	0.0013%
Fidelity National Information Services I	FIS	55,551.04	0.17%	2.06%	11.47%	13.64%	0.0226%
Fiserv Inc	FISV	64,719.50	0.19%	0.00%	13.67%	13.67%	0.0264%
Fifth Third Bancorp	FITB	23,433.39	0.07%	3.51%	13.60%	17.35%	0.0121%
FleetCor Technologies Inc	FLT	15,942.51	0.05%	0.00%	14.16%	14.16%	0.0067%
FMC Corp	FMC	13,613.65	0.04%	1.96%	9.00%	11.05%	0.0045%
Fox Corp	FOX	7,672.31	0.02%	1.58%	8.73%	10.38%	0.0024%
Fox Corp	FOXA	10,475.38	0.03%	1.46%	8.73%	10.26%	0.0032%
First Republic Bank/CA	FRC	27,741.62	0.08%	0.71%	7.38%	8.12%	0.0067%
Federal Realty Investment Trust	FRT	8,193.55	0.02%	4.27%	9.49%	13.96%	0.0034%
Fortinet Inc	FTNT	38,393.09	0.11%	0.00%	21.13%	21.13%	0.0242%
Fortive Corp	FTV	22,526.29	0.07%	0.44%	10.23%	10.69%	0.0072%
General Dynamics Corp	GD	62,783.14	0.19%	2.20%	10.23%	12.54%	0.0235%
General Electric Co	GE	80,530.85	0.24%	0.44%	23.45%	23.94%	0.0576%
Gilead Sciences Inc	GILD	79,551.20	0.24%	4.60%	-1.33%	3.25%	0.0077%
General Mills Inc	GIS	45,750.53	0.14%	2.81%	6.70%	9.61%	0.0131%
Globe Life Inc	GL	9,470.00	N/A	0.85%	N/A	N/A	N/A
Corning Inc	GLW	29,011.31	0.09%	3.15%	6.49%	9.74%	0.0084%
General Motors Co	GM	55,712.05	0.17%	0.94%	11.80%	12.80%	0.0213%
Generac Holdings Inc	GNRC	14,068.99	0.04%	0.00%	12.55%	12.55%	0.0053%
Alphabet Inc	GOOG	672,691.45	2.01%	0.00%	16.52%	16.52%	0.3319%
Alphabet Inc	GOOGL	648,887.12	1.94%	0.00%	16.52%	16.52%	0.3202%
Genuine Parts Co	GPC	22,064.65	0.07%	2.29%	10.46%	12.87%	0.0085%
Global Payments Inc	GPN	34,431.96	0.10%	0.80%	16.24%	17.11%	0.0176%
Garmin Ltd	GRMN	17,065.74	0.05%	3.30%	7.30%	10.72%	0.0055%
Goldman Sachs Group Inc/The	GS	113,558.90	0.34%	3.01%	-3.85%	-0.90%	-0.0031%
WW Grainger Inc	GWW	28,230.35	0.08%	1.24%	12.05%	13.36%	0.0113%
Halliburton Co	HAL	27,326.22	0.08%	1.59%	50.21%	52.20%	0.0426%
Hasbro Inc	HAS	10,884.33	0.03%	3.55%	7.69%	11.38%	0.0037%
Huntington Bancshares Inc/OH	HBAN	19,325.40	0.06%	4.63%	6.92%	11.71%	0.0068%
HCA Healthcare Inc	HCA	56,793.64	0.17%	1.13%	6.22%	7.38%	0.0125%
Home Depot Inc/The	HD	295,263.05	0.88%	2.64%	6.03%	8.74%	0.0771%
Hess Corp	HES	37,395.30	0.11%	1.24%	19.95%	21.31%	0.0238%
Hartford Financial Services Group Inc/	HIG	20,781.26	0.06%	2.39%	7.00%	9.48%	0.0059%
Huntington Ingalls Industries Inc	HII	9,198.43	0.03%	2.05%	40.00%	42.46%	0.0117%
Hilton Worldwide Holdings Inc	HLT	34,933.19	0.10%	0.47%	44.62%	45.20%	0.0472%
Hologic Inc	HOLX	16,866.56	0.05%	0.00%	1.35%	1.35%	0.0007%
Honeywell International Inc	HON	127,563.58	0.38%	2.07%	10.70%	12.88%	0.0491%
Hewlett Packard Enterprise Co	HPE	17,516.80	0.05%	3.53%	2.61%	6.19%	0.0032%
HP Inc	HPQ	29,690.10	0.09%	3.48%	2.42%	5.95%	0.0053%
Hormel Foods Corp	HRL	27,455.70	0.08%	2.07%	6.71%	8.85%	0.0073%
Henry Schein Inc	HSIC	9,992.20	0.03%	0.00%	6.99%	6.99%	0.0021%
Host Hotels & Resorts Inc	HST	12,703.65	N/A	2.70%	N/A	N/A	N/A
Hershey Co/The	HSY	32,997.28	0.10%	1.84%	8.15%	10.07%	0.0099%
Humana Inc	HUM	60,971.19	0.18%	0.65%	13.84%	14.54%	0.0265%
Howmet Aerospace Inc	HWM	14,717.73	0.04%	0.23%	19.70%	19.95%	0.0088%
International Business Machines Corp	IBM	116,013.47	0.35%	5.14%	8.49%	13.84%	0.0480%
Intercontinental Exchange Inc	ICE	56,320.49	0.17%	1.51%	6.14%	7.69%	0.0129%
IDEXX Laboratories Inc	IDXX	28,940.76	0.09%	0.00%	8.85%	8.85%	0.0076%
IDEX Corp	IEX	15,186.53	0.05%	1.19%	13.93%	15.21%	0.0069%
International Flavors & Fragrances Inc	IFF	28,166.54	0.08%	2.93%	6.01%	9.03%	0.0076%
Illumina Inc	ILMN	31,717.97	0.09%	0.00%	18.00%	18.00%	0.0171%
Incyte Corp	INCY	15,665.82	0.05%	0.00%	23.21%	23.21%	0.0109%
Intel Corp	INTC	131,063.52	0.39%	4.57%	2.78%	7.41%	0.0290%
Intuit Inc	INTU	121,795.21	0.36%	0.72%	18.80%	19.59%	0.0713%
International Paper Co	IP	15,067.15	0.05%	4.44%	11.90%	16.61%	0.0075%
Interpublic Group of Cos Inc/The	IPG	10,808.01	0.03%	4.20%	1.93%	6.16%	0.0020%
IQVIA Holdings Inc	IQV	39,662.79	0.12%	0.00%	17.26%	17.26%	0.0204%
Ingersoll Rand Inc	IR	19,098.68	0.06%	0.17%	15.30%	15.48%	0.0088%
Iron Mountain Inc	IRM	15,292.94	0.05%	4.70%	4.00%	8.80%	0.0040%
Intuitive Surgical Inc	ISRG	73,472.02	0.22%	0.00%	12.61%	12.61%	0.0277%
Gartner Inc	IT	22,567.10	0.07%	0.00%	10.56%	10.56%	0.0071%
Illinois Tool Works Inc	ITW	60,323.65	0.18%	2.69%	8.28%	11.08%	0.0200%
Invesco Ltd	IVZ	7,492.86	0.02%	4.55%	-6.32%	-1.91%	-0.0004%
Jacobs Solutions Inc	J	15,897.16	0.05%	0.74%	12.69%	13.48%	0.0064%
JB Hunt Transport Services Inc	JBHT	18,065.54	0.05%	0.92%	22.37%	23.39%	0.0126%
Johnson Controls International plc	JCI	37,292.17	0.11%	2.59%	16.37%	19.17%	0.0213%
Jack Henry & Associates Inc	JKHY	14,011.96	0.04%	1.02%	11.15%	12.23%	0.0051%
Johnson & Johnson	JNJ	424,191.90	1.27%	2.80%	4.33%	7.20%	0.0912%
Juniper Networks Inc	JNPR	9,168.55	0.03%	2.96%	8.17%	11.24%	0.0031%
JPMorgan Chase & Co	JPM	333,521.41	N/A	3.52%	N/A	N/A	N/A

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
Kellogg Co	K	24,739.82	0.07%	3.24%	4.20%	7.51%	0.0056%
Keurig Dr Pepper Inc	KDP	53,982.19	0.16%	1.97%	6.87%	8.90%	0.0144%
KeyCorp	KEY	16,498.74	0.05%	4.41%	6.04%	10.58%	0.0052%
Keysight Technologies Inc	KEYS	29,302.88	0.09%	0.00%	12.17%	12.17%	0.0106%
Kraft Heinz Co/The	KHC	45,831.46	0.14%	4.28%	5.20%	9.59%	0.0131%
Kimco Realty Corp	KIM	13,037.60	0.04%	4.17%	6.90%	11.22%	0.0044%
KLA Corp	KLAC	48,799.01	0.15%	1.51%	10.83%	12.42%	0.0181%
Kimberly-Clark Corp	KMB	43,053.56	0.13%	3.64%	4.75%	8.48%	0.0109%
Kinder Morgan Inc	KMI	41,274.98	0.12%	6.06%	2.70%	8.84%	0.0109%
CarMax Inc	KMX	14,076.64	0.04%	0.00%	14.61%	14.61%	0.0061%
Coca-Cola Co/The	KO	266,872.86	0.80%	2.85%	6.58%	9.52%	0.0759%
Kroger Co/The	KR	34,303.95	0.10%	2.17%	8.94%	11.21%	0.0115%
Loews Corp	L	13,326.78	N/A	0.45%	N/A	N/A	N/A
Leidos Holdings Inc	LDOS	12,978.22	0.04%	1.51%	6.46%	8.02%	0.0031%
Lennar Corp	LEN	19,748.74	0.06%	1.94%	2.67%	4.63%	0.0027%
Laboratory Corp of America Holdings	LH	20,364.41	0.06%	1.28%	-6.46%	-5.22%	-0.0032%
L3Harris Technologies Inc	LHX	43,664.84	0.13%	1.96%	4.31%	6.31%	0.0082%
Linde PLC	LIN	140,967.81	0.42%	1.65%	8.70%	10.43%	0.0439%
LKQ Corp	LKQ	14,603.04	0.04%	1.88%	4.27%	6.19%	0.0027%
Eli Lilly & Co	LLY	286,221.22	0.85%	1.30%	14.10%	15.49%	0.1324%
Lockheed Martin Corp	LMT	111,393.01	0.33%	2.67%	4.85%	7.58%	0.0252%
Lincoln National Corp	LNC	7,840.61	0.02%	3.91%	11.90%	16.04%	0.0038%
Alliant Energy Corp	LNT	15,316.52	0.05%	2.80%	6.03%	8.92%	0.0041%
Lowe's Cos Inc	LOW	120,502.89	0.36%	2.16%	10.29%	12.56%	0.0452%
Lam Research Corp	LRCX	59,988.42	0.18%	1.58%	10.12%	11.78%	0.0211%
Lumen Technologies Inc	LUMN	10,311.98	0.03%	10.04%	-29.58%	-21.02%	-0.0065%
Southwest Airlines Co	LUV	21,775.95	0.07%	0.00%	70.84%	70.84%	0.0461%
Las Vegas Sands Corp	LVS	28,755.19	N/A	0.00%	N/A	N/A	N/A
Lamb Weston Holdings Inc	LW	11,430.21	0.03%	1.23%	22.01%	23.37%	0.0080%
LyondellBasell Industries NV	LYB	27,075.10	0.08%	5.73%	8.00%	13.96%	0.0113%
Live Nation Entertainment Inc	LYV	20,780.27	N/A	0.00%	N/A	N/A	N/A
Mastercard Inc	MA	310,965.73	0.93%	0.60%	23.13%	23.80%	0.2210%
Mid-America Apartment Communities I	MAA	19,124.78	N/A	3.02%	N/A	N/A	N/A
Marriott International Inc/MD	MAR	49,896.47	0.15%	0.78%	35.05%	35.96%	0.0536%
Masco Corp	MAS	11,472.20	0.03%	2.20%	11.63%	13.96%	0.0048%
McDonald's Corp	MCD	185,606.68	0.55%	2.19%	7.29%	9.56%	0.0530%
Microchip Technology Inc	MCHP	36,049.58	0.11%	1.85%	13.05%	15.01%	0.0162%
McKesson Corp	MCK	52,748.91	0.16%	0.59%	7.89%	8.50%	0.0134%
Moody's Corp	MCO	52,209.42	0.16%	0.98%	11.40%	12.44%	0.0194%
Mondelez International Inc	MDLZ	84,783.21	0.25%	2.49%	6.26%	8.82%	0.0223%
Medtronic PLC	MDT	116,905.73	0.35%	3.09%	7.29%	10.50%	0.0367%
MetLife Inc	MET	51,310.51	0.15%	3.11%	0.89%	4.01%	0.0061%
Meta Platforms Inc	META	371,589.89	1.11%	0.00%	4.24%	4.24%	0.0471%
MGM Resorts International	MGM	12,830.85	0.04%	0.03%	124.80%	124.85%	0.0478%
Mohawk Industries Inc	MHK	7,011.61	0.02%	0.00%	4.48%	4.48%	0.0009%
McCormick & Co Inc/MD	MKC	21,057.18	0.06%	1.76%	3.93%	5.73%	0.0036%
MarketAxess Holdings Inc	MKTX	9,356.93	0.03%	1.13%	13.80%	15.00%	0.0042%
Martin Marietta Materials Inc	MLM	21,688.06	0.06%	0.76%	13.73%	14.54%	0.0094%
Marsh & McLennan Cos Inc	MMC	80,526.53	0.24%	1.46%	7.51%	9.03%	0.0217%
3M Co	MMM	70,830.26	0.21%	4.79%	6.97%	11.93%	0.0252%
Monster Beverage Corp	MNST	46,803.19	0.14%	0.00%	8.53%	8.53%	0.0119%
Altria Group Inc	MO	81,253.13	0.24%	8.33%	1.15%	9.53%	0.0231%
Molina Healthcare Inc	MOH	19,601.20	0.06%	0.00%	16.72%	16.72%	0.0098%
Mosaic Co/The	MOS	18,599.53	0.06%	1.11%	7.00%	8.15%	0.0045%
Marathon Petroleum Corp	MPC	50,236.37	0.15%	2.30%	34.64%	37.34%	0.0560%
Monolithic Power Systems Inc	MPWR	21,203.84	0.06%	0.66%	25.70%	26.45%	0.0167%
Merck & Co Inc	MRK	216,240.78	0.65%	3.23%	12.92%	16.36%	0.1057%
Moderna Inc	MRNA	51,744.02	0.15%	0.00%	-97.79%	-97.79%	-0.1511%
Marathon Oil Corp	MRO	17,339.37	0.05%	1.25%	-9.00%	-7.81%	-0.0040%
Morgan Stanley	MS	146,307.91	0.44%	3.64%	-0.86%	2.76%	0.0121%
MSCI Inc	MSCI	36,165.17	0.11%	1.11%	12.60%	13.78%	0.0149%
Microsoft Corp	MSFT	1,950,015.02	5.82%	0.95%	13.00%	14.01%	0.8160%
Motorola Solutions Inc	MSI	40,621.48	N/A	1.30%	N/A	N/A	N/A
M&T Bank Corp	MTB	31,923.11	0.10%	2.64%	8.85%	11.61%	0.0111%
Match Group Inc	MTCH	15,997.20	0.05%	0.00%	35.79%	35.79%	0.0171%
Mettler-Toledo International Inc	MTD	27,288.84	0.08%	0.00%	14.60%	14.60%	0.0119%
Micron Technology Inc	MU	62,360.79	0.19%	0.81%	10.75%	11.61%	0.0216%
Norwegian Cruise Line Holdings Ltd	NCLH	5,511.77	0.02%	0.00%	-165.24%	-165.24%	-0.0272%
Nasdaq Inc	NDAQ	29,242.68	0.09%	1.34%	7.86%	9.26%	0.0081%
Nordson Corp	NDSN	12,996.62	0.04%	1.14%	11.80%	13.01%	0.0051%
NextEra Energy Inc	NEE	167,124.10	0.50%	2.00%	10.78%	12.89%	0.0643%
Newmont Corp	NEM	32,826.60	0.10%	5.32%	-3.00%	2.24%	0.0022%
Netflix Inc	NFLX	99,418.47	0.30%	0.00%	22.50%	22.50%	0.0668%
NiSource Inc	NI	11,979.67	0.04%	3.19%	7.93%	11.24%	0.0040%
NIKE Inc	NKE	134,515.86	0.40%	1.15%	11.14%	12.35%	0.0496%
NortonLifeLock Inc	NLOK	12,914.86	0.04%	2.21%	5.20%	7.47%	0.0029%
Nielsen Holdings PLC	NLSN	10,017.78	N/A	0.86%	N/A	N/A	N/A
Northrop Grumman Corp	NOC	73,950.31	0.22%	1.45%	0.56%	2.01%	0.0045%
ServiceNow Inc	NOW	87,793.24	0.26%	0.00%	30.93%	30.93%	0.0811%
NRG Energy Inc	NRG	9,706.87	0.03%	3.39%	3.86%	7.31%	0.0021%
Norfolk Southern Corp	NSC	57,104.92	0.17%	2.04%	9.78%	11.91%	0.0203%
NetApp Inc	NTAP	15,678.61	0.05%	2.77%	7.90%	10.78%	0.0050%
Northern Trust Corp	NTRS	19,815.52	0.06%	3.15%	8.80%	12.09%	0.0072%
Nucor Corp	NUE	34,801.70	N/A	1.50%	N/A	N/A	N/A
NVIDIA Corp	NVDA	375,840.60	1.12%	0.11%	18.54%	18.66%	0.2094%
NVR Inc	NVR	13,591.82	0.04%	0.00%	16.00%	16.00%	0.0065%
Newell Brands Inc	NWL	7,382.76	N/A	5.15%	N/A	N/A	N/A
News Corp	NWS	3,376.01	0.01%	1.16%	2.95%	4.13%	0.0004%
News Corp	NWSA	6,524.32	0.02%	1.18%	2.95%	4.15%	0.0008%

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
NXP Semiconductors NV	NXPI	43,218.38	0.13%	2.05%	19.20%	21.45%	0.0277%
Realty Income Corp	O	42,168.16	0.13%	4.35%	7.56%	12.07%	0.0152%
Old Dominion Freight Line Inc	ODFL	30,336.58	0.09%	0.44%	14.26%	14.74%	0.0134%
Organon & Co	OGN	7,256.03	0.02%	3.93%	-2.54%	1.34%	0.0003%
ONEOK Inc	OKE	27,361.36	0.08%	6.11%	8.23%	14.59%	0.0119%
Omnicom Group Inc	OMC	13,704.00	0.04%	4.19%	2.41%	6.64%	0.0027%
ON Semiconductor Corp	ON	29,793.64	0.09%	0.00%	20.62%	20.62%	0.0183%
Oracle Corp	ORCL	197,604.26	0.59%	1.73%	13.15%	14.99%	0.0885%
O'Reilly Automotive Inc	ORLY	44,140.24	0.13%	0.00%	10.95%	10.95%	0.0144%
Otis Worldwide Corp	OTIS	30,349.16	0.09%	1.61%	7.00%	8.66%	0.0079%
Occidental Petroleum Corp	OXY	66,135.93	0.20%	0.73%	6.90%	7.66%	0.0151%
Paramount Global	PARA	14,230.97	0.04%	4.10%	-6.84%	-2.87%	-0.0012%
Paycom Software Inc	PAYC	21,081.13	0.06%	0.00%	25.65%	25.65%	0.0162%
Paychex Inc	PAYX	44,390.93	0.13%	2.56%	8.00%	10.66%	0.0141%
PACCAR Inc	PCAR	30,428.89	0.09%	1.55%	12.00%	13.65%	0.0124%
Healthpeak Properties Inc	PEAK	14,164.00	0.04%	4.57%	11.16%	15.99%	0.0068%
Public Service Enterprise Group Inc	PEG	32,106.63	0.10%	3.36%	4.87%	8.31%	0.0080%
Penn Entertainment Inc	PENN	4,951.92	0.01%	0.00%	1.21%	1.21%	0.0002%
PepsiCo Inc	PEP	237,747.24	0.71%	2.67%	7.38%	10.15%	0.0720%
Pfizer Inc	PFE	253,846.68	0.76%	3.54%	-6.47%	-3.04%	-0.0231%
Principal Financial Group Inc	PFG	18,632.96	0.06%	3.42%	5.94%	9.47%	0.0053%
Procter & Gamble Co/The	PG	329,615.08	0.98%	2.65%	4.50%	7.21%	0.0709%
Progressive Corp/The	PGR	71,725.72	0.21%	0.33%	24.83%	25.20%	0.0540%
Parker-Hannifin Corp	PH	34,026.80	0.10%	2.01%	9.70%	11.80%	0.0120%
PulteGroup Inc	PHM	9,412.71	0.03%	1.48%	1.73%	3.22%	0.0009%
Packaging Corp of America	PKG	12,834.88	0.04%	3.65%	3.00%	6.71%	0.0026%
PerkinElmer Inc	PKI	17,047.81	0.05%	0.21%	-3.68%	-3.47%	-0.0018%
Prologis Inc	PLD	92,180.23	0.28%	2.54%	11.90%	14.58%	0.0402%
Philip Morris International Inc	PM	148,025.06	0.44%	5.24%	4.34%	9.68%	0.0428%
PNC Financial Services Group Inc/The	PNC	64,799.59	0.19%	3.80%	12.68%	16.72%	0.0324%
Pentair PLC	PNR	7,318.47	0.02%	1.89%	8.32%	10.28%	0.0022%
Pinnacle West Capital Corp	PNW	8,517.87	0.03%	4.51%	-3.02%	1.43%	0.0004%
Pool Corp	POOL	13,428.87	N/A	1.18%	N/A	N/A	N/A
PPG Industries Inc	PPG	29,839.92	0.09%	1.95%	9.16%	11.20%	0.0100%
PPL Corp	PPL	21,408.26	0.06%	3.09%	54.38%	58.32%	0.0373%
Prudential Financial Inc	PRU	35,676.45	0.11%	5.01%	1.86%	6.92%	0.0074%
Public Storage	PSA	58,074.56	0.17%	2.42%	8.83%	11.35%	0.0197%
Phillips 66	PSX	43,034.82	0.13%	4.34%	17.78%	22.50%	0.0289%
PTC Inc	PTC	13,495.67	0.04%	0.00%	11.73%	11.73%	0.0047%
PVH Corp	PVH	3,766.56	0.01%	0.27%	6.91%	7.19%	0.0008%
Quanta Services Inc	PWR	20,209.15	0.06%	0.20%	15.20%	15.41%	0.0093%
Pioneer Natural Resources Co	PXD	60,435.26	0.18%	13.54%	7.47%	21.51%	0.0388%
PayPal Holdings Inc	PYPL	108,061.12	0.32%	0.00%	14.31%	14.31%	0.0462%
QUALCOMM Inc	QCOM	148,539.21	0.44%	2.27%	16.25%	18.70%	0.0830%
Qorvo Inc	QRVO	9,265.66	0.03%	0.00%	3.58%	3.58%	0.0010%
Royal Caribbean Cruises Ltd	RCL	10,419.16	0.03%	0.00%	-164.40%	-164.40%	-0.0512%
Everest Re Group Ltd	RE	10,603.26	0.03%	2.45%	14.45%	17.08%	0.0054%
Regency Centers Corp	REG	10,410.70	0.03%	4.11%	4.79%	8.99%	0.0028%
Regeneron Pharmaceuticals Inc	REGN	62,283.82	0.19%	0.00%	-4.12%	-4.12%	-0.0077%
Regions Financial Corp	RF	20,248.36	0.06%	3.69%	1.62%	5.34%	0.0032%
Robert Half International Inc	RHI	8,433.45	0.03%	2.23%	-2.03%	0.19%	0.0000%
Raymond James Financial Inc	RJF	22,525.66	0.07%	1.30%	10.30%	11.67%	0.0079%
Ralph Lauren Corp	RL	3,917.87	0.01%	3.28%	4.67%	8.03%	0.0009%
ResMed Inc	RMD	32,201.79	0.10%	0.80%	13.65%	14.51%	0.0140%
Rockwell Automation Inc	ROK	27,351.17	0.08%	1.89%	10.26%	12.25%	0.0100%
Rollins Inc	ROL	16,624.00	0.05%	1.18%	10.30%	11.55%	0.0057%
Roper Technologies Inc	ROP	42,677.51	0.13%	0.62%	12.20%	12.85%	0.0164%
Ross Stores Inc	ROST	30,188.12	0.09%	1.44%	9.70%	11.21%	0.0101%
Republic Services Inc	RSG	45,089.96	0.13%	1.39%	9.69%	11.14%	0.0150%
Raytheon Technologies Corp	RTX	132,517.13	0.40%	2.45%	11.98%	14.58%	0.0577%
SBA Communications Corp	SBAC	35,087.32	0.10%	0.87%	23.80%	24.78%	0.0260%
Signature Bank/New York NY	SBNY	10,972.30	0.03%	1.28%	12.25%	13.61%	0.0045%
Starbucks Corp	SBUX	96,461.92	0.29%	2.33%	10.19%	12.64%	0.0364%
Charles Schwab Corp/The	SCHW	128,972.48	0.39%	1.24%	20.45%	21.82%	0.0840%
SolarEdge Technologies Inc	SEDG	15,353.59	0.05%	0.00%	28.80%	28.80%	0.0132%
Sealed Air Corp	SEE	7,814.66	0.02%	1.49%	6.18%	7.71%	0.0018%
Sherwin-Williams Co/The	SHW	60,156.37	0.18%	1.03%	11.75%	12.84%	0.0231%
SVB Financial Group	SIVB	24,018.01	0.07%	0.00%	7.00%	7.00%	0.0050%
J M Smucker Co/The	SJM	14,916.91	0.04%	2.91%	4.69%	7.67%	0.0034%
Schlumberger NV	SLB	53,958.90	0.16%	1.83%	26.40%	28.48%	0.0459%
Snap-on Inc	SNA	11,604.97	0.03%	2.61%	6.64%	9.33%	0.0032%
Synopsys Inc	SNPS	52,910.26	0.16%	0.00%	17.66%	17.66%	0.0279%
Southern Co/The	SO	81,888.80	0.24%	3.53%	5.37%	8.99%	0.0220%
Simon Property Group Inc	SPG	33,383.36	0.10%	6.86%	6.62%	13.71%	0.0137%
S&P Global Inc	SPGI	117,452.03	0.35%	0.97%	7.00%	8.00%	0.0281%
Sempra Energy	SRE	51,851.72	0.15%	2.78%	5.65%	8.50%	0.0132%
STERIS PLC	STE	20,141.02	N/A	0.93%	N/A	N/A	N/A
State Street Corp	STT	25,126.76	0.08%	3.69%	9.19%	13.04%	0.0098%
Seagate Technology Holdings PLC	STX	13,978.23	0.04%	4.18%	3.65%	7.91%	0.0033%
Constellation Brands Inc	STZ	39,204.38	0.12%	1.30%	9.31%	10.67%	0.0125%
Stanley Black & Decker Inc	SWK	13,022.59	0.04%	3.63%	-9.00%	-5.53%	-0.0022%
Skyworks Solutions Inc	SWKS	15,811.95	0.05%	2.52%	6.23%	8.82%	0.0042%
Synchrony Financial	SYF	15,777.61	0.05%	2.81%	-8.80%	-6.11%	-0.0029%
Stryker Corp	SYK	77,631.47	0.23%	1.35%	9.14%	10.56%	0.0245%
Sysco Corp	SYY	41,612.36	0.12%	2.38%	5.80%	8.25%	0.0103%
AT&T Inc	T	124,990.04	0.37%	6.33%	1.20%	7.57%	0.0283%
Molson Coors Beverage Co	TAP	10,352.91	0.03%	2.94%	3.00%	5.99%	0.0019%
TransDigm Group Inc	TDG	32,562.15	0.10%	0.00%	19.11%	19.11%	0.0186%
Teledyne Technologies Inc	TDY	17,263.19	0.05%	0.00%	8.63%	8.63%	0.0044%

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
Bio-Techne Corp	TECH	13,010.93	0.04%	0.39%	25.60%	26.04%	0.0101%
TE Connectivity Ltd	TEL	40,366.88	0.12%	1.77%	9.83%	11.69%	0.0141%
Teradyne Inc	TER	13,270.03	0.04%	0.52%	8.47%	9.01%	0.0036%
Truist Financial Corp	TFC	62,128.25	0.19%	4.44%	7.75%	12.37%	0.0229%
Teleflex Inc	TFX	10,612.73	0.03%	0.60%	7.73%	8.35%	0.0026%
Target Corp	TGT	73,798.57	0.22%	2.69%	8.04%	10.84%	0.0239%
TJX Cos Inc/The	TJX	72,391.65	0.22%	1.89%	11.05%	13.05%	0.0282%
Thermo Fisher Scientific Inc	TMO	213,650.38	0.64%	0.22%	6.40%	6.63%	0.0423%
T-Mobile US Inc	TMUS	180,531.74	0.54%	0.00%	23.80%	23.80%	0.1283%
Tapestry Inc	TPR	8,377.54	0.03%	3.46%	11.93%	15.59%	0.0039%
Trimble Inc	TRMB	15,664.31	0.05%	0.00%	10.00%	10.00%	0.0047%
T Rowe Price Group Inc	TROW	27,083.04	0.08%	4.00%	-7.69%	-3.84%	-0.0031%
Travelers Cos Inc/The	TRV	38,359.27	0.11%	2.30%	6.15%	8.52%	0.0098%
Tractor Supply Co	TSCO	20,551.65	0.06%	1.99%	10.11%	12.20%	0.0075%
Tesla Inc	TSLA	863,615.67	2.58%	0.00%	9.70%	9.70%	0.2502%
Tyson Foods Inc	TSN	21,831.33	0.07%	2.44%	0.65%	3.10%	0.0020%
Trane Technologies PLC	TT	35,700.64	0.11%	1.74%	10.77%	12.60%	0.0134%
Take-Two Interactive Software Inc	TTWO	20,429.65	0.06%	0.00%	35.79%	35.79%	0.0218%
Twitter Inc	TWTR	29,653.28	N/A	0.00%	N/A	N/A	N/A
Texas Instruments Inc	TXN	150,953.53	0.45%	2.78%	8.25%	11.15%	0.0503%
Textron Inc	TXT	13,195.37	0.04%	0.13%	12.51%	12.65%	0.0050%
Tyler Technologies Inc	TYL	15,447.76	0.05%	0.00%	14.80%	14.80%	0.0068%
United Airlines Holdings Inc	UAL	11,438.78	0.03%	0.00%	-768.31%	-768.31%	-0.2625%
UDR Inc	UDR	14,579.30	0.04%	3.39%	6.62%	10.12%	0.0044%
Universal Health Services Inc	UHS	6,429.75	0.02%	0.82%	5.65%	6.49%	0.0012%
Ulta Beauty Inc	ULTA	21,506.16	0.06%	0.00%	11.64%	11.64%	0.0075%
UnitedHealth Group Inc	UNH	485,772.45	1.45%	1.27%	12.35%	13.70%	0.1988%
Union Pacific Corp	UNP	140,201.78	0.42%	2.32%	10.45%	12.89%	0.0540%
United Parcel Service Inc	UPS	142,352.92	0.43%	3.13%	5.21%	8.42%	0.0358%
United Rentals Inc	URI	20,438.42	0.06%	0.00%	15.09%	15.09%	0.0092%
US Bancorp	USB	67,766.61	0.20%	4.03%	2.40%	6.48%	0.0131%
Visa Inc	V	324,893.83	0.97%	0.75%	17.68%	18.50%	0.1795%
VF Corp	VFC	16,103.12	0.05%	4.83%	5.12%	10.07%	0.0048%
VICI Properties Inc	VICI	31,772.44	0.09%	4.36%	5.55%	10.04%	0.0095%
Valero Energy Corp	VLO	46,141.77	0.14%	3.35%	33.00%	36.90%	0.0509%
Vulcan Materials Co	VMC	22,126.69	0.07%	0.96%	15.42%	16.46%	0.0109%
Vornado Realty Trust	VNO	5,028.34	0.02%	8.09%	-24.06%	-16.95%	-0.0025%
Verisk Analytics Inc	VRSK	29,376.63	0.09%	0.66%	10.18%	10.88%	0.0095%
VeriSign Inc	VRSN	19,549.11	0.06%	0.00%	8.60%	8.60%	0.0050%
Vertex Pharmaceuticals Inc	VRTX	72,259.89	0.22%	0.00%	28.54%	28.54%	0.0616%
Ventas Inc	VTR	19,130.26	0.06%	3.76%	6.63%	10.52%	0.0060%
Viatris Inc	VTRS	11,580.15	0.03%	5.03%	-1.88%	3.10%	0.0011%
Verizon Communications Inc	VZ	175,590.08	0.52%	6.12%	0.72%	6.87%	0.0360%
Westinghouse Air Brake Technologies	WAB	15,941.34	0.05%	0.68%	11.12%	11.84%	0.0056%
Waters Corp	WAT	17,878.97	0.05%	0.00%	10.43%	10.43%	0.0056%
Walgreens Boots Alliance Inc	WBA	30,300.85	N/A	5.48%	N/A	N/A	N/A
Warner Bros Discovery Inc	WBD	32,141.33	0.10%	0.00%	4.41%	4.41%	0.0042%
Western Digital Corp	WDC	13,290.47	0.04%	0.00%	-7.46%	-7.46%	-0.0030%
WEC Energy Group Inc	WEC	32,533.97	0.10%	2.82%	6.39%	9.30%	0.0090%
Welltower Inc	WELL	35,517.31	0.11%	3.18%	25.38%	28.96%	0.0307%
Wells Fargo & Co	WFC	165,794.22	0.50%	2.75%	5.66%	8.48%	0.0420%
Whirlpool Corp	WHR	8,535.95	0.03%	4.47%	-0.54%	3.92%	0.0010%
Waste Management Inc	WM	69,866.18	0.21%	1.54%	13.06%	14.70%	0.0307%
Williams Cos Inc/The	WMB	41,466.58	0.12%	5.00%	7.10%	12.27%	0.0152%
Walmart Inc	WMT	363,339.43	1.09%	1.69%	7.17%	8.92%	0.0968%
W R Berkley Corp	WRB	17189.6904	0.05%	0.62%	9.00%	9.65%	0.0050%
Westrock Co	WRK	10,321.96	0.03%	2.46%	14.58%	17.22%	0.0053%
West Pharmaceutical Services Inc	WST	21,969.30	0.07%	0.24%	27.22%	27.50%	0.0180%
Willis Towers Watson PLC	WTW	22,744.27	0.07%	1.59%	5.26%	6.89%	0.0047%
Weyerhaeuser Co	WY	25,289.16	N/A	2.11%	N/A	N/A	N/A
Wynn Resorts Ltd	WYNN	6,890.90	N/A	0.00%	N/A	N/A	N/A
Xcel Energy Inc	XEL	40,614.08	0.12%	2.63%	6.68%	9.39%	0.0114%
Exxon Mobil Corp	XOM	398,384.33	1.19%	3.68%	20.87%	24.94%	0.2968%
DENTSPLY SIRONA Inc	XRAY	7,060.36	0.02%	1.53%	5.16%	6.73%	0.0014%
Xylem Inc/NY	XYL	16,414.58	0.05%	1.32%	13.75%	15.16%	0.0074%
Yum! Brands Inc	YUM	31,652.45	0.09%	2.05%	9.54%	11.68%	0.0110%
Zimmer Biomet Holdings Inc	ZBH	22,308.06	0.07%	0.90%	4.46%	5.38%	0.0036%
Zebra Technologies Corp	ZBRA	15,621.94	N/A	0.00%	N/A	N/A	N/A
Zions Bancorp NA	ZION	8,280.42	0.02%	2.98%	0.57%	3.55%	0.0009%
Zoetis Inc	ZTS	73,277.80	0.22%	0.83%	10.86%	11.73%	0.0257%
		33,480,459.50					12.65%

[1] Equals sum of Col. [7]
[2] Source: Bloomberg Professional
[3] Equals weight in S&P 500 based on market capitalization
[4] Source: Bloomberg Professional
[5] Source: Bloomberg Professional
[6] Equals ([4] x (1 + (0.5 x [5]))) + [5]
[7] Equals Col. [3] x Col. [6]

Expected Market Return
Market DCF Method Based - Value Line EPS Growth

[1]
S&P 500 Est. Required Market Return
13.74%

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
Agilent Technologies Inc	A	37,962.00	0.12%	0.65%	12.00%	12.69%	0.0149%
American Airlines Group Inc	AAL	8,441.50	0.03%	0.00%	14.50%	14.50%	0.0038%
Advance Auto Parts Inc	AAP	10,138.30	0.03%	3.56%	16.00%	19.84%	0.0062%
Apple Inc	AAPL	2,526,643.63	7.83%	0.59%	5.50%	6.10%	0.4775%
AbbVie Inc	ABBV	237,738.19	0.74%	4.19%	4.50%	8.79%	0.0647%
AmerisourceBergen Corp	ABC	30,375.73	0.09%	1.26%	7.00%	8.30%	0.0078%
ABIOMED Inc	ABMD	11,787.13	0.04%	0.00%	10.00%	10.00%	0.0037%
Abbott Laboratories	ABT	179,762.73	0.56%	1.83%	8.00%	9.90%	0.0552%
Accenture PLC	ACN	191,591.67	0.59%	1.35%	8.50%	9.90%	0.0588%
Adobe Inc	ADBE	174,769.92	0.54%	0.00%	6.00%	6.00%	0.0325%
Analog Devices Inc	ADI	77,938.24	0.24%	2.01%	14.00%	16.15%	0.0390%
Archer-Daniels-Midland Co	ADM	49,267.79	0.15%	1.82%	13.00%	14.94%	0.0228%
Automatic Data Processing Inc	ADP	101,556.51	0.31%	1.70%	10.00%	11.79%	0.0371%
Autodesk Inc	ADSK	43,547.39	0.13%	0.00%	14.00%	14.00%	0.0189%
Ameren Corp	AEE	23,904.48	0.07%	2.55%	7.00%	9.64%	0.0071%
American Electric Power Co Inc	AEP	51,476.15	0.16%	3.11%	6.50%	9.71%	0.0155%
AES Corp/The	AES	16,998.92	0.05%	2.48%	14.50%	17.16%	0.0090%
Aflac Inc	AFL	37,548.45	0.12%	2.69%	9.00%	11.81%	0.0137%
American International Group Inc	AIG	39,351.53	N/A	2.47%	N/A	N/A	N/A
Assurant Inc	AIZ	8,433.09	N/A	1.72%	N/A	N/A	N/A
Arthur J Gallagher & Co	AJG	38,190.71	0.12%	1.12%	17.50%	18.72%	0.0221%
Akamai Technologies Inc	AKAM	14,350.64	0.04%	0.00%	10.00%	10.00%	0.0044%
Albemarle Corp	ALB	31,385.89	0.10%	0.59%	21.50%	22.15%	0.0215%
Align Technology Inc	ALGN	19,034.92	0.06%	0.00%	17.00%	17.00%	0.0100%
Alaska Air Group Inc	ALK	5,521.88	0.02%	0.00%	6.50%	6.50%	0.0011%
Allstate Corp/The	ALL	32,570.67	0.10%	2.82%	13.00%	16.00%	0.0161%
Allegion plc	ALLE	8,353.39	0.03%	1.72%	10.00%	11.81%	0.0031%
Applied Materials Inc	AMAT	80,929.27	0.25%	1.11%	5.00%	6.13%	0.0154%
Amcor PLC	AMCR	17,883.13	0.06%	4.00%	15.00%	19.30%	0.0107%
Advanced Micro Devices Inc	AMD	137,007.42	N/A	0.00%	N/A	N/A	N/A
AMETEK Inc	AME	27,586.09	0.09%	0.73%	4.50%	5.25%	0.0045%
Amgen Inc	AMGN	128,543.92	0.40%	3.23%	14.00%	17.46%	0.0695%
Ameriprise Financial Inc	AMP	28,989.57	0.09%	1.87%	12.00%	13.98%	0.0126%
American Tower Corp	AMT	118,282.38	0.37%	2.25%	5.50%	7.81%	0.0286%
Amazon.com Inc	AMZN	1,291,476.35	4.00%	0.00%	3.00%	3.00%	0.1200%
Arista Networks Inc	ANET	36,477.09	0.11%	0.00%	8.00%	8.00%	0.0090%
ANSYS Inc	ANSS	21,619.23	0.07%	0.00%	6.50%	6.50%	0.0044%
Aon PLC	AON	58,903.19	0.18%	0.80%	6.50%	7.33%	0.0134%
A O Smith Corp	AOS	7,252.53	0.02%	1.98%	6.00%	8.04%	0.0018%
APA Corp	APA	12,770.59	0.04%	1.28%	26.50%	27.95%	0.0111%
Air Products and Chemicals Inc	APD	55,993.16	0.17%	2.57%	12.00%	14.72%	0.0255%
Amphenol Corp	APH	43,737.70	0.14%	1.09%	-1.00%	0.08%	0.0001%
Aptiv PLC	APTV	25,313.27	0.08%	0.00%	27.50%	27.50%	0.0216%
Alexandria Real Estate Equities Inc	ARE	25,029.97	0.08%	3.08%	7.50%	10.69%	0.0083%
Atmos Energy Corp	ATO	15,860.95	0.05%	2.40%	7.50%	9.99%	0.0049%
Activision Blizzard Inc	ATVI	61,403.28	0.19%	0.60%	3.50%	4.11%	0.0078%
AvalonBay Communities Inc	AVB	28,093.45	N/A	3.17%	N/A	N/A	N/A
Broadcom Inc	AVGO	201,549.60	0.62%	3.29%	23.00%	26.66%	0.1665%
Avery Dennison Corp	AVY	14,920.23	0.05%	1.63%	12.00%	13.73%	0.0063%
American Water Works Co Inc	AWK	26,986.13	0.08%	1.76%	3.00%	4.79%	0.0040%
American Express Co	AXP	113,961.70	0.35%	1.37%	10.00%	11.44%	0.0404%
AutoZone Inc	AZO	41,299.16	0.13%	0.00%	14.00%	14.00%	0.0179%
Boeing Co/The	BA	95,158.21	N/A	0.00%	N/A	N/A	N/A
Bank of America Corp	BAC	270,064.38	0.84%	2.62%	8.50%	11.23%	0.0939%
Ball Corp	BALL	17,541.47	0.05%	1.43%	21.50%	23.09%	0.0125%
Baxter International Inc	BAX	28,937.49	0.09%	2.02%	10.00%	12.12%	0.0109%
Bath & Body Works Inc	BBWI	8,522.44	0.03%	2.14%	11.50%	13.77%	0.0036%
Best Buy Co Inc	BBY	15,917.13	0.05%	4.98%	9.50%	14.72%	0.0073%
Becton Dickinson and Co	BDX	71,988.92	0.22%	1.38%	4.50%	5.91%	0.0132%
Franklin Resources Inc	BEN	12,992.17	0.04%	4.45%	9.00%	13.65%	0.0055%
Brown-Forman Corp	BF/B	22,531.47	0.07%	1.04%	14.00%	15.11%	0.0105%
Biogen Inc	BIIB	28,352.18	0.09%	0.00%	3.50%	3.50%	0.0031%
Bio-Rad Laboratories Inc	BIO	11,948.48	N/A	0.00%	N/A	N/A	N/A
Bank of New York Mellon Corp/The	BK	33,560.52	0.10%	3.56%	6.00%	9.67%	0.0101%
Booking Holdings Inc	BKNG	74,480.91	0.23%	0.00%	23.00%	23.00%	0.0531%
Baker Hughes Co	BKR	25,556.91	0.08%	2.85%	11.50%	14.51%	0.0115%
BlackRock Inc	BLK	100,470.95	0.31%	2.93%	9.00%	12.06%	0.0375%
Bristol-Myers Squibb Co	BMY	143,937.54	N/A	3.20%	N/A	N/A	N/A
Broadridge Financial Solutions Inc	BR	20,078.58	0.06%	1.69%	3.50%	5.22%	0.0032%
Berkshire Hathaway Inc	BRK/B	365,356.18	1.13%	0.00%	6.00%	6.00%	0.0679%
Brown & Brown Inc	BRO	17,805.90	0.06%	0.65%	8.00%	8.68%	0.0048%
Boston Scientific Corp	BSX	57,708.36	0.18%	0.00%	16.00%	16.00%	0.0286%
BorgWarner Inc	BWA	8,928.53	0.03%	1.80%	-6.00%	-4.25%	-0.0012%
Boston Properties Inc	BXP	12,449.46	0.04%	4.94%	12.50%	17.74%	0.0068%
Citigroup Inc	C	94,530.82	0.29%	4.18%	5.50%	9.79%	0.0287%
Conagra Brands Inc	CAG	16,523.99	0.05%	3.84%	4.00%	7.92%	0.0041%
Cardinal Health Inc	CAH	19,272.05	N/A	2.80%	N/A	N/A	N/A

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
Carrier Global Corp	CARR	32,922.73	N/A	1.53%	N/A	N/A	N/A
Caterpillar Inc	CAT	97,510.07	0.30%	2.60%	8.00%	10.70%	0.0323%
Chubb Ltd	CB	78,955.03	0.24%	1.76%	10.00%	11.84%	0.0290%
Cboe Global Markets Inc	CBOE	12,512.13	0.04%	1.70%	8.00%	9.76%	0.0038%
CBRE Group Inc	CBRE	25,359.66	0.08%	0.00%	8.50%	8.50%	0.0067%
Crown Castle Inc	CCI	73,976.05	0.23%	3.44%	12.00%	15.65%	0.0359%
Carnival Corp	CCL	10,375.31	N/A	0.00%	N/A	N/A	N/A
Ceridian HCM Holding Inc	CDAY	9,128.32	N/A	0.00%	N/A	N/A	N/A
Cadence Design Systems Inc	CDNS	47,590.39	0.15%	0.00%	14.00%	14.00%	0.0206%
CDW Corp/DE	CDW	23,085.98	0.07%	1.17%	8.50%	9.72%	0.0070%
Celanese Corp	CE	12,011.57	0.04%	2.45%	4.50%	7.01%	0.0026%
Constellation Energy Corp	CEG	26,652.52	0.08%	0.69%	8.50%	9.22%	0.0076%
CF Industries Holdings Inc	CF	20,615.54	0.06%	1.55%	7.50%	9.10%	0.0058%
Citizens Financial Group Inc	CFG	18,180.19	0.06%	4.58%	25.00%	30.15%	0.0170%
Church & Dwight Co Inc	CHD	20,333.91	0.06%	1.25%	6.00%	7.29%	0.0046%
CH Robinson Worldwide Inc	CHRW	14,141.24	0.04%	1.93%	24.50%	26.66%	0.0117%
Charter Communications Inc	CHTR	66,291.07	0.21%	0.00%	26.50%	26.50%	0.0544%
Cigna Corp	CI	86,485.13	0.27%	1.58%	10.00%	11.66%	0.0312%
Cincinnati Financial Corp	CINF	15,435.94	0.05%	2.85%	5.00%	7.92%	0.0038%
Colgate-Palmolive Co	CL	65,236.53	0.20%	2.40%	6.50%	8.98%	0.0181%
Clorox Co/The	CLX	17,777.35	0.06%	3.27%	4.50%	7.84%	0.0043%
Comerica Inc	CMA	10,504.85	0.03%	3.39%	9.00%	12.54%	0.0041%
Comcast Corp	CMCSA	159,373.30	0.49%	2.98%	13.50%	16.69%	0.0824%
CME Group Inc	CME	70,308.69	0.22%	2.04%	10.00%	12.15%	0.0265%
Chipotle Mexican Grill Inc	CMG	44,335.15	0.14%	0.00%	52.00%	52.00%	0.0714%
Cummins Inc	CMI	30,365.45	0.09%	2.92%	8.50%	11.54%	0.0109%
CMS Energy Corp	CMS	19,599.84	0.06%	2.72%	6.50%	9.31%	0.0057%
Centene Corp	CNC	51,293.68	0.16%	0.00%	10.00%	10.00%	0.0159%
CenterPoint Energy Inc	CNP	19,845.99	0.06%	2.28%	6.50%	8.86%	0.0054%
Capital One Financial Corp	COF	40,615.62	0.13%	2.27%	8.50%	10.86%	0.0137%
Cooper Cos Inc/The	COO	14,181.14	0.04%	0.02%	18.50%	18.52%	0.0081%
ConocoPhillips	COP	139,333.46	0.43%	1.68%	3.00%	4.71%	0.0203%
Costco Wholesale Corp	COST	231,270.98	0.72%	0.69%	5.00%	5.71%	0.0409%
Campbell Soup Co	CPB	15,143.02	0.05%	2.94%	5.00%	8.01%	0.0038%
Copart Inc	CPRT	28,437.57	0.09%	0.00%	8.50%	8.50%	0.0075%
Camden Property Trust	CPT	13,689.91	0.04%	2.93%	7.00%	10.03%	0.0043%
Charles River Laboratories Internationa	CRL	10,439.63	0.03%	0.00%	5.50%	5.50%	0.0018%
Salesforce Inc	CRM	156,120.00	0.48%	0.00%	16.50%	16.50%	0.0798%
Cisco Systems Inc	CSCO	185,183.91	0.57%	3.40%	8.00%	11.53%	0.0662%
CSX Corp	CSX	67,770.28	0.21%	1.26%	10.00%	11.33%	0.0238%
Cintas Corp	CTAS	41,515.58	0.13%	1.13%	14.00%	15.21%	0.0196%
Catalent Inc	CTLT	15,830.85	0.05%	0.00%	21.00%	21.00%	0.0103%
Coterra Energy Inc	CTRA	24,591.84	N/A	8.41%	N/A	N/A	N/A
Cognizant Technology Solutions Corp	CTSH	32,708.48	0.10%	1.71%	10.00%	11.80%	0.0120%
Corteva Inc	CTVA	44,556.41	0.14%	0.98%	16.50%	17.56%	0.0242%
Citrix Systems Inc	CTXS	13,039.97	0.04%	0.00%	8.00%	8.00%	0.0032%
CVS Health Corp	CVS	128,854.17	N/A	2.24%	N/A	N/A	N/A
Chevron Corp	CVX	309,392.18	0.96%	3.59%	44.00%	48.38%	0.4637%
Caesars Entertainment Inc	CZR	9,245.66	N/A	0.00%	N/A	N/A	N/A
Dominion Energy Inc	D	68,098.75	0.21%	3.26%	5.00%	8.35%	0.0176%
Delta Air Lines Inc	DAL	19,922.02	N/A	0.00%	N/A	N/A	N/A
DuPont de Nemours Inc	DD	27,870.19	0.09%	2.37%	6.00%	8.44%	0.0073%
Deere & Co	DE	111,633.55	0.35%	1.24%	15.00%	16.33%	0.0565%
Discover Financial Services	DFS	27,450.95	0.09%	2.39%	14.00%	16.56%	0.0141%
Dollar General Corp	DG	53,555.30	0.17%	0.93%	10.00%	10.97%	0.0182%
Quest Diagnostics Inc	DGX	14,611.90	0.05%	2.11%	15.50%	17.77%	0.0080%
DR Horton Inc	DHI	24,723.27	0.08%	1.26%	4.50%	5.79%	0.0044%
Danaher Corp	DHR	196,344.68	0.61%	0.37%	17.00%	17.40%	0.1058%
Walt Disney Co/The	DIS	204,328.34	0.63%	0.00%	30.50%	30.50%	0.1930%
DISH Network Corp	DISH	5,063.94	0.02%	0.00%	2.50%	2.50%	0.0004%
Digital Realty Trust Inc	DLR	35,532.25	0.11%	3.95%	15.00%	19.24%	0.0212%
Dollar Tree Inc	DLTR	30,383.77	0.09%	0.00%	12.00%	12.00%	0.0113%
Dover Corp	DOV	17,937.88	0.06%	1.62%	9.00%	10.69%	0.0059%
Dow Inc	DOW	36,626.52	0.11%	5.49%	19.50%	25.53%	0.0290%
Domino's Pizza Inc	DPZ	13,344.20	0.04%	1.18%	21.00%	22.31%	0.0092%
Duke Realty Corp	DRE	22,656.84	0.07%	1.90%	-2.50%	-0.62%	-0.0004%
Darden Restaurants Inc	DRI	15,164.37	0.05%	3.91%	12.00%	16.15%	0.0076%
DTE Energy Co	DTE	25,252.33	0.08%	2.72%	10.00%	12.85%	0.0101%
Duke Energy Corp	DUK	82,320.70	0.25%	3.76%	5.00%	8.85%	0.0226%
DaVita Inc	DVA	7,786.98	0.02%	0.00%	11.50%	11.50%	0.0028%
Devon Energy Corp	DVN	46,241.98	0.14%	8.78%	10.50%	19.74%	0.0283%
DXC Technology Co	DXC	5,696.35	0.02%	0.00%	9.00%	9.00%	0.0016%
Dexcom Inc	DXCM	32,274.17	N/A	0.00%	N/A	N/A	N/A
Electronic Arts Inc	EA	35,275.57	0.11%	0.60%	13.00%	13.64%	0.0149%
eBay Inc	EBAY	24,243.61	0.08%	1.99%	12.50%	14.62%	0.0110%
Ecolab Inc	ECL	46,689.75	0.14%	1.25%	10.50%	11.81%	0.0171%
Consolidated Edison Inc	ED	34,656.84	0.11%	3.23%	4.00%	7.30%	0.0078%
Equifax Inc	EFX	23,103.00	0.07%	0.83%	10.00%	10.87%	0.0078%
Edison International	EIX	25,849.65	0.08%	4.13%	7.50%	11.79%	0.0094%
Estee Lauder Cos Inc/The	EL	58,853.87	0.18%	0.94%	11.00%	12.00%	0.0219%
Elevance Health Inc	ELV	116,426.89	0.36%	1.06%	12.50%	13.62%	0.0491%
Eastman Chemical Co	EMN	11,175.62	0.03%	3.34%	3.00%	6.39%	0.0022%
Emerson Electric Co	EMR	48,332.86	0.15%	2.52%	10.00%	12.65%	0.0189%
Enphase Energy Inc	ENPH	38,800.30	0.12%	0.00%	26.50%	26.50%	0.0318%
EOG Resources Inc	EOG	71,087.26	0.22%	2.47%	18.00%	20.70%	0.0456%
EPAM Systems Inc	EPAM	24,467.03	0.08%	0.00%	20.50%	20.50%	0.0155%
Equinix Inc	EQIX	59,869.97	0.19%	1.89%	-3.50%	-1.65%	-0.0031%
Equity Residential	EQR	27,524.32	0.09%	3.42%	2.50%	5.96%	0.0051%
Eversource Energy	ES	31,072.47	0.10%	2.84%	6.00%	8.93%	0.0086%

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
Essex Property Trust Inc	ESS	17,261.77	0.05%	3.32%	-4.00%	-0.75%	-0.0004%
Eaton Corp PLC	ETN	54,423.71	0.17%	2.37%	12.00%	14.51%	0.0245%
Entergy Corp	ETR	23,454.10	0.07%	3.50%	4.00%	7.57%	0.0055%
Etsy Inc	ETSY	13,371.18	0.04%	0.00%	12.50%	12.50%	0.0052%
Evergy Inc	EVRG	15,726.13	N/A	3.34%	N/A	N/A	N/A
Edwards Lifesciences Corp	EW	55,856.86	0.17%	0.00%	10.50%	10.50%	0.0182%
Exelon Corp	EXC	43,548.05	N/A	3.07%	N/A	N/A	N/A
Expeditors International of Washington	EXPD	16,832.29	0.05%	1.30%	11.50%	12.88%	0.0067%
Expedia Group Inc	EXPE	15,606.39	N/A	0.00%	N/A	N/A	N/A
Extra Space Storage Inc	EXR	26,612.33	0.08%	3.02%	4.00%	7.08%	0.0058%
Ford Motor Co	F	60,188.63	0.19%	3.94%	33.50%	38.10%	0.0710%
Diamondback Energy Inc	FANG	23,695.18	N/A	9.15%	N/A	N/A	N/A
Fastenal Co	FAST	28,923.59	0.09%	2.46%	10.00%	12.59%	0.0113%
Fortune Brands Home & Security Inc	FBHS	7,943.94	0.02%	1.82%	10.00%	11.91%	0.0029%
Freeport-McMoRan Inc	FCX	42,306.39	0.13%	2.03%	29.00%	31.32%	0.0410%
FactSet Research Systems Inc	FDS	16,458.25	0.05%	0.82%	8.50%	9.36%	0.0048%
FedEx Corp	FDX	54,791.21	0.17%	2.18%	13.00%	15.32%	0.0260%
FirstEnergy Corp	FE	22,598.67	0.07%	3.94%	6.00%	10.06%	0.0070%
F5 Inc	FFIV	9,354.81	0.03%	0.00%	22.00%	22.00%	0.0064%
Fidelity National Information Services I	FIS	55,551.04	0.17%	2.06%	6.50%	8.62%	0.0148%
Fiserv Inc	FISV	64,719.50	0.20%	0.00%	6.00%	6.00%	0.0120%
Fifth Third Bancorp	FITB	23,433.39	0.07%	3.51%	11.00%	14.71%	0.0107%
FleetCor Technologies Inc	FLT	15,942.51	0.05%	0.00%	10.50%	10.50%	0.0052%
FMC Corp	FMC	13,613.65	0.04%	1.96%	11.00%	13.07%	0.0055%
Fox Corp	FOX	7,672.31	0.02%	1.58%	11.00%	12.67%	0.0030%
Fox Corp	FOXA	10,475.38	0.03%	1.46%	9.00%	10.53%	0.0034%
First Republic Bank/CA	FRC	27,741.62	0.09%	0.71%	10.50%	11.25%	0.0097%
Federal Realty Investment Trust	FRT	8,193.55	0.03%	4.27%	2.50%	6.82%	0.0017%
Fortinet Inc	FTNT	38,393.09	0.12%	0.00%	15.00%	15.00%	0.0178%
Fortive Corp	FTV	22,526.29	0.07%	0.44%	12.00%	12.47%	0.0087%
General Dynamics Corp	GD	62,783.14	0.19%	2.20%	8.50%	10.80%	0.0210%
General Electric Co	GE	80,530.85	0.25%	0.44%	14.00%	14.47%	0.0361%
Gilead Sciences Inc	GILD	79,551.20	0.25%	4.60%	9.00%	13.81%	0.0340%
General Mills Inc	GIS	45,750.53	0.14%	2.81%	3.50%	6.36%	0.0090%
Globe Life Inc	GL	9,470.00	0.03%	0.85%	20.00%	20.94%	0.0061%
Corning Inc	GLW	29,011.31	0.09%	3.15%	17.50%	20.92%	0.0188%
General Motors Co	GM	55,712.05	0.17%	0.94%	10.00%	10.99%	0.0190%
Generac Holdings Inc	GNRC	14,068.99	0.04%	0.00%	15.00%	15.00%	0.0065%
Alphabet Inc	GOOG	672,691.45	N/A	0.00%	N/A	N/A	N/A
Alphabet Inc	GOOGL	648,887.12	2.01%	0.00%	17.50%	17.50%	0.3517%
Genuine Parts Co	GPC	22,064.65	0.07%	2.29%	8.50%	10.89%	0.0074%
Global Payments Inc	GPN	34,431.96	0.11%	0.80%	17.00%	17.87%	0.0191%
Garmin Ltd	GRMN	17,065.74	0.05%	3.30%	8.00%	11.43%	0.0060%
Goldman Sachs Group Inc/The	GS	113,558.90	0.35%	3.01%	15.50%	18.74%	0.0659%
WW Grainger Inc	GWW	28,230.35	0.09%	1.24%	7.00%	8.28%	0.0072%
Halliburton Co	HAL	27,326.22	0.08%	1.59%	31.00%	32.84%	0.0278%
Hasbro Inc	HAS	10,884.33	0.03%	3.55%	13.50%	17.29%	0.0058%
Huntington Bancshares Inc/OH	HBAN	19,325.40	0.06%	4.63%	11.50%	16.39%	0.0098%
HCA Healthcare Inc	HCA	56,793.64	0.18%	1.13%	12.50%	13.70%	0.0241%
Home Depot Inc/The	HD	295,263.05	0.91%	2.64%	9.00%	11.75%	0.1075%
Hess Corp	HES	37,395.30	N/A	1.24%	N/A	N/A	N/A
Hartford Financial Services Group Inc/	HIG	20,781.26	0.06%	2.39%	11.00%	13.53%	0.0087%
Huntington Ingalls Industries Inc	HII	9,198.43	N/A	2.05%	N/A	N/A	N/A
Hilton Worldwide Holdings Inc	HLT	34,933.19	N/A	0.47%	N/A	N/A	N/A
Hologic Inc	HOLX	16,866.56	0.05%	0.00%	14.50%	14.50%	0.0076%
Honeywell International Inc	HON	127,563.58	0.40%	2.07%	11.00%	13.18%	0.0521%
Hewlett Packard Enterprise Co	HPE	17,516.80	0.05%	3.53%	7.50%	11.16%	0.0061%
HP Inc	HPQ	29,690.10	0.09%	3.48%	12.50%	16.20%	0.0149%
Hormel Foods Corp	HRL	27,455.70	0.09%	2.07%	6.00%	8.13%	0.0069%
Henry Schein Inc	HSIC	9,992.20	0.03%	0.00%	12.50%	12.50%	0.0039%
Host Hotels & Resorts Inc	HST	12,703.65	N/A	2.70%	N/A	N/A	N/A
Hershey Co/The	HSY	32,997.28	0.10%	1.84%	6.50%	8.40%	0.0086%
Humana Inc	HUM	60,971.19	0.19%	0.65%	11.00%	11.69%	0.0221%
Howmet Aerospace Inc	HWM	14,717.73	0.05%	0.23%	12.50%	12.74%	0.0058%
International Business Machines Corp	IBM	116,013.47	0.36%	5.14%	3.00%	8.22%	0.0295%
Intercontinental Exchange Inc	ICE	56,320.49	0.17%	1.51%	13.00%	14.61%	0.0255%
IDEXX Laboratories Inc	IDXX	28,940.76	0.09%	0.00%	14.00%	14.00%	0.0126%
IDEX Corp	IEX	15,186.53	0.05%	1.19%	12.50%	13.77%	0.0065%
International Flavors & Fragrances Inc	IFF	28,166.54	0.09%	2.93%	7.50%	10.54%	0.0092%
Illumina Inc	ILMN	31,717.97	0.10%	0.00%	6.50%	6.50%	0.0064%
Incyte Corp	INCY	15,665.82	0.05%	0.00%	57.00%	57.00%	0.0277%
Intel Corp	INTC	131,063.52	0.41%	4.57%	6.00%	10.71%	0.0435%
Intuit Inc	INTU	121,795.21	0.38%	0.72%	12.00%	12.77%	0.0482%
International Paper Co	IP	15,067.15	0.05%	4.44%	12.50%	17.22%	0.0080%
Interpublic Group of Cos Inc/The	IPG	10,808.01	0.03%	4.20%	10.00%	14.41%	0.0048%
IQVIA Holdings Inc	IQV	39,662.79	0.12%	0.00%	14.50%	14.50%	0.0178%
Ingersoll Rand Inc	IR	19,098.68	0.06%	0.17%	7.00%	7.17%	0.0042%
Iron Mountain Inc	IRM	15,292.94	0.05%	4.70%	6.50%	11.36%	0.0054%
Intuitive Surgical Inc	ISRG	73,472.02	0.23%	0.00%	6.50%	6.50%	0.0148%
Gartner Inc	IT	22,567.10	0.07%	0.00%	15.50%	15.50%	0.0108%
Illinois Tool Works Inc	ITW	60,323.65	0.19%	2.69%	11.00%	13.84%	0.0259%
Invesco Ltd	IVZ	7,492.86	N/A	4.55%	N/A	N/A	N/A
Jacobs Solutions Inc	J	15,897.16	0.05%	0.74%	12.50%	13.28%	0.0065%
JB Hunt Transport Services Inc	JBHT	18,065.54	0.06%	0.92%	11.50%	12.47%	0.0070%
Johnson Controls International plc	JCI	37,292.17	0.12%	2.59%	8.00%	10.69%	0.0123%
Jack Henry & Associates Inc	JKHY	14,011.96	0.04%	1.02%	26.50%	27.65%	0.0120%
Johnson & Johnson	JNJ	424,191.90	1.31%	2.80%	8.00%	10.91%	0.1434%
Juniper Networks Inc	JNPR	9,168.55	0.03%	2.96%	8.50%	11.58%	0.0033%
JPMorgan Chase & Co	JPM	333,521.41	1.03%	3.52%	5.00%	8.61%	0.0889%

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
Kellogg Co	K	24,739.82	0.08%	3.24%	12.00%	15.44%	0.0118%
Keurig Dr Pepper Inc	KDP	53,982.19	0.17%	1.97%	9.50%	11.56%	0.0193%
KeyCorp	KEY	16,498.74	0.05%	4.41%	16.50%	21.27%	0.0109%
Keysight Technologies Inc	KEYS	29,302.88	0.09%	0.00%	9.50%	9.50%	0.0086%
Kraft Heinz Co/The	KHC	45,831.46	0.14%	4.28%	9.50%	13.98%	0.0198%
Kimco Realty Corp	KIM	13,037.60	0.04%	4.17%	5.50%	9.79%	0.0040%
KLA Corp	KLAC	48,799.01	0.15%	1.51%	49.50%	51.39%	0.0777%
Kimberly-Clark Corp	KMB	43,053.56	0.13%	3.64%	9.00%	12.80%	0.0171%
Kinder Morgan Inc	KMI	41,274.98	0.13%	6.06%	19.00%	25.63%	0.0328%
CarMax Inc	KMX	14,076.64	0.04%	0.00%	18.50%	18.50%	0.0081%
Coca-Cola Co/The	KO	266,872.86	0.83%	2.85%	7.50%	10.46%	0.0865%
Kroger Co/The	KR	34,303.95	0.11%	2.17%	9.00%	11.27%	0.0120%
Loews Corp	L	13,326.78	0.04%	0.45%	11.50%	11.98%	0.0049%
Leidos Holdings Inc	LDOS	12,978.22	0.04%	1.51%	8.50%	10.08%	0.0041%
Lennar Corp	LEN	19,748.74	0.06%	1.94%	5.50%	7.49%	0.0046%
Laboratory Corp of America Holdings	LH	20,364.41	0.06%	1.28%	10.00%	11.34%	0.0072%
L3Harris Technologies Inc	LHX	43,664.84	0.14%	1.96%	18.00%	20.14%	0.0272%
Linde PLC	LIN	140,967.81	0.44%	1.65%	14.00%	15.77%	0.0689%
LKQ Corp	LKQ	14,603.04	0.05%	1.88%	13.00%	15.00%	0.0068%
Eli Lilly & Co	LLY	286,221.22	0.89%	1.30%	9.00%	10.36%	0.0918%
Lockheed Martin Corp	LMT	111,393.01	0.35%	2.67%	10.00%	12.80%	0.0442%
Lincoln National Corp	LNC	7,840.61	0.02%	3.91%	21.50%	25.83%	0.0063%
Alliant Energy Corp	LNT	15,316.52	0.05%	2.80%	6.00%	8.89%	0.0042%
Lowe's Cos Inc	LOW	120,502.89	0.37%	2.16%	18.50%	20.86%	0.0779%
Lam Research Corp	LRCX	59,988.42	0.19%	1.58%	21.50%	23.25%	0.0432%
Lumen Technologies Inc	LUMN	10,311.98	0.03%	10.04%	3.50%	13.72%	0.0044%
Southwest Airlines Co	LUV	21,775.95	0.07%	0.00%	6.50%	6.50%	0.0044%
Las Vegas Sands Corp	LVS	28,755.19	0.09%	0.00%	11.00%	11.00%	0.0098%
Lamb Weston Holdings Inc	LW	11,430.21	0.04%	1.23%	6.00%	7.27%	0.0026%
LyondellBasell Industries NV	LYB	27,075.10	0.08%	5.73%	3.50%	9.34%	0.0078%
Live Nation Entertainment Inc	LYV	20,780.27	0.06%	0.00%	27.00%	27.00%	0.0174%
Mastercard Inc	MA	310,965.73	0.96%	0.60%	2.50%	3.11%	0.0300%
Mid-America Apartment Communities I	MAA	19,124.78	0.06%	3.02%	13.50%	16.72%	0.0099%
Marriott International Inc/MD	MAR	49,896.47	0.15%	0.78%	23.00%	23.87%	0.0369%
Masco Corp	MAS	11,472.20	0.04%	2.20%	12.00%	14.33%	0.0051%
McDonald's Corp	MCD	185,606.68	0.57%	2.19%	10.50%	12.80%	0.0736%
Microchip Technology Inc	MCHP	36,049.58	0.11%	1.85%	10.50%	12.44%	0.0139%
McKesson Corp	MCK	52,748.91	0.16%	0.59%	11.50%	12.12%	0.0198%
Moody's Corp	MCO	52,209.42	0.16%	0.98%	7.50%	8.52%	0.0138%
Mondelez International Inc	MDLZ	84,783.21	0.26%	2.49%	9.50%	12.11%	0.0318%
Medtronic PLC	MDT	116,905.73	0.36%	3.09%	9.50%	12.74%	0.0461%
MetLife Inc	MET	51,310.51	0.16%	3.11%	10.00%	13.26%	0.0211%
Meta Platforms Inc	META	371,589.89	1.15%	0.00%	16.00%	16.00%	0.1842%
MGM Resorts International	MGM	12,830.85	0.04%	0.03%	25.00%	25.03%	0.0099%
Mohawk Industries Inc	MHK	7,011.61	0.02%	0.00%	10.50%	10.50%	0.0023%
McCormick & Co Inc/MD	MKC	21,057.18	0.07%	1.76%	17.50%	19.41%	0.0127%
MarketAxess Holdings Inc	MKTX	9,356.93	0.03%	1.13%	12.00%	13.19%	0.0038%
Martin Marietta Materials Inc	MLM	21,688.06	0.07%	0.76%	5.50%	6.28%	0.0042%
Marsh & McLennan Cos Inc	MMC	80,526.53	0.25%	1.46%	11.00%	12.54%	0.0313%
3M Co	MMM	70,830.26	0.22%	4.79%	6.50%	11.45%	0.0251%
Monster Beverage Corp	MNST	46,803.19	0.14%	0.00%	-10.50%	-10.50%	-0.0152%
Altria Group Inc	MO	81,253.13	0.25%	8.33%	5.50%	14.06%	0.0354%
Molina Healthcare Inc	MOH	19,601.20	0.06%	0.00%	13.50%	13.50%	0.0082%
Mosaic Co/The	MOS	18,599.53	0.06%	1.11%	33.00%	34.30%	0.0198%
Marathon Petroleum Corp	MPC	50,236.37	0.16%	2.30%	6.50%	8.88%	0.0138%
Monolithic Power Systems Inc	MPWR	21,203.84	0.07%	0.66%	18.00%	18.72%	0.0123%
Merck & Co Inc	MRK	216,240.78	0.67%	3.23%	8.00%	11.36%	0.0761%
Moderna Inc	MRNA	51,744.02	0.16%	0.00%	-2.50%	-2.50%	-0.0040%
Marathon Oil Corp	MRO	17,339.37	0.05%	1.25%	12.00%	13.33%	0.0072%
Morgan Stanley	MS	146,307.91	0.45%	3.64%	17.50%	21.46%	0.0972%
MSCI Inc	MSCI	36,165.17	0.11%	1.11%	15.50%	16.70%	0.0187%
Microsoft Corp	MSFT	1,950,015.02	6.04%	0.95%	16.50%	17.53%	1.0587%
Motorola Solutions Inc	MSI	40,621.48	0.13%	1.30%	24.00%	25.45%	0.0320%
M&T Bank Corp	MTB	31,923.11	0.10%	2.64%	8.50%	11.25%	0.0111%
Match Group Inc	MTCH	15,997.20	0.05%	0.00%	21.00%	21.00%	0.0104%
Mettler-Toledo International Inc	MTD	27,288.84	0.08%	0.00%	8.50%	8.50%	0.0072%
Micron Technology Inc	MU	62,360.79	0.19%	0.81%	10.00%	10.85%	0.0210%
Norwegian Cruise Line Holdings Ltd	NCLH	5,511.77	0.02%	0.00%	9.50%	9.50%	0.0016%
Nasdaq Inc	NDAQ	29,242.68	0.09%	1.34%	6.00%	7.38%	0.0067%
Nordson Corp	NDSN	12,996.62	0.04%	1.14%	6.00%	7.18%	0.0029%
NextEra Energy Inc	NEE	167,124.10	0.52%	2.00%	10.00%	12.10%	0.0626%
Newmont Corp	NEM	32,826.60	0.10%	5.32%	1.50%	6.86%	0.0070%
Netflix Inc	NFLX	99,418.47	0.31%	0.00%	14.50%	14.50%	0.0447%
NiSource Inc	NI	11,979.67	0.04%	3.19%	24.00%	27.57%	0.0102%
NIKE Inc	NKE	134,515.86	0.42%	1.15%	9.50%	10.70%	0.0446%
NortonLifeLock Inc	NLOK	12,914.86	0.04%	2.21%	11.50%	13.84%	0.0055%
Nielsen Holdings PLC	NLSN	10,017.78	N/A	0.86%	N/A	N/A	N/A
Northrop Grumman Corp	NOC	73,950.31	0.23%	1.45%	6.50%	7.99%	0.0183%
ServiceNow Inc	NOW	87,793.24	0.27%	0.00%	45.50%	45.50%	0.1237%
NRG Energy Inc	NRG	9,706.87	0.03%	3.39%	15.50%	19.15%	0.0058%
Norfolk Southern Corp	NSC	57,104.92	0.18%	2.04%	9.50%	11.64%	0.0206%
NetApp Inc	NTAP	15,678.61	0.05%	2.77%	5.50%	8.35%	0.0041%
Northern Trust Corp	NTRS	19,815.52	0.06%	3.15%	-10.50%	-7.51%	-0.0046%
Nucor Corp	NUE	34,801.70	0.11%	1.50%	11.50%	13.09%	0.0141%
NVIDIA Corp	NVDA	375,840.60	1.16%	0.11%	10.50%	10.61%	0.1235%
NVR Inc	NVR	13,591.82	0.04%	0.00%	14.50%	14.50%	0.0061%
Newell Brands Inc	NWL	7,382.76	N/A	5.15%	N/A	N/A	N/A
News Corp	NWS	3,376.01	N/A	1.16%	N/A	N/A	N/A
News Corp	NWSA	6,524.32	N/A	1.18%	N/A	N/A	N/A

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
NXP Semiconductors NV	NXPI	43,218.38	0.13%	2.05%	23.50%	25.80%	0.0345%
Realty Income Corp	O	42,168.16	0.13%	4.35%	6.00%	10.48%	0.0137%
Old Dominion Freight Line Inc	ODFL	30,336.58	0.09%	0.44%	12.00%	12.47%	0.0117%
Organon & Co	OGN	7,256.03	0.02%	3.93%	11.50%	15.65%	0.0035%
ONEOK Inc	OKE	27,361.36	0.08%	6.11%	6.50%	12.81%	0.0109%
Omnicom Group Inc	OMC	13,704.00	N/A	4.19%	N/A	N/A	N/A
ON Semiconductor Corp	ON	29,793.64	0.09%	0.00%	8.00%	8.00%	0.0074%
Oracle Corp	ORCL	197,604.26	0.61%	1.73%	8.50%	10.30%	0.0630%
O'Reilly Automotive Inc	ORLY	44,140.24	0.14%	0.00%	9.00%	9.00%	0.0123%
Otis Worldwide Corp	OTIS	30,349.16	N/A	1.61%	N/A	N/A	N/A
Occidental Petroleum Corp	OXY	66,135.93	0.20%	0.73%	13.50%	14.28%	0.0293%
Paramount Global	PARA	14,230.97	0.04%	4.10%	8.50%	12.78%	0.0056%
Paycom Software Inc	PAYC	21,081.13	0.07%	0.00%	21.00%	21.00%	0.0137%
Paychex Inc	PAYX	44,390.93	0.14%	2.56%	11.00%	13.70%	0.0188%
PACCAR Inc	PCAR	30,428.89	0.09%	1.55%	5.50%	7.10%	0.0067%
Healthpeak Properties Inc	PEAK	14,164.00	0.04%	4.57%	17.00%	21.96%	0.0096%
Public Service Enterprise Group Inc	PEG	32,106.63	0.10%	3.36%	6.50%	9.97%	0.0099%
Penn Entertainment Inc	PENN	4,951.92	0.02%	0.00%	15.00%	15.00%	0.0023%
PepsiCo Inc	PEP	237,747.24	0.74%	2.67%	6.00%	8.75%	0.0644%
Pfizer Inc	PFE	253,846.68	0.79%	3.54%	6.50%	10.15%	0.0798%
Principal Financial Group Inc	PFG	18,632.96	0.06%	3.42%	10.00%	13.60%	0.0078%
Procter & Gamble Co/The	PG	329,615.08	1.02%	2.65%	6.50%	9.23%	0.0943%
Progressive Corp/The	PGR	71,725.72	0.22%	0.33%	4.00%	4.33%	0.0096%
Parker-Hannifin Corp	PH	34,026.80	0.11%	2.01%	10.50%	12.61%	0.0133%
PulteGroup Inc	PHM	9,412.71	0.03%	1.48%	20.00%	21.62%	0.0063%
Packaging Corp of America	PKG	12,834.88	0.04%	3.65%	8.00%	11.80%	0.0047%
PerkinElmer Inc	PKI	17,047.81	0.05%	0.21%	4.00%	4.21%	0.0022%
Prologis Inc	PLD	92,180.23	0.29%	2.54%	10.50%	13.17%	0.0376%
Philip Morris International Inc	PM	148,025.06	0.46%	5.24%	7.50%	12.93%	0.0593%
PNC Financial Services Group Inc/The	PNC	64,799.59	0.20%	3.80%	0.50%	4.31%	0.0086%
Pentair PLC	PNR	7,318.47	0.02%	1.89%	13.00%	15.01%	0.0034%
Pinnacle West Capital Corp	PNW	8,517.87	0.03%	4.51%	11.00%	15.76%	0.0042%
Pool Corp	POOL	13,428.87	0.04%	1.18%	14.00%	15.26%	0.0063%
PPG Industries Inc	PPG	29,839.92	0.09%	1.95%	12.00%	14.07%	0.0130%
PPL Corp	PPL	21,408.26	0.07%	3.09%	10.50%	13.76%	0.0091%
Prudential Financial Inc	PRU	35,676.45	0.11%	5.01%	6.50%	11.68%	0.0129%
Public Storage	PSA	58,074.56	0.18%	2.42%	6.00%	8.49%	0.0153%
Phillips 66	PSX	43,034.82	0.13%	4.34%	85.00%	91.18%	0.1215%
PTC Inc	PTC	13,495.67	0.04%	0.00%	29.00%	29.00%	0.0121%
PVH Corp	PVH	3,766.56	0.01%	0.27%	-0.50%	-0.23%	0.0000%
Quanta Services Inc	PWR	20,209.15	0.06%	0.20%	11.00%	11.21%	0.0070%
Pioneer Natural Resources Co	PXD	60,435.26	0.19%	13.54%	12.00%	26.35%	0.0493%
PayPal Holdings Inc	PYPL	108,061.12	0.33%	0.00%	12.00%	12.00%	0.0402%
QUALCOMM Inc	QCOM	148,539.21	0.46%	2.27%	10.00%	12.38%	0.0570%
Qorvo Inc	QRVO	9,265.66	0.03%	0.00%	14.50%	14.50%	0.0042%
Royal Caribbean Cruises Ltd	RCL	10,419.16	N/A	0.00%	N/A	N/A	N/A
Everest Re Group Ltd	RE	10,603.26	0.03%	2.45%	17.50%	20.17%	0.0066%
Regency Centers Corp	REG	10,410.70	0.03%	4.11%	12.50%	16.87%	0.0054%
Regeneron Pharmaceuticals Inc	REGN	62,283.82	0.19%	0.00%	9.00%	9.00%	0.0174%
Regions Financial Corp	RF	20,248.36	0.06%	3.69%	11.50%	15.40%	0.0097%
Robert Half International Inc	RHI	8,433.45	0.03%	2.23%	4.00%	6.28%	0.0016%
Raymond James Financial Inc	RJF	22,525.66	0.07%	1.30%	11.50%	12.88%	0.0090%
Ralph Lauren Corp	RL	3,917.87	0.01%	3.28%	9.00%	12.43%	0.0015%
ResMed Inc	RMD	32,201.79	0.10%	0.80%	25.50%	26.40%	0.0263%
Rockwell Automation Inc	ROK	27,351.17	0.08%	1.89%	14.00%	16.02%	0.0136%
Rollins Inc	ROL	16,624.00	0.05%	1.18%	13.50%	14.76%	0.0076%
Roper Technologies Inc	ROP	42,677.51	0.13%	0.62%	19.00%	19.67%	0.0260%
Ross Stores Inc	ROST	30,188.12	0.09%	1.44%	8.50%	10.00%	0.0093%
Republic Services Inc	RSG	45,089.96	0.14%	1.39%	10.50%	11.96%	0.0167%
Raytheon Technologies Corp	RTX	132,517.13	0.41%	2.45%	7.00%	9.54%	0.0391%
SBA Communications Corp	SBAC	35,087.32	0.11%	0.87%	5.00%	5.90%	0.0064%
Signature Bank/New York NY	SBNY	10,972.30	0.03%	1.28%	21.50%	22.92%	0.0078%
Starbucks Corp	SBUX	96,461.92	0.30%	2.33%	12.00%	14.47%	0.0432%
Charles Schwab Corp/The	SCHW	128,972.48	0.40%	1.24%	23.00%	24.38%	0.0974%
SolarEdge Technologies Inc	SEDG	15,353.59	0.05%	0.00%	22.00%	22.00%	0.0105%
Sealed Air Corp	SEE	7,814.66	0.02%	1.49%	23.00%	24.66%	0.0060%
Sherwin-Williams Co/The	SHW	60,156.37	0.19%	1.03%	9.00%	10.08%	0.0188%
SVB Financial Group	SIVB	24,018.01	0.07%	0.00%	7.50%	7.50%	0.0056%
J M Smucker Co/The	SJM	14,916.91	0.05%	2.91%	17.00%	20.16%	0.0093%
Schlumberger NV	SLB	53,958.90	N/A	1.83%	N/A	N/A	N/A
Snap-on Inc	SNA	11,604.97	0.04%	2.61%	4.00%	6.66%	0.0024%
Synopsys Inc	SNPS	52,910.26	0.16%	0.00%	11.00%	11.00%	0.0180%
Southern Co/The	SO	81,888.80	0.25%	3.53%	10.00%	13.71%	0.0348%
Simon Property Group Inc	SPG	33,383.36	0.10%	6.86%	25.50%	33.24%	0.0344%
S&P Global Inc	SPGI	117,452.03	0.36%	0.97%	8.50%	9.51%	0.0346%
Sempra Energy	SRE	51,851.72	0.16%	2.78%	35.50%	38.77%	0.0623%
STERIS PLC	STE	20,141.02	0.06%	0.93%	7.50%	8.47%	0.0053%
State Street Corp	STT	25,126.76	N/A	3.69%	N/A	N/A	N/A
Seagate Technology Holdings PLC	STX	13,978.23	N/A	4.18%	N/A	N/A	N/A
Constellation Brands Inc	STZ	39,204.38	0.12%	1.30%	6.50%	7.84%	0.0095%
Stanley Black & Decker Inc	SWK	13,022.59	0.04%	3.63%	15.50%	19.41%	0.0078%
Skyworks Solutions Inc	SWKS	15,811.95	0.05%	2.52%	7.00%	9.60%	0.0047%
Synchrony Financial	SYF	15,777.61	0.05%	2.81%	9.50%	12.44%	0.0061%
Stryker Corp	SYK	77,631.47	0.24%	1.35%	11.50%	12.93%	0.0311%
Sysco Corp	SYY	41,612.36	0.13%	2.38%	8.50%	10.99%	0.0142%
AT&T Inc	T	124,990.04	0.39%	6.33%	0.50%	6.84%	0.0265%
Molson Coors Beverage Co	TAP	10,352.91	0.03%	2.94%	9.50%	12.58%	0.0040%
TransDigm Group Inc	TDG	32,562.15	0.10%	0.00%	12.50%	12.50%	0.0126%
Teledyne Technologies Inc	TDY	17,263.19	0.05%	0.00%	11.50%	11.50%	0.0061%

Company	Ticker	[2] Market Capitalization	[3] Weight in Index	[4] Dividend Yield	[5] Long-Term Growth Est.	[6] DCF Result	[7] Weighted DCF Result
Bio-Techne Corp	TECH	13,010.93	0.04%	0.39%	30.00%	30.44%	0.0123%
TE Connectivity Ltd	TEL	40,366.88	0.13%	1.77%	10.50%	12.37%	0.0155%
Teradyne Inc	TER	13,270.03	0.04%	0.52%	8.50%	9.04%	0.0037%
Truist Financial Corp	TFC	62,128.25	0.19%	4.44%	6.50%	11.08%	0.0213%
Teleflex Inc	TFX	10,612.73	N/A	0.60%	N/A	N/A	N/A
Target Corp	TGT	73,798.57	0.23%	2.69%	13.00%	15.87%	0.0363%
TJX Cos Inc/The	TJX	72,391.65	0.22%	1.89%	10.00%	11.99%	0.0269%
Thermo Fisher Scientific Inc	TMO	213,650.38	0.66%	0.22%	8.50%	8.73%	0.0578%
T-Mobile US Inc	TMUS	180,531.74	0.56%	0.00%	9.50%	9.50%	0.0531%
Tapestry Inc	TPR	8,377.54	0.03%	3.46%	7.50%	11.08%	0.0029%
Trimble Inc	TRMB	15,664.31	N/A	0.00%	N/A	N/A	N/A
T Rowe Price Group Inc	TROW	27,083.04	0.08%	4.00%	9.50%	13.69%	0.0115%
Travelers Cos Inc/The	TRV	38,359.27	0.12%	2.30%	6.50%	8.88%	0.0105%
Tractor Supply Co	TSCO	20,551.65	0.06%	1.99%	12.50%	14.61%	0.0093%
Tesla Inc	TSLA	863,615.67	2.68%	0.00%	52.00%	52.00%	1.3910%
Tyson Foods Inc	TSN	21,831.33	0.07%	2.44%	8.50%	11.04%	0.0075%
Trane Technologies PLC	TT	35,700.64	N/A	1.74%	N/A	N/A	N/A
Take-Two Interactive Software Inc	TTWO	20,429.65	0.06%	0.00%	12.50%	12.50%	0.0079%
Twitter Inc	TWTR	29,653.28	0.09%	0.00%	9.50%	9.50%	0.0087%
Texas Instruments Inc	TXN	150,953.53	0.47%	2.78%	16.50%	19.51%	0.0912%
Textron Inc	TXT	13,195.37	0.04%	0.13%	9.00%	9.13%	0.0037%
Tyler Technologies Inc	TYL	15,447.76	0.05%	0.00%	12.00%	12.00%	0.0057%
United Airlines Holdings Inc	UAL	11,438.78	0.04%	0.00%	15.00%	15.00%	0.0053%
UDR Inc	UDR	14,579.30	0.05%	3.39%	10.50%	14.07%	0.0064%
Universal Health Services Inc	UHS	6,429.75	0.02%	0.82%	12.00%	12.87%	0.0026%
Ulta Beauty Inc	ULTA	21,506.16	0.07%	0.00%	12.50%	12.50%	0.0083%
UnitedHealth Group Inc	UNH	485,772.45	1.50%	1.27%	13.00%	14.35%	0.2160%
Union Pacific Corp	UNP	140,201.78	0.43%	2.32%	15.00%	17.49%	0.0760%
United Parcel Service Inc	UPS	142,352.92	0.44%	3.13%	5.50%	8.71%	0.0384%
United Rentals Inc	URI	20,438.42	0.06%	0.00%	18.00%	18.00%	0.0114%
US Bancorp	USB	67,766.61	N/A	4.03%	N/A	N/A	N/A
Visa Inc	V	324,893.83	1.01%	0.75%	16.00%	16.82%	0.1692%
VF Corp	VFC	16,103.12	0.05%	4.83%	10.50%	15.58%	0.0078%
VICI Properties Inc	VICI	31,772.44	0.10%	4.36%	12.00%	16.63%	0.0164%
Valero Energy Corp	VLO	46,141.77	0.14%	3.35%	21.00%	24.70%	0.0353%
Vulcan Materials Co	VMC	22,126.69	0.07%	0.96%	-20.50%	-19.64%	-0.0135%
Vornado Realty Trust	VNO	5,028.34	0.02%	8.09%	9.50%	17.97%	0.0028%
Verisk Analytics Inc	VRSK	29,376.63	0.09%	0.66%	10.50%	11.20%	0.0102%
VeriSign Inc	VRSN	19,549.11	0.06%	0.00%	3.00%	3.00%	0.0018%
Vertex Pharmaceuticals Inc	VRTX	72,259.89	0.22%	0.00%	12.50%	12.50%	0.0280%
Ventas Inc	VTR	19,130.26	0.06%	3.76%	11.50%	15.48%	0.0092%
Viatris Inc	VTRS	11,580.15	0.04%	5.03%	9.00%	14.25%	0.0051%
Verizon Communications Inc	VZ	175,590.08	0.54%	6.12%	3.00%	9.21%	0.0501%
Westinghouse Air Brake Technologies	WAB	15,941.34	0.05%	0.68%	9.50%	10.22%	0.0050%
Waters Corp	WAT	17,878.97	N/A	0.00%	N/A	N/A	N/A
Walgreens Boots Alliance Inc	WBA	30,300.85	0.09%	5.48%	11.50%	17.29%	0.0162%
Warner Bros Discovery Inc	WBD	32,141.33	0.10%	0.00%	10.50%	10.50%	0.0105%
Western Digital Corp	WDC	13,290.47	0.04%	0.00%	20.00%	20.00%	0.0082%
WEC Energy Group Inc	WEC	32,533.97	N/A	2.82%	N/A	N/A	N/A
Welltower Inc	WELL	35,517.31	0.11%	3.18%	12.50%	15.88%	0.0175%
Wells Fargo & Co	WFC	165,794.22	0.51%	2.75%	6.50%	9.33%	0.0479%
Whirlpool Corp	WHR	8,535.95	0.03%	4.47%	6.00%	10.60%	0.0028%
Waste Management Inc	WM	69,866.18	0.22%	1.54%	9.50%	11.11%	0.0240%
Williams Cos Inc/The	WMB	41,466.58	0.13%	5.00%	6.00%	11.15%	0.0143%
Walmart Inc	WMT	363,339.43	1.13%	1.69%	7.50%	9.25%	0.1041%
W R Berkley Corp	WRB	17,189.69	N/A	0.62%	N/A	N/A	N/A
Westrock Co	WRK	10,321.96	0.03%	2.46%	20.00%	22.71%	0.0073%
West Pharmaceutical Services Inc	WST	21,969.30	0.07%	0.24%	11.50%	11.76%	0.0080%
Willis Towers Watson PLC	WTW	22,744.27	0.07%	1.59%	8.50%	10.15%	0.0072%
Weyerhaeuser Co	WY	25,289.16	0.08%	2.11%	8.50%	10.70%	0.0084%
Wynn Resorts Ltd	WYNN	6,890.90	0.02%	0.00%	22.50%	22.50%	0.0048%
Xcel Energy Inc	XEL	40,614.08	0.13%	2.63%	8.00%	10.73%	0.0135%
Exxon Mobil Corp	XOM	398,384.33	N/A	3.68%	N/A	N/A	N/A
DENTSPLY SIRONA Inc	XRAY	7,060.36	0.02%	1.53%	5.00%	6.56%	0.0014%
Xylem Inc/NY	XYL	16,414.58	0.05%	1.32%	4.50%	5.85%	0.0030%
Yum! Brands Inc	YUM	31,652.45	0.10%	2.05%	19.50%	21.75%	0.0213%
Zimmer Biomet Holdings Inc	ZBH	22,308.06	0.07%	0.90%	11.50%	12.45%	0.0086%
Zebra Technologies Corp	ZBRA	15,621.94	0.05%	0.00%	12.50%	12.50%	0.0060%
Zions Bancorp NA	ZION	8,280.42	0.03%	2.98%	12.00%	15.16%	0.0039%
Zoetis Inc	ZTS	73,277.80	0.23%	0.83%	11.00%	11.88%	0.0270%
		32,283,676.38					13.74%

[1] Equals sum of Col. [7]
[2] Source: Bloomberg Professional
[3] Equals weight in S&P 500 based on market capitalization
[4] Source: Bloomberg Professional
[5] Source: Value Line
[6] Equals ([4] x (1 + (0.5 x [5]))) + [5]
[7] Equals Col. [3] x Col. [6]

Ex Ante Capital Asset Pricing Model and Empirical Capital Asset Pricing Model Results
Using Long-Term Historical Market Required Return and 10-year Bloomberg Beta Coefficients

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-Year Treasury Yield	10-yr Bloomberg Beta Coefficient	Long-Term Average Historical Market Return (1926-2021)	Market Risk Premium	Traditional CAPM	Empirical CAPM
Atmos Energy Corporation	ATO	3.11%	0.76	12.33%	9.22%	10.13%	10.68%
New Jersey Resources Corporation	NJR	3.11%	0.82	12.33%	9.22%	10.66%	11.07%
NiSource Inc.	NI	3.11%	0.83	12.33%	9.22%	10.74%	11.14%
Northwest Natural Holding Company	NWN	3.11%	0.70	12.33%	9.22%	9.60%	10.29%
ONE Gas, Inc.	OGS	3.11%	0.80	12.33%	9.22%	10.46%	10.92%
Spire Inc.	SR	3.11%	0.76	12.33%	9.22%	10.14%	10.69%
					Mean:	10.29%	10.80%
					Median:	10.30%	10.81%
					Average of the Mean and Median:	10.29%	10.80%

		[7]	[8]	[9]	[10]	[11]	[12]
Company	Ticker	Projected 30-Year Treasury Yield	10-yr Bloomberg Beta Coefficient	Long-Term Average Historical Market Return (1926-2021)	Market Risk Premium	Traditional CAPM	Empirical CAPM
Atmos Energy Corporation	ATO	3.66%	0.76	12.33%	8.67%	10.26%	10.78%
New Jersey Resources Corporation	NJR	3.66%	0.82	12.33%	8.67%	10.76%	11.15%
NiSource Inc.	NI	3.66%	0.83	12.33%	8.67%	10.83%	11.21%
Northwest Natural Holding Company	NWN	3.66%	0.70	12.33%	8.67%	9.77%	10.41%
ONE Gas, Inc.	OGS	3.66%	0.80	12.33%	8.67%	10.57%	11.01%
Spire Inc.	SR	3.66%	0.76	12.33%	8.67%	10.27%	10.79%
					Mean:	10.41%	10.89%
					Median:	10.42%	10.90%
					Average of the Mean and Median:	10.41%	10.89%

Notes:
[1] Source: Bloomberg Professional Service; 30-day average
[2] Source: Bloomberg Professional Service
[3] Duff & Phelps, 2022 SBBI Yearbook Appendix A-1.
[4] Equals Col. [3] - Col. [1]
[5] Equals Col. [1] + (Col. [2] x (Col. [4])
[6] Equals Col. [1] + ((0.75 x (Col. [2] x (Col. [4])) + (0.25 x Col. [4])
[7] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 14; Vol. 41, No. 9, September 1, 2022, at 2
[8] See Note [2]
[9] See Note [3]
[10] Equals Col. [9] - Col. [7]
[11] Equals Col. [7] + (Col. [8] x (Col. [10])
[12] Equals Col. [7] + ((0.75 x (Col. [8] x (Col. [10])) + (0.25 x Col. [10])

Ex Ante Capital Asset Pricing Model and Empirical Capital Asset Pricing Model Results
Using DCF-derived Expected Market Required Return and *Value Line* Beta Coefficients

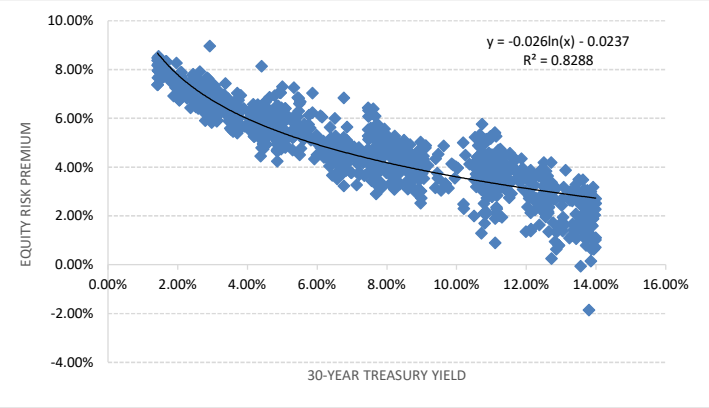
		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-Year Treasury Yield	Value Line Beta Coefficient	Average Proj. Market Required Return	Market Risk Premium	Traditional CAPM	Empirical CAPM
Atmos Energy Corporation	ATO	3.11%	0.80	13.19%	10.09%	11.18%	11.68%
New Jersey Resources Corporation	NJR	3.11%	0.95	13.19%	10.09%	12.69%	12.81%
NiSource Inc.	NI	3.11%	0.85	13.19%	10.09%	11.68%	12.06%
Northwest Natural Holding Company	NWN	3.11%	0.80	13.19%	10.09%	11.18%	11.68%
ONE Gas, Inc.	OGS	3.11%	0.80	13.19%	10.09%	11.18%	11.68%
Spire Inc.	SR	3.11%	0.80	13.19%	10.09%	11.18%	11.68%
					Mean:	11.51%	11.93%
					Median:	11.18%	11.68%
					Average of the Mean and Median:	11.34%	11.81%

		[7]	[8]	[9]	[10]	[11]	[12]
Company	Ticker	Projected 30-Year Treasury Yield	Value Line Beta Coefficient	Average Proj. Market Required Return	Market Risk Premium	Traditional CAPM	Empirical CAPM
Atmos Energy Corporation	ATO	3.66%	0.80	13.19%	9.53%	11.29%	11.76%
New Jersey Resources Corporation	NJR	3.66%	0.95	13.19%	9.53%	12.72%	12.84%
NiSource Inc.	NI	3.66%	0.85	13.19%	9.53%	11.76%	12.12%
Northwest Natural Holding Company	NWN	3.66%	0.80	13.19%	9.53%	11.29%	11.76%
ONE Gas, Inc.	OGS	3.66%	0.80	13.19%	9.53%	11.29%	11.76%
Spire Inc.	SR	3.66%	0.80	13.19%	9.53%	11.29%	11.76%
					Mean:	11.60%	12.00%
					Median:	11.29%	11.76%
					Average of the Mean and Median:	11.44%	11.88%

Notes:
[1] Source: Bloomberg Professional Service; 30-day average
[2] Source: Value Line
[3] Average of Bloomberg and Value Line Market Return in Exhibit JEN-13
[4] Equals Col. [3] - Col. [1]
[5] Equals Col. [1] + (Col. [2] x (Col. [4])
[6] Equals Col. [1] + ((0.75 x (Col. [2] x (Col. [4])) + (0.25 x Col. [4])
[7] Source: Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 14; Vol. 41, No. 9, September 1, 2022, at 2
[8] See Note [2]
[9] See Note [3]
[10] Equals Col. [9] - Col. [7]
[11] Equals Col. [7] + (Col. [8] x (Col. [10])
[12] Equals Col. [7] + ((0.75 x (Col. [8] x (Col. [10])) + (0.25 x Col. [10])

Bond Yield Plus Risk Premium

[1]	[2]	[3]	[4]	[5]
Constant	Slope	30-Year Treasury Yield	Risk Premium	Return on Equity
-2.375%	-2.598%			
Current 30-Year Treasury		3.11%	6.65%	9.75%
Projected 30-Year Treasury		3.66%	6.22%	9.88%



Notes:
[1] Constant of regression equation
[2] Slope of regression equation
[3] Sources: Current = Bloomberg Professional,
Projected = Average of near-term and long-term projected 30-year Treasury yield; Blue Chip Financial Forecasts, Vol. 41, No. 9, September 1, 2022, at 2 and Blue Chip Financial Forecasts, Vol. 41, No. 6, June 1, 2022, at 14.
[4] Equals [1] + ln([3]) x [2]
[5] Equals [3] + [4]
[6] Source: S&P Capital IQ
[7] Source: S&P Capital IQ
[8] Source: Bloomberg Professional, equals 187-trading day average (i.e. lag period)
[9] Equals [7] - [8]

Bond Yield Plus Risk Premium

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/3/1980	12.55%	9.39%	3.16%
1/4/1980	13.75%	9.40%	4.35%
1/14/1980	13.20%	9.44%	3.76%
1/18/1980	14.00%	9.47%	4.53%
1/31/1980	12.61%	9.56%	3.05%
2/8/1980	14.50%	9.63%	4.87%
2/14/1980	13.00%	9.67%	3.33%
2/15/1980	13.00%	9.69%	3.31%
2/29/1980	14.00%	9.86%	4.14%
3/5/1980	14.00%	9.91%	4.09%
3/7/1980	13.50%	9.95%	3.55%
3/14/1980	14.00%	10.04%	3.96%
3/27/1980	12.69%	10.20%	2.49%
4/1/1980	14.75%	10.26%	4.49%
4/29/1980	12.50%	10.51%	1.99%
5/7/1980	14.27%	10.56%	3.71%
5/8/1980	13.75%	10.56%	3.19%
5/19/1980	15.50%	10.62%	4.88%
5/27/1980	14.60%	10.65%	3.95%
5/29/1980	16.00%	10.67%	5.33%
6/10/1980	13.78%	10.71%	3.07%
6/25/1980	14.25%	10.74%	3.51%
7/9/1980	14.51%	10.77%	3.74%
7/17/1980	12.90%	10.79%	2.11%
7/18/1980	13.80%	10.79%	3.01%
7/22/1980	14.10%	10.79%	3.31%
7/23/1980	14.19%	10.79%	3.40%
8/1/1980	12.50%	10.80%	1.70%
8/11/1980	14.85%	10.81%	4.04%
8/21/1980	13.03%	10.84%	2.19%
8/28/1980	13.61%	10.87%	2.74%
8/28/1980	14.00%	10.87%	3.13%
9/4/1980	14.00%	10.90%	3.10%
9/24/1980	15.00%	10.98%	4.02%
10/9/1980	14.50%	11.05%	3.45%
10/9/1980	14.50%	11.05%	3.45%
10/24/1980	14.00%	11.09%	2.91%
10/27/1980	15.20%	11.10%	4.10%
10/27/1980	15.20%	11.10%	4.10%
10/28/1980	12.00%	11.10%	0.90%
10/28/1980	13.00%	11.10%	1.90%
10/31/1980	14.50%	11.12%	3.38%
11/4/1980	15.00%	11.12%	3.88%
11/6/1980	14.35%	11.13%	3.22%
11/10/1980	13.25%	11.14%	2.11%
11/17/1980	15.50%	11.15%	4.35%
11/19/1980	13.50%	11.14%	2.36%
12/5/1980	14.60%	11.13%	3.47%
12/8/1980	16.40%	11.13%	5.27%
12/12/1980	15.45%	11.15%	4.30%
12/17/1980	14.20%	11.16%	3.04%
12/17/1980	14.40%	11.16%	3.24%
12/18/1980	14.00%	11.16%	2.84%
12/22/1980	13.45%	11.16%	2.29%
12/26/1980	14.00%	11.15%	2.85%
12/30/1980	14.50%	11.14%	3.36%
12/31/1980	14.56%	11.14%	3.42%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/7/1981	14.30%	11.13%	3.17%
1/12/1981	14.95%	11.14%	3.81%
1/26/1981	15.25%	11.20%	4.05%
1/30/1981	13.25%	11.23%	2.02%
2/11/1981	14.50%	11.33%	3.17%
2/20/1981	14.50%	11.40%	3.10%
3/12/1981	15.65%	11.60%	4.05%
3/25/1981	15.30%	11.74%	3.56%
4/1/1981	15.30%	11.82%	3.48%
4/9/1981	15.00%	11.91%	3.09%
4/29/1981	13.50%	12.12%	1.38%
4/29/1981	14.25%	12.12%	2.13%
4/30/1981	13.60%	12.14%	1.46%
4/30/1981	15.00%	12.14%	2.86%
5/21/1981	14.00%	12.37%	1.63%
6/3/1981	14.67%	12.46%	2.21%
6/22/1981	16.00%	12.57%	3.43%
6/25/1981	14.75%	12.60%	2.15%
7/2/1981	14.00%	12.64%	1.36%
7/10/1981	16.00%	12.69%	3.31%
7/14/1981	16.90%	12.71%	4.19%
7/21/1981	15.78%	12.78%	3.00%
7/27/1981	13.77%	12.82%	0.95%
7/27/1981	15.50%	12.82%	2.68%
7/31/1981	13.50%	12.86%	0.64%
7/31/1981	14.20%	12.86%	1.34%
8/12/1981	13.72%	12.93%	0.79%
8/12/1981	13.72%	12.93%	0.79%
8/12/1981	14.41%	12.93%	1.48%
8/25/1981	15.45%	13.02%	2.43%
8/27/1981	14.43%	13.04%	1.39%
8/28/1981	15.00%	13.05%	1.95%
9/23/1981	14.34%	13.24%	1.10%
9/24/1981	16.25%	13.26%	2.99%
9/29/1981	14.50%	13.31%	1.19%
9/30/1981	15.94%	13.32%	2.62%
10/2/1981	14.80%	13.36%	1.44%
10/12/1981	16.25%	13.43%	2.82%
10/20/1981	15.25%	13.50%	1.75%
10/20/1981	16.50%	13.50%	3.00%
10/20/1981	17.00%	13.50%	3.50%
10/23/1981	15.50%	13.54%	1.96%
10/26/1981	13.50%	13.56%	-0.06%
10/29/1981	16.50%	13.60%	2.90%
11/4/1981	15.33%	13.62%	1.71%
11/6/1981	15.17%	13.64%	1.53%
11/12/1981	15.00%	13.65%	1.35%
11/25/1981	15.25%	13.66%	1.59%
11/25/1981	16.10%	13.66%	2.44%
11/25/1981	16.10%	13.66%	2.44%
11/30/1981	16.75%	13.66%	3.09%
12/1/1981	15.70%	13.66%	2.04%
12/1/1981	16.00%	13.66%	2.34%
12/15/1981	15.81%	13.69%	2.12%
12/17/1981	14.75%	13.70%	1.05%
12/22/1981	15.70%	13.72%	1.98%
12/22/1981	16.00%	13.72%	2.28%
12/30/1981	16.00%	13.74%	2.26%
12/30/1981	16.25%	13.74%	2.51%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/4/1982	15.50%	13.75%	1.75%
1/14/1982	11.95%	13.80%	-1.85%
1/25/1982	16.25%	13.84%	2.41%
1/27/1982	16.84%	13.85%	2.99%
1/31/1982	14.00%	13.86%	0.14%
2/2/1982	16.24%	13.86%	2.38%
2/8/1982	15.50%	13.87%	1.63%
2/9/1982	14.95%	13.88%	1.07%
2/9/1982	15.75%	13.88%	1.87%
2/11/1982	16.00%	13.89%	2.11%
3/1/1982	15.96%	13.91%	2.05%
3/3/1982	15.00%	13.91%	1.09%
3/8/1982	17.10%	13.92%	3.18%
3/26/1982	16.00%	13.97%	2.03%
3/31/1982	16.25%	13.98%	2.27%
4/1/1982	16.50%	13.98%	2.52%
4/6/1982	15.00%	13.99%	1.01%
4/9/1982	16.50%	13.99%	2.51%
4/12/1982	15.10%	13.99%	1.11%
4/12/1982	16.70%	13.99%	2.71%
4/18/1982	14.70%	13.99%	0.71%
4/27/1982	15.00%	13.97%	1.03%
5/10/1982	14.57%	13.94%	0.63%
5/14/1982	15.80%	13.92%	1.88%
5/20/1982	15.82%	13.91%	1.91%
5/21/1982	15.50%	13.90%	1.60%
5/25/1982	16.25%	13.90%	2.35%
6/2/1982	14.50%	13.87%	0.63%
6/7/1982	16.00%	13.85%	2.15%
6/23/1982	15.50%	13.81%	1.69%
6/25/1982	16.50%	13.81%	2.69%
7/1/1982	15.55%	13.79%	1.76%
7/1/1982	16.00%	13.79%	2.21%
7/2/1982	15.10%	13.79%	1.31%
7/13/1982	16.80%	13.75%	3.05%
7/22/1982	14.50%	13.71%	0.79%
7/28/1982	16.10%	13.68%	2.42%
7/30/1982	14.82%	13.66%	1.16%
8/4/1982	15.58%	13.64%	1.94%
8/6/1982	16.50%	13.63%	2.87%
8/11/1982	17.11%	13.62%	3.49%
8/25/1982	16.00%	13.59%	2.41%
8/30/1982	16.25%	13.58%	2.67%
9/3/1982	15.50%	13.57%	1.93%
9/9/1982	16.04%	13.55%	2.49%
9/15/1982	16.04%	13.52%	2.52%
9/17/1982	15.25%	13.51%	1.74%
9/29/1982	14.50%	13.43%	1.07%
9/30/1982	14.74%	13.42%	1.32%
9/30/1982	15.50%	13.42%	2.08%
9/30/1982	16.50%	13.42%	3.08%
9/30/1982	16.70%	13.42%	3.28%
10/1/1982	16.50%	13.41%	3.09%
10/8/1982	15.00%	13.33%	1.67%
10/15/1982	15.90%	13.26%	2.64%
10/19/1982	15.90%	13.22%	2.68%
10/27/1982	17.00%	13.12%	3.88%
10/28/1982	14.75%	13.11%	1.64%
11/2/1982	16.25%	13.07%	3.18%
11/4/1982	15.75%	13.03%	2.72%
11/5/1982	14.73%	13.01%	1.72%
11/17/1982	16.00%	12.86%	3.14%
11/23/1982	15.50%	12.79%	2.71%
11/24/1982	14.50%	12.77%	1.73%
11/24/1982	16.02%	12.77%	3.25%
11/30/1982	12.98%	12.72%	0.26%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	15.65%	12.72%	2.93%
11/30/1982	16.00%	12.72%	3.28%
11/30/1982	16.10%	12.72%	3.38%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/3/1982	15.33%	12.68%	2.65%
12/8/1982	15.75%	12.63%	3.12%
12/13/1982	16.00%	12.58%	3.42%
12/14/1982	16.40%	12.57%	3.83%
12/17/1982	16.25%	12.52%	3.73%
12/20/1982	15.00%	12.51%	2.49%
12/21/1982	15.70%	12.49%	3.21%
12/28/1982	15.25%	12.42%	2.83%
12/28/1982	15.25%	12.42%	2.83%
12/29/1982	16.25%	12.41%	3.84%
12/29/1982	16.25%	12.41%	3.84%
1/11/1983	15.90%	12.26%	3.64%
1/12/1983	15.50%	12.24%	3.26%
1/18/1983	15.00%	12.18%	2.82%
1/24/1983	15.50%	12.13%	3.37%
1/24/1983	16.00%	12.13%	3.87%
1/28/1983	14.90%	12.08%	2.82%
1/31/1983	15.00%	12.07%	2.93%
2/10/1983	15.00%	11.97%	3.03%
2/25/1983	15.70%	11.84%	3.86%
3/2/1983	15.25%	11.79%	3.46%
3/16/1983	16.00%	11.62%	4.38%
3/21/1983	14.96%	11.57%	3.39%
3/23/1983	15.40%	11.53%	3.87%
3/23/1983	16.10%	11.53%	4.57%
3/24/1983	15.00%	11.51%	3.49%
4/12/1983	13.25%	11.30%	1.95%
4/29/1983	15.05%	11.09%	3.96%
5/3/1983	15.40%	11.06%	4.34%
5/9/1983	15.50%	11.00%	4.50%
5/19/1983	14.85%	10.90%	3.95%
5/31/1983	14.00%	10.84%	3.16%
6/2/1983	14.50%	10.82%	3.68%
6/7/1983	14.50%	10.80%	3.70%
6/9/1983	14.85%	10.79%	4.06%
6/20/1983	14.15%	10.74%	3.41%
6/20/1983	16.50%	10.74%	5.76%
6/27/1983	14.50%	10.71%	3.79%
6/30/1983	14.80%	10.70%	4.10%
6/30/1983	15.90%	10.70%	5.20%
7/1/1983	14.80%	10.70%	4.10%
7/5/1983	15.00%	10.69%	4.31%
7/8/1983	15.50%	10.69%	4.81%
7/19/1983	15.00%	10.70%	4.30%
7/19/1983	15.10%	10.70%	4.40%
8/18/1983	15.30%	10.81%	4.49%
8/19/1983	15.79%	10.82%	4.97%
8/29/1983	16.00%	10.85%	5.15%
8/31/1983	14.75%	10.87%	3.88%
8/31/1983	15.25%	10.87%	4.38%
9/8/1983	14.75%	10.89%	3.86%
9/16/1983	15.51%	10.93%	4.58%
9/26/1983	14.50%	10.96%	3.54%
9/28/1983	14.25%	10.97%	3.28%
9/30/1983	16.15%	10.98%	5.17%
9/30/1983	16.25%	10.98%	5.27%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/1/1983	16.25%	10.98%	5.27%
10/13/1983	15.52%	11.02%	4.50%
10/19/1983	15.20%	11.04%	4.16%
10/26/1983	14.75%	11.06%	3.69%
10/27/1983	14.88%	11.07%	3.81%
10/27/1983	15.33%	11.07%	4.26%
11/9/1983	14.82%	11.10%	3.72%
11/9/1983	16.51%	11.10%	5.41%
11/9/1983	16.51%	11.10%	5.41%
12/1/1983	14.50%	11.17%	3.33%
12/8/1983	15.90%	11.20%	4.70%
12/9/1983	15.30%	11.21%	4.09%
12/12/1983	14.50%	11.22%	3.28%
12/12/1983	15.50%	11.22%	4.28%
12/20/1983	15.40%	11.26%	4.14%
12/20/1983	16.00%	11.26%	4.74%
12/22/1983	15.75%	11.27%	4.48%
12/29/1983	15.00%	11.30%	3.70%
12/30/1983	15.00%	11.30%	3.70%
1/10/1984	15.90%	11.34%	4.56%
1/13/1984	15.50%	11.36%	4.14%
1/18/1984	15.53%	11.38%	4.15%
1/26/1984	15.90%	11.42%	4.48%
2/14/1984	14.25%	11.51%	2.74%
2/28/1984	14.50%	11.58%	2.92%
3/20/1984	16.00%	11.70%	4.30%
3/23/1984	15.50%	11.72%	3.78%
4/9/1984	15.20%	11.81%	3.39%
4/18/1984	16.20%	11.86%	4.34%
4/27/1984	15.85%	11.90%	3.95%
5/15/1984	13.35%	11.99%	1.36%
5/16/1984	15.00%	12.00%	3.00%
5/22/1984	14.40%	12.04%	2.36%
6/13/1984	15.50%	12.18%	3.32%
7/10/1984	16.00%	12.37%	3.63%
8/7/1984	16.69%	12.51%	4.18%
8/9/1984	15.33%	12.51%	2.82%
8/17/1984	14.82%	12.54%	2.28%
8/21/1984	14.64%	12.54%	2.10%
8/27/1984	14.52%	12.56%	1.96%
8/28/1984	14.75%	12.57%	2.18%
8/30/1984	15.60%	12.58%	3.02%
9/12/1984	15.60%	12.60%	3.00%
9/12/1984	15.90%	12.60%	3.30%
9/25/1984	16.25%	12.61%	3.64%
10/2/1984	14.80%	12.62%	2.18%
10/9/1984	14.75%	12.63%	2.12%
10/10/1984	15.50%	12.63%	2.87%
10/18/1984	15.00%	12.65%	2.35%
10/24/1984	15.50%	12.65%	2.85%
11/7/1984	15.00%	12.64%	2.36%
11/20/1984	15.92%	12.63%	3.29%
11/30/1984	15.50%	12.60%	2.90%
12/18/1984	15.00%	12.55%	2.45%
12/20/1984	15.00%	12.54%	2.46%
12/28/1984	15.75%	12.51%	3.24%
12/28/1984	16.25%	12.51%	3.74%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/2/1985	16.00%	12.50%	3.50%
1/31/1985	14.75%	12.37%	2.38%
2/7/1985	14.85%	12.33%	2.52%
2/15/1985	15.00%	12.27%	2.73%
2/20/1985	14.50%	12.25%	2.25%
2/22/1985	14.86%	12.25%	2.61%
3/14/1985	15.50%	12.16%	3.34%
3/28/1985	14.80%	12.08%	2.72%
4/9/1985	15.50%	12.02%	3.48%
4/16/1985	15.70%	11.96%	3.74%
6/10/1985	15.75%	11.58%	4.17%
6/26/1985	14.82%	11.46%	3.36%
7/9/1985	15.00%	11.38%	3.62%
7/26/1985	14.50%	11.26%	3.24%
8/29/1985	14.50%	11.11%	3.39%
8/30/1985	14.38%	11.11%	3.27%
9/12/1985	15.25%	11.07%	4.18%
9/23/1985	15.30%	11.03%	4.27%
9/25/1985	14.50%	11.02%	3.48%
9/26/1985	13.80%	11.02%	2.78%
9/26/1985	14.50%	11.02%	3.48%
10/25/1985	15.25%	10.91%	4.34%
11/8/1985	12.94%	10.85%	2.09%
11/20/1985	14.90%	10.81%	4.09%
11/25/1985	13.30%	10.79%	2.51%
12/6/1985	12.00%	10.71%	1.29%
12/11/1985	14.90%	10.68%	4.22%
12/20/1985	14.88%	10.59%	4.29%
12/20/1985	15.00%	10.59%	4.41%
12/20/1985	15.00%	10.59%	4.41%
12/30/1985	15.75%	10.53%	5.22%
12/31/1985	14.00%	10.51%	3.49%
12/31/1985	14.50%	10.51%	3.99%
1/17/1986	14.50%	10.38%	4.12%
2/11/1986	12.50%	10.20%	2.30%
2/12/1986	15.20%	10.19%	5.01%
3/11/1986	14.00%	9.98%	4.02%
4/2/1986	12.90%	9.76%	3.14%
4/28/1986	13.01%	9.47%	3.54%
5/21/1986	13.25%	9.18%	4.07%
5/28/1986	14.00%	9.12%	4.88%
5/29/1986	13.90%	9.10%	4.80%
6/2/1986	13.00%	9.08%	3.92%
6/11/1986	14.00%	8.97%	5.03%
6/13/1986	13.55%	8.94%	4.61%
6/27/1986	11.88%	8.77%	3.11%
7/14/1986	12.60%	8.59%	4.01%
7/30/1986	13.30%	8.38%	4.92%
8/14/1986	13.50%	8.22%	5.28%
9/5/1986	13.30%	8.02%	5.28%
9/23/1986	12.75%	7.91%	4.84%
10/30/1986	13.00%	7.67%	5.33%
10/31/1986	13.75%	7.66%	6.09%
11/10/1986	14.00%	7.61%	6.39%
11/19/1986	13.75%	7.56%	6.19%
11/25/1986	13.15%	7.54%	5.61%
12/22/1986	13.80%	7.47%	6.33%
12/30/1986	13.90%	7.47%	6.43%
1/20/1987	12.75%	7.47%	5.28%
1/23/1987	13.55%	7.47%	6.08%
1/27/1987	12.16%	7.47%	4.69%
2/13/1987	12.60%	7.47%	5.13%
2/24/1987	12.00%	7.47%	4.53%
3/30/1987	12.20%	7.46%	4.74%
3/31/1987	13.00%	7.47%	5.53%
5/5/1987	12.85%	7.60%	5.25%
5/28/1987	13.50%	7.73%	5.77%
6/15/1987	13.20%	7.80%	5.40%
6/30/1987	12.60%	7.85%	4.75%
7/10/1987	12.90%	7.88%	5.02%
7/27/1987	13.50%	7.93%	5.57%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
8/25/1987	11.40%	8.09%	3.31%
9/18/1987	13.00%	8.27%	4.73%
10/20/1987	12.60%	8.55%	4.05%
10/20/1987	12.98%	8.55%	4.43%
11/12/1987	12.75%	8.68%	4.07%
11/13/1987	12.75%	8.68%	4.07%
11/24/1987	12.50%	8.73%	3.77%
12/8/1987	12.50%	8.81%	3.69%
12/22/1987	12.00%	8.90%	3.10%
12/31/1987	12.85%	8.94%	3.91%
12/31/1987	13.25%	8.94%	4.31%
1/15/1988	13.15%	8.99%	4.16%
1/20/1988	12.75%	8.99%	3.76%
1/29/1988	13.20%	8.99%	4.21%
2/4/1988	12.60%	8.99%	3.61%
3/23/1988	13.00%	8.95%	4.05%
5/27/1988	13.18%	9.02%	4.16%
6/14/1988	13.50%	9.00%	4.50%
6/17/1988	11.72%	8.99%	2.73%
6/24/1988	11.50%	8.97%	2.53%
7/1/1988	12.75%	8.95%	3.80%
7/8/1988	12.00%	8.93%	3.07%
7/18/1988	12.00%	8.91%	3.09%
7/20/1988	13.40%	8.90%	4.50%
8/8/1988	12.74%	8.90%	3.84%
9/20/1988	12.90%	8.93%	3.97%
9/26/1988	12.40%	8.93%	3.47%
9/27/1988	13.65%	8.93%	4.72%
9/30/1988	13.25%	8.94%	4.31%
10/13/1988	13.10%	8.93%	4.17%
10/21/1988	12.80%	8.94%	3.86%
10/25/1988	13.25%	8.94%	4.31%
10/26/1988	13.50%	8.94%	4.56%
10/27/1988	12.95%	8.94%	4.01%
10/28/1988	13.00%	8.95%	4.05%
11/15/1988	12.00%	8.98%	3.02%
11/29/1988	12.75%	9.01%	3.74%
12/19/1988	13.00%	9.05%	3.95%
12/21/1988	12.90%	9.05%	3.85%
12/22/1988	13.50%	9.05%	4.45%
1/26/1989	12.60%	9.06%	3.54%
1/27/1989	13.00%	9.06%	3.94%
2/8/1989	13.37%	9.05%	4.32%
3/8/1989	13.00%	9.04%	3.96%
5/4/1989	13.00%	9.04%	3.96%
6/8/1989	13.50%	8.96%	4.54%
7/19/1989	11.80%	8.84%	2.96%
7/25/1989	12.80%	8.82%	3.98%
7/31/1989	13.00%	8.81%	4.19%
8/14/1989	12.50%	8.76%	3.74%
8/22/1989	12.80%	8.73%	4.07%
8/23/1989	12.90%	8.72%	4.18%
9/21/1989	12.10%	8.62%	3.48%
10/6/1989	13.00%	8.58%	4.42%
10/17/1989	12.41%	8.54%	3.87%
10/18/1989	13.25%	8.54%	4.71%
10/20/1989	12.90%	8.53%	4.37%
10/31/1989	13.60%	8.50%	5.10%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/3/1989	12.93%	8.48%	4.45%
11/5/1989	13.20%	8.48%	4.72%
11/9/1989	12.60%	8.45%	4.15%
11/9/1989	13.00%	8.45%	4.55%
11/28/1989	12.75%	8.37%	4.38%
12/7/1989	13.25%	8.32%	4.93%
12/15/1989	13.00%	8.28%	4.72%
12/20/1989	12.90%	8.26%	4.64%
12/21/1989	12.80%	8.25%	4.55%
12/21/1989	12.90%	8.25%	4.65%
12/27/1989	12.50%	8.23%	4.27%
1/9/1990	13.00%	8.19%	4.81%
1/18/1990	12.50%	8.16%	4.34%
1/26/1990	12.10%	8.14%	3.96%
3/21/1990	12.80%	8.15%	4.65%
3/28/1990	13.00%	8.16%	4.84%
4/5/1990	12.20%	8.17%	4.03%
4/12/1990	13.25%	8.19%	5.06%
4/30/1990	12.45%	8.24%	4.21%
5/31/1990	12.40%	8.31%	4.09%
6/15/1990	13.20%	8.33%	4.87%
6/27/1990	12.90%	8.34%	4.56%
6/29/1990	13.25%	8.35%	4.90%
7/6/1990	12.10%	8.36%	3.74%
7/19/1990	11.70%	8.38%	3.32%
8/31/1990	12.50%	8.53%	3.97%
8/31/1990	12.50%	8.53%	3.97%
9/13/1990	12.50%	8.58%	3.92%
9/18/1990	12.75%	8.60%	4.15%
9/20/1990	12.50%	8.61%	3.89%
10/2/1990	13.00%	8.65%	4.35%
10/17/1990	11.90%	8.68%	3.22%
10/31/1990	12.95%	8.70%	4.25%
11/9/1990	13.25%	8.70%	4.55%
11/19/1990	13.00%	8.70%	4.30%
11/21/1990	12.10%	8.70%	3.40%
11/21/1990	12.50%	8.70%	3.80%
11/28/1990	12.75%	8.70%	4.05%
11/29/1990	12.75%	8.70%	4.05%
12/18/1990	13.10%	8.68%	4.42%
12/20/1990	12.50%	8.67%	3.83%
12/21/1990	12.50%	8.67%	3.83%
12/21/1990	13.00%	8.67%	4.33%
12/21/1990	13.60%	8.67%	4.93%
1/3/1991	13.02%	8.66%	4.36%
1/16/1991	13.25%	8.63%	4.62%
1/25/1991	11.70%	8.61%	3.09%
2/15/1991	12.70%	8.56%	4.14%
2/15/1991	12.80%	8.56%	4.24%
4/3/1991	13.00%	8.51%	4.49%
4/30/1991	12.45%	8.48%	3.97%
4/30/1991	13.00%	8.48%	4.52%
6/25/1991	11.70%	8.34%	3.36%
6/28/1991	12.50%	8.34%	4.16%
7/1/1991	11.70%	8.34%	3.36%
7/19/1991	12.10%	8.31%	3.79%
7/19/1991	12.30%	8.31%	3.99%
7/22/1991	12.90%	8.30%	4.60%
8/15/1991	12.25%	8.28%	3.97%
8/29/1991	13.30%	8.26%	5.04%
9/27/1991	12.50%	8.23%	4.27%
9/30/1991	12.40%	8.23%	4.17%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/3/1991	11.30%	8.22%	3.08%
10/9/1991	11.70%	8.21%	3.49%
10/15/1991	13.40%	8.20%	5.20%
11/1/1991	12.90%	8.20%	4.70%
11/8/1991	12.75%	8.20%	4.55%
11/26/1991	11.60%	8.18%	3.42%
11/26/1991	12.00%	8.18%	3.82%
11/27/1991	12.70%	8.18%	4.52%
12/6/1991	12.70%	8.16%	4.54%
12/10/1991	11.75%	8.15%	3.60%
12/19/1991	12.60%	8.14%	4.46%
12/19/1991	12.80%	8.14%	4.66%
12/30/1991	12.10%	8.11%	3.99%
1/22/1992	12.84%	8.05%	4.79%
1/31/1992	12.00%	8.03%	3.97%
2/20/1992	13.00%	8.00%	5.00%
2/27/1992	11.75%	7.98%	3.77%
3/18/1992	12.50%	7.94%	4.56%
5/15/1992	12.75%	7.86%	4.89%
6/24/1992	12.20%	7.85%	4.35%
6/29/1992	11.00%	7.85%	3.15%
7/14/1992	12.00%	7.83%	4.17%
7/22/1992	11.20%	7.82%	3.38%
8/10/1992	12.10%	7.79%	4.31%
8/26/1992	12.43%	7.75%	4.68%
9/30/1992	11.60%	7.72%	3.88%
10/6/1992	12.25%	7.72%	4.53%
10/13/1992	12.75%	7.71%	5.04%
10/23/1992	11.65%	7.71%	3.94%
10/28/1992	12.25%	7.71%	4.54%
10/29/1992	12.75%	7.70%	5.05%
10/30/1992	11.40%	7.70%	3.70%
11/9/1992	10.60%	7.70%	2.90%
11/25/1992	11.00%	7.68%	3.32%
11/25/1992	12.00%	7.68%	4.32%
12/3/1992	11.85%	7.66%	4.19%
12/16/1992	11.90%	7.64%	4.26%
12/22/1992	12.30%	7.62%	4.68%
12/22/1992	12.40%	7.62%	4.78%
12/30/1992	12.00%	7.61%	4.39%
12/31/1992	12.00%	7.61%	4.39%
1/12/1993	12.00%	7.59%	4.41%
1/12/1993	12.00%	7.59%	4.41%
2/2/1993	11.40%	7.53%	3.87%
2/22/1993	11.60%	7.48%	4.12%
4/23/1993	11.75%	7.27%	4.48%
5/3/1993	11.50%	7.25%	4.25%
5/3/1993	11.75%	7.25%	4.50%
6/3/1993	12.00%	7.20%	4.80%
6/7/1993	11.50%	7.20%	4.30%
6/22/1993	11.75%	7.16%	4.59%
7/21/1993	11.78%	7.06%	4.72%
7/21/1993	11.90%	7.06%	4.84%
7/23/1993	11.50%	7.05%	4.45%
7/29/1993	11.50%	7.03%	4.47%
8/12/1993	10.75%	6.97%	3.78%
8/24/1993	11.50%	6.92%	4.58%
8/31/1993	11.90%	6.88%	5.02%
9/1/1993	11.25%	6.87%	4.38%
9/1/1993	11.47%	6.87%	4.60%
9/27/1993	10.50%	6.74%	3.76%
9/29/1993	11.00%	6.72%	4.28%
9/30/1993	11.60%	6.72%	4.88%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/8/1993	11.50%	6.67%	4.83%
10/14/1993	11.20%	6.65%	4.55%
10/15/1993	11.75%	6.64%	5.11%
10/25/1993	11.55%	6.60%	4.95%
10/28/1993	11.50%	6.58%	4.92%
10/29/1993	10.10%	6.57%	3.53%
10/29/1993	10.20%	6.57%	3.63%
10/29/1993	11.25%	6.57%	4.68%
11/2/1993	10.80%	6.56%	4.24%
11/12/1993	11.80%	6.53%	5.27%
11/23/1993	12.50%	6.51%	5.99%
11/26/1993	11.00%	6.50%	4.50%
12/1/1993	11.45%	6.49%	4.96%
12/16/1993	10.60%	6.45%	4.15%
12/16/1993	11.20%	6.45%	4.75%
12/21/1993	11.30%	6.44%	4.86%
12/22/1993	11.00%	6.44%	4.56%
12/23/1993	10.10%	6.44%	3.66%
1/5/1994	11.50%	6.41%	5.09%
1/10/1994	11.00%	6.40%	4.60%
1/25/1994	12.00%	6.37%	5.63%
2/2/1994	10.40%	6.35%	4.05%
2/9/1994	10.70%	6.34%	4.36%
4/6/1994	11.24%	6.35%	4.89%
4/25/1994	11.00%	6.39%	4.61%
6/16/1994	10.50%	6.63%	3.87%
6/23/1994	10.60%	6.67%	3.93%
7/19/1994	10.70%	6.83%	3.87%
9/29/1994	10.90%	7.20%	3.70%
9/29/1994	11.00%	7.20%	3.80%
10/7/1994	11.87%	7.26%	4.61%
10/18/1994	11.50%	7.32%	4.18%
10/18/1994	11.50%	7.32%	4.18%
10/24/1994	11.00%	7.35%	3.65%
11/22/1994	12.12%	7.52%	4.60%
11/29/1994	11.30%	7.55%	3.75%
12/1/1994	11.00%	7.56%	3.44%
12/8/1994	11.50%	7.59%	3.91%
12/8/1994	11.70%	7.59%	4.11%
12/12/1994	11.82%	7.60%	4.22%
12/14/1994	11.50%	7.61%	3.89%
12/19/1994	11.50%	7.62%	3.88%
4/19/1995	11.00%	7.72%	3.28%
9/11/1995	11.30%	7.16%	4.14%
9/15/1995	10.40%	7.13%	3.27%
9/29/1995	11.50%	7.06%	4.44%
10/13/1995	10.76%	6.98%	3.78%
11/7/1995	12.50%	6.86%	5.64%
11/8/1995	11.10%	6.85%	4.25%
11/8/1995	11.30%	6.85%	4.45%
11/17/1995	10.90%	6.81%	4.09%
11/20/1995	11.40%	6.80%	4.60%
11/27/1995	13.60%	6.77%	6.83%
12/14/1995	11.30%	6.68%	4.62%
12/20/1995	11.60%	6.65%	4.95%
1/31/1996	11.30%	6.45%	4.85%
3/11/1996	11.60%	6.40%	5.20%
4/3/1996	11.13%	6.41%	4.72%
4/15/1996	10.50%	6.41%	4.09%
4/17/1996	10.77%	6.40%	4.37%
4/26/1996	10.60%	6.40%	4.20%
5/10/1996	11.00%	6.40%	4.60%
5/13/1996	11.25%	6.41%	4.84%
7/3/1996	11.25%	6.49%	4.76%
7/22/1996	11.25%	6.54%	4.71%
10/3/1996	10.00%	6.77%	3.23%
10/29/1996	11.30%	6.84%	4.46%
11/26/1996	11.30%	6.86%	4.44%
11/27/1996	11.30%	6.86%	4.44%
11/29/1996	11.00%	6.86%	4.14%
12/12/1996	11.96%	6.85%	5.11%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/17/1996	11.50%	6.85%	4.65%
1/22/1997	11.30%	6.83%	4.47%
1/27/1997	11.25%	6.83%	4.42%
1/31/1997	11.25%	6.83%	4.42%
2/13/1997	11.00%	6.82%	4.18%
2/13/1997	11.80%	6.82%	4.98%
2/20/1997	11.80%	6.81%	4.99%
3/27/1997	10.75%	6.79%	3.96%
4/29/1997	11.70%	6.81%	4.89%
7/17/1997	12.00%	6.77%	5.23%
10/29/1997	10.75%	6.70%	4.05%
10/31/1997	11.25%	6.70%	4.55%
12/24/1997	10.75%	6.53%	4.22%
4/28/1998	10.90%	6.11%	4.79%
4/30/1998	12.20%	6.10%	6.10%
6/30/1998	11.00%	5.94%	5.06%
8/26/1998	10.93%	5.82%	5.11%
9/3/1998	11.40%	5.80%	5.60%
9/15/1998	11.90%	5.77%	6.13%
10/7/1998	11.06%	5.70%	5.36%
10/30/1998	11.40%	5.63%	5.77%
12/10/1998	12.20%	5.52%	6.68%
12/17/1998	12.10%	5.49%	6.61%
2/19/1999	11.15%	5.32%	5.83%
3/1/1999	10.65%	5.31%	5.34%
3/1/1999	10.65%	5.31%	5.34%
6/8/1999	11.25%	5.35%	5.90%
11/12/1999	10.25%	5.92%	4.33%
12/14/1999	10.50%	5.99%	4.51%
1/28/2000	10.71%	6.16%	4.55%
2/17/2000	10.60%	6.20%	4.40%
5/25/2000	10.80%	6.19%	4.61%
6/19/2000	11.05%	6.18%	4.87%
6/22/2000	11.25%	6.18%	5.07%
7/17/2000	11.06%	6.15%	4.91%
7/20/2000	12.20%	6.14%	6.06%
8/11/2000	11.00%	6.11%	4.89%
9/27/2000	11.25%	6.00%	5.25%
9/29/2000	11.16%	6.00%	5.16%
10/5/2000	11.30%	5.98%	5.32%
11/28/2000	12.90%	5.87%	7.03%
11/30/2000	12.10%	5.86%	6.24%
2/5/2001	11.50%	5.75%	5.75%
3/15/2001	11.25%	5.66%	5.59%
5/8/2001	10.75%	5.61%	5.14%
10/24/2001	10.30%	5.54%	4.76%
10/24/2001	11.00%	5.54%	5.46%
1/9/2002	10.00%	5.50%	4.50%
1/30/2002	11.00%	5.47%	5.53%
1/31/2002	11.00%	5.47%	5.53%
4/17/2002	11.50%	5.44%	6.06%
4/29/2002	11.00%	5.45%	5.55%
6/11/2002	11.77%	5.48%	6.29%
6/20/2002	12.30%	5.48%	6.82%
8/28/2002	11.00%	5.49%	5.51%
9/11/2002	11.20%	5.45%	5.75%
9/12/2002	12.30%	5.45%	6.85%
10/28/2002	11.30%	5.35%	5.95%
10/30/2002	10.60%	5.34%	5.26%
11/1/2002	12.60%	5.34%	7.26%
11/7/2002	11.40%	5.33%	6.07%
11/8/2002	10.75%	5.33%	5.42%
11/20/2002	10.00%	5.30%	4.70%
11/20/2002	10.50%	5.30%	5.20%
12/4/2002	10.75%	5.27%	5.48%
12/30/2002	11.20%	5.19%	6.01%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/6/2003	11.25%	5.16%	6.09%
2/28/2003	12.30%	5.01%	7.29%
3/7/2003	9.96%	4.99%	4.97%
3/12/2003	11.40%	4.97%	6.43%
3/20/2003	12.00%	4.95%	7.05%
4/3/2003	12.00%	4.92%	7.08%
5/2/2003	11.40%	4.88%	6.52%
5/15/2003	11.05%	4.87%	6.18%
6/26/2003	11.00%	4.80%	6.20%
7/1/2003	11.00%	4.80%	6.20%
7/29/2003	11.71%	4.78%	6.93%
8/22/2003	10.20%	4.81%	5.39%
9/17/2003	9.90%	4.85%	5.05%
9/25/2003	10.25%	4.85%	5.40%
10/17/2003	10.54%	4.87%	5.67%
10/22/2003	10.46%	4.87%	5.59%
10/22/2003	10.71%	4.87%	5.84%
10/30/2003	11.00%	4.88%	6.12%
10/31/2003	10.20%	4.88%	5.32%
10/31/2003	10.75%	4.88%	5.87%
11/10/2003	10.60%	4.89%	5.71%
12/9/2003	10.50%	4.93%	5.57%
12/18/2003	10.50%	4.94%	5.56%
12/19/2003	12.00%	4.94%	7.06%
12/19/2003	12.00%	4.94%	7.06%
1/13/2004	10.25%	4.95%	5.30%
1/13/2004	12.00%	4.95%	7.05%
2/9/2004	11.25%	4.98%	6.27%
3/16/2004	10.90%	5.05%	5.85%
3/16/2004	10.90%	5.05%	5.85%
5/25/2004	10.00%	5.06%	4.94%
6/2/2004	11.22%	5.07%	6.15%
6/30/2004	10.50%	5.10%	5.40%
7/8/2004	10.00%	5.10%	4.90%
7/22/2004	10.25%	5.10%	5.15%
8/26/2004	10.50%	5.10%	5.40%
8/26/2004	10.50%	5.10%	5.40%
9/9/2004	10.40%	5.10%	5.30%
9/21/2004	10.50%	5.09%	5.41%
9/27/2004	10.30%	5.09%	5.21%
9/27/2004	10.50%	5.09%	5.41%
10/20/2004	10.20%	5.08%	5.12%
11/30/2004	10.60%	5.08%	5.52%
12/8/2004	9.90%	5.09%	4.81%
12/21/2004	11.50%	5.09%	6.41%
12/22/2004	11.50%	5.09%	6.41%
12/28/2004	10.25%	5.09%	5.16%
2/18/2005	10.30%	4.95%	5.35%
3/29/2005	11.00%	4.86%	6.14%
4/13/2005	10.60%	4.84%	5.76%
4/28/2005	11.00%	4.80%	6.20%
5/17/2005	10.00%	4.77%	5.23%
6/8/2005	10.18%	4.71%	5.47%
6/10/2005	10.90%	4.71%	6.19%
7/6/2005	10.50%	4.65%	5.85%
7/19/2005	11.50%	4.63%	6.87%
8/11/2005	10.40%	4.60%	5.80%
9/19/2005	9.45%	4.53%	4.92%
9/30/2005	10.51%	4.52%	5.99%
10/4/2005	9.90%	4.52%	5.38%
10/4/2005	10.75%	4.52%	6.23%
10/14/2005	10.40%	4.52%	5.88%
10/31/2005	10.25%	4.53%	5.72%
11/2/2005	9.70%	4.53%	5.17%
11/30/2005	10.00%	4.53%	5.47%
12/9/2005	9.70%	4.53%	5.17%
12/12/2005	11.00%	4.53%	6.47%
12/20/2005	10.13%	4.53%	5.60%
12/21/2005	10.40%	4.52%	5.88%
12/21/2005	11.00%	4.52%	6.48%
12/22/2005	10.20%	4.52%	5.68%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/22/2005	11.00%	4.52%	6.48%
12/28/2005	10.00%	4.52%	5.48%
1/5/2006	11.00%	4.52%	6.48%
1/25/2006	11.20%	4.52%	6.68%
1/25/2006	11.20%	4.52%	6.68%
2/3/2006	10.50%	4.52%	5.98%
2/15/2006	9.50%	4.53%	4.97%
4/26/2006	10.60%	4.65%	5.95%
7/24/2006	9.60%	4.87%	4.73%
7/24/2006	10.00%	4.87%	5.13%
9/20/2006	11.00%	4.93%	6.07%
9/26/2006	10.75%	4.93%	5.82%
10/20/2006	9.80%	4.96%	4.84%
11/2/2006	9.71%	4.97%	4.74%
11/9/2006	10.00%	4.97%	5.03%
11/21/2006	11.00%	4.98%	6.02%
12/5/2006	10.20%	4.97%	5.23%
1/5/2007	10.40%	4.95%	5.45%
1/9/2007	11.00%	4.94%	6.06%
1/11/2007	10.90%	4.94%	5.96%
1/19/2007	10.80%	4.93%	5.87%
1/26/2007	10.00%	4.92%	5.08%
2/8/2007	10.40%	4.91%	5.49%
3/14/2007	10.10%	4.86%	5.24%
3/20/2007	10.25%	4.84%	5.41%
3/21/2007	11.35%	4.84%	6.51%
3/22/2007	10.50%	4.84%	5.66%
3/29/2007	10.00%	4.83%	5.17%
6/13/2007	10.75%	4.81%	5.94%
6/29/2007	9.53%	4.84%	4.69%
6/29/2007	10.10%	4.84%	5.26%
7/3/2007	10.25%	4.85%	5.40%
7/13/2007	9.50%	4.86%	4.64%
7/24/2007	10.40%	4.87%	5.53%
8/1/2007	10.15%	4.88%	5.27%
8/29/2007	10.50%	4.91%	5.59%
9/10/2007	9.71%	4.91%	4.80%
9/19/2007	10.00%	4.91%	5.09%
9/25/2007	9.70%	4.92%	4.78%
10/8/2007	10.48%	4.92%	5.56%
10/19/2007	10.50%	4.91%	5.59%
10/25/2007	9.65%	4.91%	4.74%
11/15/2007	10.00%	4.89%	5.11%
11/20/2007	9.90%	4.89%	5.01%
11/27/2007	10.00%	4.88%	5.12%
11/29/2007	10.90%	4.88%	6.02%
12/14/2007	10.80%	4.87%	5.93%
12/18/2007	10.40%	4.86%	5.54%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	10.20%	4.86%	5.34%
12/21/2007	9.10%	4.86%	4.24%
1/8/2008	10.75%	4.83%	5.92%
1/17/2008	10.75%	4.81%	5.94%
1/17/2008	10.75%	4.81%	5.94%
2/5/2008	9.99%	4.78%	5.21%
2/5/2008	10.19%	4.78%	5.41%
2/13/2008	10.20%	4.76%	5.44%
3/31/2008	10.00%	4.63%	5.37%
5/28/2008	10.50%	4.53%	5.97%
6/24/2008	10.00%	4.52%	5.48%
6/27/2008	10.00%	4.52%	5.48%
7/31/2008	10.70%	4.50%	6.20%
7/31/2008	10.82%	4.50%	6.32%
8/27/2008	10.25%	4.50%	5.75%
9/2/2008	10.25%	4.50%	5.75%
9/19/2008	10.70%	4.48%	6.22%
9/24/2008	10.68%	4.48%	6.20%
9/24/2008	10.68%	4.48%	6.20%
9/24/2008	10.68%	4.48%	6.20%
9/30/2008	10.20%	4.48%	5.72%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/3/2008	10.30%	4.48%	5.82%
10/8/2008	10.15%	4.47%	5.68%
10/20/2008	10.06%	4.47%	5.59%
10/24/2008	10.60%	4.46%	6.14%
10/24/2008	10.60%	4.46%	6.14%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/24/2008	10.50%	4.41%	6.09%
12/3/2008	10.39%	4.37%	6.02%
12/24/2008	10.00%	4.26%	5.74%
12/26/2008	10.10%	4.24%	5.86%
12/29/2008	10.20%	4.23%	5.97%
1/13/2009	10.45%	4.14%	6.31%
2/2/2009	10.05%	4.04%	6.01%
3/9/2009	10.30%	3.89%	6.41%
3/25/2009	10.17%	3.84%	6.33%
4/2/2009	10.75%	3.81%	6.94%
5/5/2009	10.75%	3.71%	7.04%
5/15/2009	10.20%	3.70%	6.50%
5/29/2009	9.54%	3.70%	5.84%
6/3/2009	10.10%	3.71%	6.39%
6/22/2009	10.00%	3.73%	6.27%
6/29/2009	10.21%	3.74%	6.47%
6/30/2009	9.31%	3.74%	5.57%
7/17/2009	9.26%	3.75%	5.51%
7/17/2009	10.50%	3.75%	6.75%
10/16/2009	10.40%	4.09%	6.31%
10/26/2009	10.10%	4.11%	5.99%
10/28/2009	10.15%	4.12%	6.03%
10/28/2009	10.15%	4.12%	6.03%
10/30/2009	9.95%	4.12%	5.83%
11/20/2009	9.45%	4.18%	5.27%
12/14/2009	10.50%	4.24%	6.26%
12/16/2009	10.75%	4.25%	6.50%
12/17/2009	10.30%	4.26%	6.04%
12/18/2009	10.40%	4.26%	6.14%
12/18/2009	10.40%	4.26%	6.14%
12/18/2009	10.50%	4.26%	6.24%
12/22/2009	10.20%	4.27%	5.93%
12/22/2009	10.40%	4.27%	6.13%
12/28/2009	10.85%	4.29%	6.56%
12/29/2009	10.38%	4.30%	6.08%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/11/2010	10.24%	4.34%	5.90%
1/21/2010	10.23%	4.37%	5.86%
1/21/2010	10.33%	4.37%	5.96%
1/26/2010	10.40%	4.37%	6.03%
2/10/2010	10.00%	4.39%	5.61%
2/23/2010	10.50%	4.40%	6.10%
3/9/2010	9.60%	4.40%	5.20%
3/24/2010	10.13%	4.42%	5.71%
3/31/2010	10.70%	4.43%	6.27%
4/1/2010	9.50%	4.43%	5.07%
4/2/2010	10.10%	4.44%	5.66%
4/8/2010	10.35%	4.44%	5.91%
4/29/2010	9.19%	4.46%	4.73%
4/29/2010	9.40%	4.46%	4.94%
4/29/2010	9.40%	4.46%	4.94%
5/17/2010	10.55%	4.46%	6.09%
5/24/2010	10.05%	4.46%	5.59%
6/3/2010	11.00%	4.46%	6.54%
6/16/2010	10.00%	4.46%	5.54%
6/18/2010	10.30%	4.46%	5.84%
8/9/2010	12.55%	4.41%	8.14%
8/17/2010	10.10%	4.40%	5.70%
9/16/2010	9.60%	4.31%	5.29%
9/16/2010	10.00%	4.31%	5.69%
9/16/2010	10.00%	4.31%	5.69%
9/16/2010	10.30%	4.31%	5.99%
10/21/2010	10.40%	4.20%	6.20%
11/2/2010	9.75%	4.17%	5.58%
11/2/2010	9.75%	4.17%	5.58%
11/3/2010	10.75%	4.17%	6.58%
11/19/2010	10.20%	4.15%	6.05%
12/1/2010	10.00%	4.13%	5.87%
12/6/2010	9.56%	4.12%	5.44%
12/6/2010	10.09%	4.12%	5.97%
12/9/2010	10.25%	4.12%	6.13%
12/14/2010	10.33%	4.11%	6.22%
12/17/2010	10.10%	4.11%	5.99%
12/20/2010	10.10%	4.11%	5.99%
12/23/2010	9.92%	4.10%	5.82%
1/6/2011	10.35%	4.09%	6.26%
1/12/2011	10.30%	4.09%	6.21%
1/13/2011	10.30%	4.09%	6.21%
3/10/2011	10.10%	4.16%	5.94%
3/31/2011	9.45%	4.20%	5.25%
4/18/2011	10.05%	4.23%	5.82%
5/26/2011	10.50%	4.32%	6.18%
6/21/2011	10.00%	4.36%	5.64%
6/29/2011	8.83%	4.38%	4.45%
8/1/2011	9.20%	4.41%	4.79%
9/1/2011	10.10%	4.33%	5.77%
11/14/2011	9.60%	3.93%	5.67%
12/13/2011	9.50%	3.76%	5.74%
12/20/2011	10.00%	3.72%	6.28%
12/22/2011	10.40%	3.70%	6.70%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/10/2012	9.06%	3.59%	5.47%
1/10/2012	9.45%	3.59%	5.86%
1/10/2012	9.45%	3.59%	5.86%
1/23/2012	10.20%	3.53%	6.67%
1/31/2012	10.00%	3.49%	6.51%
4/24/2012	9.50%	3.16%	6.34%
4/24/2012	9.75%	3.16%	6.59%
5/7/2012	9.80%	3.13%	6.67%
5/22/2012	9.60%	3.10%	6.50%
5/24/2012	9.70%	3.09%	6.61%
6/7/2012	10.30%	3.06%	7.24%
6/15/2012	10.40%	3.05%	7.35%
6/18/2012	9.60%	3.05%	6.55%
7/2/2012	9.75%	3.04%	6.71%
10/24/2012	10.30%	2.92%	7.38%
10/26/2012	9.50%	2.92%	6.58%
10/31/2012	9.30%	2.92%	6.38%
10/31/2012	9.90%	2.92%	6.98%
10/31/2012	10.00%	2.92%	7.08%
11/1/2012	9.45%	2.91%	6.54%
11/8/2012	10.10%	2.91%	7.19%
11/9/2012	10.30%	2.90%	7.40%
11/26/2012	10.00%	2.89%	7.11%
11/28/2012	10.40%	2.88%	7.52%
11/28/2012	10.50%	2.88%	7.62%
12/4/2012	10.00%	2.87%	7.13%
12/4/2012	10.50%	2.87%	7.63%
12/20/2012	9.50%	2.84%	6.66%
12/20/2012	10.10%	2.84%	7.26%
12/20/2012	10.25%	2.84%	7.41%
12/20/2012	10.30%	2.84%	7.46%
12/20/2012	10.40%	2.84%	7.56%
12/20/2012	10.50%	2.84%	7.66%
12/26/2012	9.80%	2.83%	6.97%
2/22/2013	9.60%	2.86%	6.74%
3/14/2013	9.30%	2.89%	6.41%
3/27/2013	9.80%	2.92%	6.88%
4/23/2013	9.80%	2.96%	6.84%
5/10/2013	9.25%	2.96%	6.29%
6/13/2013	9.40%	3.01%	6.39%
6/18/2013	9.28%	3.02%	6.26%
6/18/2013	9.28%	3.02%	6.26%
6/25/2013	9.80%	3.04%	6.76%
9/23/2013	9.60%	3.33%	6.27%
11/6/2013	10.20%	3.42%	6.78%
11/13/2013	9.84%	3.44%	6.40%
11/14/2013	10.25%	3.44%	6.81%
11/22/2013	9.50%	3.47%	6.03%
12/5/2013	10.20%	3.50%	6.70%
12/13/2013	9.60%	3.52%	6.08%
12/16/2013	9.73%	3.53%	6.20%
12/17/2013	10.00%	3.53%	6.47%
12/18/2013	9.08%	3.53%	5.55%
12/23/2013	9.72%	3.55%	6.17%
12/30/2013	10.00%	3.57%	6.43%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/21/2014	9.65%	3.66%	5.99%
1/22/2014	9.18%	3.66%	5.52%
2/20/2014	9.30%	3.71%	5.59%
2/21/2014	9.85%	3.72%	6.13%
2/28/2014	9.55%	3.73%	5.82%
3/16/2014	9.72%	3.74%	5.98%
4/21/2014	9.50%	3.73%	5.77%
4/22/2014	9.80%	3.73%	6.07%
5/8/2014	9.10%	3.71%	5.39%
5/8/2014	9.59%	3.71%	5.88%
6/6/2014	10.40%	3.66%	6.74%
6/12/2014	10.10%	3.66%	6.44%
6/12/2014	10.10%	3.66%	6.44%
6/12/2014	10.10%	3.66%	6.44%
7/7/2014	9.30%	3.63%	5.67%
7/25/2014	9.30%	3.60%	5.70%
7/31/2014	9.90%	3.59%	6.31%
9/4/2014	9.10%	3.50%	5.60%
9/24/2014	9.35%	3.46%	5.89%
9/30/2014	9.75%	3.44%	6.31%
10/29/2014	10.80%	3.37%	7.43%
11/6/2014	10.20%	3.35%	6.85%
11/14/2014	10.20%	3.33%	6.87%
11/14/2014	10.30%	3.33%	6.97%
11/26/2014	10.20%	3.30%	6.90%
12/3/2014	10.00%	3.29%	6.71%
1/13/2015	10.30%	3.16%	7.14%
1/21/2015	9.05%	3.13%	5.92%
1/21/2015	9.05%	3.13%	5.92%
4/9/2015	9.50%	2.88%	6.62%
5/11/2015	9.80%	2.82%	6.98%
6/17/2015	9.00%	2.79%	6.21%
8/21/2015	9.75%	2.78%	6.97%
10/7/2015	9.55%	2.82%	6.73%
10/13/2015	9.75%	2.83%	6.92%
10/15/2015	9.00%	2.84%	6.16%
10/30/2015	9.80%	2.87%	6.93%
11/19/2015	10.00%	2.89%	7.11%
12/3/2015	10.00%	2.91%	7.09%
12/9/2015	9.60%	2.92%	6.68%
12/11/2015	9.90%	2.92%	6.98%
12/18/2015	9.50%	2.94%	6.56%
1/6/2016	9.50%	2.97%	6.53%
1/6/2016	9.50%	2.97%	6.53%
1/28/2016	9.40%	2.97%	6.43%
2/10/2016	9.60%	2.95%	6.65%
2/16/2016	9.50%	2.94%	6.56%
2/29/2016	9.40%	2.92%	6.48%
4/29/2016	9.80%	2.83%	6.97%
5/5/2016	9.49%	2.82%	6.67%
6/1/2016	9.55%	2.80%	6.75%
6/3/2016	9.65%	2.79%	6.86%
6/15/2016	9.00%	2.77%	6.23%
6/15/2016	9.00%	2.77%	6.23%
9/2/2016	9.50%	2.56%	6.94%
9/23/2016	9.75%	2.52%	7.23%
9/27/2016	9.50%	2.51%	6.99%
9/29/2016	9.11%	2.50%	6.61%
10/13/2016	10.20%	2.48%	7.72%
10/28/2016	9.70%	2.47%	7.23%
11/9/2016	9.80%	2.47%	7.33%
11/18/2016	10.00%	2.49%	7.51%
12/9/2016	10.10%	2.51%	7.59%
12/15/2016	9.00%	2.53%	6.47%
12/15/2016	9.00%	2.53%	6.47%
12/20/2016	9.75%	2.53%	7.22%
12/22/2016	9.50%	2.54%	6.96%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/24/2017	9.00%	2.59%	6.41%
2/21/2017	10.55%	2.63%	7.92%
3/1/2017	9.25%	2.65%	6.60%
4/11/2017	9.50%	2.77%	6.73%
4/20/2017	8.70%	2.79%	5.91%
4/28/2017	9.50%	2.81%	6.69%
5/23/2017	9.60%	2.88%	6.72%
6/6/2017	9.70%	2.91%	6.79%
6/22/2017	9.70%	2.93%	6.77%
6/30/2017	9.60%	2.94%	6.66%
7/20/2017	9.55%	2.97%	6.58%
7/31/2017	10.10%	2.98%	7.12%
9/13/2017	9.40%	2.93%	6.47%
9/19/2017	9.70%	2.92%	6.78%
9/22/2017	11.88%	2.92%	8.96%
9/27/2017	10.20%	2.92%	7.28%
10/20/2017	9.60%	2.90%	6.70%
10/26/2017	10.20%	2.90%	7.30%
10/30/2017	10.05%	2.90%	7.15%
12/5/2017	9.50%	2.86%	6.64%
12/7/2017	9.80%	2.86%	6.94%
12/13/2017	9.25%	2.85%	6.40%
12/28/2017	9.50%	2.84%	6.66%
1/31/2018	9.80%	2.83%	6.97%
2/21/2018	9.80%	2.84%	6.96%
2/21/2018	9.80%	2.84%	6.96%
2/28/2018	9.50%	2.85%	6.65%
3/15/2018	9.00%	2.87%	6.13%
3/26/2018	10.19%	2.88%	7.31%
4/26/2018	9.50%	2.91%	6.59%
4/27/2018	9.30%	2.91%	6.39%
5/2/2018	9.50%	2.91%	6.59%
5/3/2018	9.70%	2.91%	6.79%
5/29/2018	9.40%	2.95%	6.45%
6/6/2018	9.80%	2.96%	6.84%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
6/14/2018	8.80%	2.97%	5.83%
7/16/2018	9.60%	2.98%	6.62%
7/20/2018	9.40%	2.99%	6.41%
8/24/2018	9.28%	3.02%	6.26%
8/28/2018	10.00%	3.03%	6.97%
9/13/2018	10.00%	3.04%	6.96%
9/14/2018	10.00%	3.05%	6.95%
9/19/2018	9.85%	3.05%	6.80%
9/20/2018	9.80%	3.05%	6.75%
9/26/2018	9.40%	3.06%	6.34%
9/26/2018	10.20%	3.06%	7.14%
9/28/2018	9.50%	3.07%	6.43%
9/28/2018	9.50%	3.07%	6.43%
10/5/2018	9.61%	3.08%	6.53%
10/15/2018	9.80%	3.09%	6.71%
10/26/2018	9.40%	3.11%	6.29%
10/29/2018	9.60%	3.11%	6.49%
11/1/2018	9.87%	3.11%	6.76%
11/8/2018	9.70%	3.12%	6.58%
11/8/2018	9.70%	3.12%	6.58%
12/11/2018	9.70%	3.14%	6.56%
12/12/2018	9.30%	3.14%	6.16%
12/13/2018	9.60%	3.14%	6.46%
12/19/2018	9.30%	3.14%	6.16%
12/21/2018	9.35%	3.14%	6.21%
12/24/2018	9.25%	3.14%	6.11%
12/24/2018	9.25%	3.14%	6.11%
1/4/2019	9.80%	3.14%	6.66%
1/18/2019	9.70%	3.14%	6.56%
3/14/2019	9.00%	3.12%	5.88%
3/27/2019	9.70%	3.12%	6.58%
4/30/2019	9.73%	3.11%	6.62%
5/7/2019	9.65%	3.10%	6.55%
5/21/2019	9.80%	3.10%	6.70%
9/4/2019	10.00%	2.76%	7.24%
9/26/2019	9.90%	2.69%	7.21%
10/2/2019	9.73%	2.67%	7.06%
10/8/2019	9.40%	2.64%	6.76%
10/15/2019	9.70%	2.62%	7.08%
10/21/2019	9.40%	2.60%	6.80%
10/31/2019	9.70%	2.57%	7.13%
10/31/2019	10.00%	2.57%	7.43%
10/31/2019	10.00%	2.57%	7.43%
10/31/2019	10.20%	2.57%	7.63%
11/7/2019	9.35%	2.55%	6.80%
11/13/2019	9.60%	2.54%	7.06%
11/13/2019	9.60%	2.54%	7.06%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/6/2019	9.87%	2.47%	7.40%
12/11/2019	9.40%	2.46%	6.94%
12/17/2019	9.75%	2.44%	7.31%
12/18/2019	9.60%	2.44%	7.16%
12/18/2019	9.60%	2.44%	7.16%
12/19/2019	10.05%	2.44%	7.61%
12/19/2019	10.20%	2.44%	7.76%
12/19/2019	10.25%	2.44%	7.81%
12/20/2019	9.20%	2.44%	6.76%
12/26/2019	9.75%	2.42%	7.33%
1/15/2020	9.35%	2.37%	6.98%
1/16/2020	8.80%	2.37%	6.43%
1/24/2020	9.44%	2.35%	7.09%
2/3/2020	9.40%	2.32%	7.08%
2/24/2020	9.10%	2.27%	6.83%
2/25/2020	9.50%	2.27%	7.23%
2/28/2020	9.70%	2.25%	7.45%
3/25/2020	9.40%	2.15%	7.25%
3/26/2020	9.48%	2.14%	7.34%
4/21/2020	9.80%	2.02%	7.78%
5/19/2020	9.20%	1.94%	7.26%
6/16/2020	9.65%	1.86%	7.79%
7/8/2020	9.40%	1.80%	7.60%
8/4/2020	9.50%	1.70%	7.80%
8/20/2020	9.90%	1.64%	8.26%
8/21/2020	9.35%	1.64%	7.71%
9/10/2020	9.90%	1.57%	8.33%
9/23/2020	9.60%	1.53%	8.07%
9/25/2020	9.25%	1.52%	7.73%
9/25/2020	9.25%	1.52%	7.73%
10/7/2020	9.70%	1.49%	8.21%
10/12/2020	9.20%	1.48%	7.72%
10/16/2020	9.40%	1.46%	7.94%
10/30/2020	9.90%	1.44%	8.46%
11/7/2020	9.60%	1.43%	8.17%
11/19/2020	8.80%	1.42%	7.38%
11/19/2020	8.80%	1.42%	7.38%
11/19/2020	9.90%	1.42%	8.48%
11/24/2020	9.80%	1.42%	8.38%
12/9/2020	9.10%	1.43%	7.67%
12/10/2020	9.40%	1.43%	7.97%
12/16/2020	9.38%	1.44%	7.94%
12/16/2020	9.65%	1.44%	8.21%
12/23/2020	10.00%	1.45%	8.55%

[6]	[7]	[8]	[9]
Date of Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/6/2021	9.40%	1.47%	7.93%
1/6/2021	9.60%	1.47%	8.13%
1/13/2021	9.67%	1.49%	8.18%
1/26/2021	9.50%	1.51%	7.99%
2/16/2021	9.80%	1.56%	8.24%
2/19/2021	9.86%	1.57%	8.29%
2/24/2021	9.25%	1.57%	7.68%
3/25/2021	10.00%	1.67%	8.33%
3/25/2021	10.00%	1.67%	8.33%
3/25/2021	10.00%	1.67%	8.33%
4/9/2021	9.70%	1.73%	7.97%
5/5/2021	9.30%	1.83%	7.47%
5/18/2021	9.40%	1.87%	7.53%
5/19/2021	8.80%	1.88%	6.92%
6/17/2021	10.24%	1.97%	8.27%
6/30/2021	9.43%	2.00%	7.43%
7/27/2021	9.54%	2.03%	7.51%
7/30/2021	9.30%	2.04%	7.26%
8/12/2021	8.80%	2.05%	6.75%
8/12/2021	8.80%	2.05%	6.75%
9/1/2021	9.40%	2.07%	7.33%
9/8/2021	9.67%	2.08%	7.59%
9/9/2021	9.85%	2.08%	7.77%
9/14/2021	9.50%	2.08%	7.42%
9/27/2021	9.40%	2.09%	7.31%
9/30/2021	9.70%	2.10%	7.60%
10/6/2021	9.70%	2.10%	7.60%
10/27/2021	9.37%	2.12%	7.25%
11/17/2021	9.80%	2.11%	7.69%
11/17/2021	9.60%	2.11%	7.49%
11/18/2021	9.00%	2.11%	6.89%
11/18/2021	9.75%	2.11%	7.64%
11/18/2021	10.00%	2.11%	7.89%
11/18/2021	10.00%	2.11%	7.89%
11/23/2021	9.80%	2.10%	7.70%
11/30/2021	9.40%	2.09%	7.31%
12/3/2021	9.65%	2.08%	7.57%
12/9/2021	9.90%	2.07%	7.83%
12/13/2021	9.20%	2.06%	7.14%
12/28/2021	9.35%	2.03%	7.32%
12/28/2021	9.38%	2.03%	7.35%
12/28/2021	9.60%	2.03%	7.57%
1/3/2022	9.25%	2.03%	7.22%
1/6/2022	9.60%	2.02%	7.58%
1/20/2022	9.00%	2.01%	6.99%
1/21/2022	9.60%	2.01%	7.59%
3/22/2022	9.40%	2.02%	7.38%
3/22/2022	9.40%	2.02%	7.38%
4/14/2022	9.20%	2.08%	7.12%
5/19/2022	9.23%	2.23%	7.00%
6/16/2022	9.25%	2.36%	6.89%
7/7/2022	9.90%	2.45%	7.45%
7/20/2022	9.30%	2.50%	6.80%
7/27/2022	9.85%	2.53%	7.32%
8/2/2022	9.40%	2.56%	6.84%
8/17/2022	9.60%	2.62%	6.98%
8/18/2022	9.39%	2.63%	6.76%
8/23/2022	9.40%	2.65%	6.75%
		# of Cases:	1,236

CAPITAL STRUCTURE ANALYSIS

COMMON EQUITY RATIO [1]

Proxy Group Company	Ticker	2021	2020	2019	Average
Atmos Energy Corporation	ATO	51.03%	58.31%	57.85%	55.73%
New Jersey Resources Corporation	NJR	51.75%	55.13%	57.55%	54.81%
NiSource Inc.	NI	54.85%	54.43%	54.33%	54.54%
Northwest Natural Gas Company	NWN	44.08%	41.92%	45.51%	43.84%
One Gas Inc.	OGS	61.09%	60.04%	63.28%	61.47%
Spire Inc.	SR	49.11%	52.78%	53.70%	51.87%
Proxy Group					
MEAN		51.99%	53.77%	55.37%	53.71%
MEDIAN		51.39%	54.78%	55.94%	54.67%
LOW		44.08%	41.92%	45.51%	43.84%
HIGH		61.09%	60.04%	63.28%	61.47%

COMMON EQUITY RATIO - UTILITY OPERATING COMPANIES [2]

Company Name	Ticker	2021	2020	2019	Average
Atmos Energy Corporation	ATO	51.03%	58.31%	57.85%	55.73%
New Jersey Natural Gas Company	NJR	51.75%	55.13%	57.55%	54.81%
Columbia Gas of Maryland Inc.	NI	55.26%	54.95%	52.38%	54.20%
Columbia Gas of Pennsylvania, Inc.	NI	56.05%	55.68%	55.59%	55.77%
Columbia Gas of Kentucky, Inc.	NI	53.87%	54.68%	54.23%	54.26%
Columbia Gas of Virginia, Inc.	NI	44.52%	43.69%	42.53%	43.58%
Columbia Gas of Ohio, Inc.	NI	50.79%	50.45%	53.00%	51.41%
Northern Indiana Public Service Company	NI	58.59%	58.01%	56.43%	57.68%
Northwest Natural Gas Company	NWN	44.08%	41.92%	45.51%	43.84%
Kansas Gas Service Company, Inc.	OGS	61.37%	60.33%	63.55%	61.75%
Oklahoma Natural Gas Company	OGS	60.99%	59.85%	63.10%	61.31%
Texas Gas Service Company, Inc.	OGS	60.98%	59.99%	63.23%	61.40%
Spire Alabama Inc.	SR	56.81%	58.95%	60.54%	58.77%
Spire Gulf Inc.	SR	41.14%	39.49%	49.39%	43.34%
Spire Mississippi Inc.	SR	38.68%	38.44%	45.64%	40.92%
Spire Missouri Inc.	SR	46.20%	50.65%	50.45%	49.10%
Operating Company					
MEAN		52.01%	52.53%	54.44%	52.99%
MEDIAN		52.81%	55.04%	54.91%	54.54%
LOW		38.68%	38.44%	42.53%	40.92%
HIGH		61.37%	60.33%	63.55%	61.75%

Notes:
Sources: Operating Company FERC Form 2; Annual LDC Reports; S&P Capital IQ

[1] Ratios are weighted by actual common capital, long-term debt, and short-term debt of Operating Subsidiaries.
[2] Natural Gas operating subsidiaries where data was unable to be obtained for 2019-2021 were removed from the analysis.

CAPITAL STRUCTURE ANALYSIS

LONG-TERM DEBT RATIO [1]

Proxy Group Company	Ticker	2021	2020	2019	Average
Atmos Energy Corporation	ATO	48.97%	41.69%	41.16%	43.94%
New Jersey Resources Corporation	NJR	42.01%	44.29%	40.21%	42.17%
NiSource Inc.	NI	45.15%	45.57%	45.67%	45.46%
Northwest Natural Gas Company	NWN	44.85%	46.45%	43.41%	44.90%
One Gas Inc.	OGS	38.91%	39.96%	36.72%	38.53%
Spire Inc.	SR	39.38%	37.20%	33.60%	36.72%
Proxy Group					
MEAN		43.21%	42.53%	40.13%	41.95%
MEDIAN		43.43%	42.99%	40.69%	43.05%
LOW		38.91%	37.20%	33.60%	36.72%
HIGH		48.97%	46.45%	45.67%	45.46%

LONG-TERM DEBT RATIO - UTILITY OPERATING COMPANIES [2]

Company Name	Ticker	2021	2020	2019	Average
Atmos Energy Corporation	ATO	48.97%	41.69%	41.16%	43.94%
New Jersey Natural Gas Company	NJR	42.01%	44.29%	40.21%	42.17%
Columbia Gas of Maryland Inc.	NI	44.74%	45.05%	47.62%	45.80%
Columbia Gas of Pennsylvania, Inc.	NI	43.95%	44.32%	44.41%	44.23%
Columbia Gas of Kentucky, Inc.	NI	46.13%	45.32%	45.77%	45.74%
Columbia Gas of Virginia, Inc.	NI	55.48%	56.31%	57.47%	56.42%
Columbia Gas of Ohio, Inc.	NI	49.21%	49.55%	47.00%	48.59%
Northern Indiana Public Service Company	NI	41.41%	41.99%	43.57%	42.32%
Northwest Natural Gas Company	NWN	44.85%	46.45%	43.41%	44.90%
Kansas Gas Service Company, Inc.	OGS	38.63%	39.67%	36.45%	38.25%
Oklahoma Natural Gas Company	OGS	39.01%	40.15%	36.90%	38.69%
Texas Gas Service Company, Inc.	OGS	39.02%	40.01%	36.77%	38.60%
Spire Alabama Inc.	SR	40.03%	32.66%	30.07%	34.25%
Spire Gulf Inc.	SR	42.00%	57.90%	50.61%	50.17%
Spire Mississippi Inc.	SR	0.00%	0.00%	0.00%	0.00%
Spire Missouri Inc.	SR	39.42%	38.72%	34.99%	37.71%
Operating Company					
MEAN		40.93%	41.50%	39.78%	40.74%
MEDIAN		42.00%	43.14%	42.29%	43.13%
LOW		0.00%	0.00%	0.00%	0.00%
HIGH		55.48%	57.90%	57.47%	56.42%

Notes:

[1] Ratios are weighted by actual common capital, long-term debt, and short-term debt of Operating Subsidiaries.

[2] Natural Gas operating subsidiaries where data was unable to be obtained for 2019-2021 were removed from the analysis.

CAPITAL STRUCTURE ANALYSIS

SHORT-TERM DEBT RATIO [1]

Proxy Group Company	Ticker	2021	2020	2019	Average
Atmos Energy Corporation	ATO	0.00%	0.00%	0.99%	0.33%
New Jersey Resources Corporation	NJR	6.25%	0.58%	2.23%	3.02%
NiSource Inc.	NI	0.00%	0.00%	0.00%	0.00%
Northwest Natural Gas Company	NWN	11.07%	11.63%	11.07%	11.26%
One Gas Inc.	OGS	0.00%	0.00%	0.00%	0.00%
Spire Inc.	SR	11.51%	10.02%	12.70%	11.41%
Proxy Group					
MEAN		4.80%	3.71%	4.50%	4.34%
MEDIAN		3.12%	0.29%	1.61%	1.68%
LOW		0.00%	0.00%	0.00%	0.00%
HIGH		11.51%	11.63%	12.70%	11.41%

SHORT-TERM DEBT RATIO - UTILITY OPERATING COMPANIES [2]

Company Name	Ticker	2021	2020	2019	Average
Atmos Energy Corporation	ATO	0.00%	0.00%	0.99%	0.33%
New Jersey Natural Gas Company	NJR	6.25%	0.58%	2.23%	3.02%
Columbia Gas of Maryland Inc.	NI	0.00%	0.00%	0.00%	0.00%
Columbia Gas of Pennsylvania, Inc.	NI	0.00%	0.00%	0.00%	0.00%
Columbia Gas of Kentucky, Inc.	NI	0.00%	0.00%	0.00%	0.00%
Columbia Gas of Virginia, Inc.	NI	0.00%	0.00%	0.00%	0.00%
Columbia Gas of Ohio, Inc.	NI	0.00%	0.00%	0.00%	0.00%
Northern Indiana Public Service Company	NI	0.00%	0.00%	0.00%	0.00%
Northwest Natural Gas Company	NWN	11.07%	11.63%	11.07%	11.26%
Kansas Gas Service Company, Inc.	OGS	0.00%	0.00%	0.00%	0.00%
Oklahoma Natural Gas Company	OGS	0.00%	0.00%	0.00%	0.00%
Texas Gas Service Company, Inc.	OGS	0.00%	0.00%	0.00%	0.00%
Spire Alabama Inc.	SR	3.16%	8.40%	9.39%	6.98%
Spire Gulf Inc.	SR	16.86%	2.61%	0.00%	6.49%
Spire Mississippi Inc.	SR	61.32%	61.56%	54.36%	59.08%
Spire Missouri Inc.	SR	14.38%	10.63%	14.56%	13.19%
Operating Company					
MEAN		7.06%	5.96%	5.79%	6.27%
MEDIAN		0.00%	0.00%	0.00%	0.00%
LOW		0.00%	0.00%	0.00%	0.00%
HIGH		61.32%	61.56%	54.36%	59.08%

Notes:

[1] Ratios are weighted by actual common capital, long-term debt, and short-term debt of Operating Subsidiaries.

[2] Natural Gas operating subsidiaries where data was unable to be obtained for 2019-2021 were removed from the analysis.

2017-2022 Reported Authorized Return on Equity and Equity Ratio as a Percentage of Total Capital

State	Utility	Parent Company Ticker	Case Identification	Service Type	Case Type	Date Rate Case Filed	Date Authorized	Authorized ROE	Authorized Equity % Total Capital
New York	Consolidated Edison Co. of NY	ED	C-16-G-0061	Natural Gas	Distribution	1/29/2016	1/24/2017	9.00%	48.00%
Georgia	Atlanta Gas Light Co.	SO	D-40828	Natural Gas	Distribution	12/1/2016	2/21/2017	10.55%	51.00%
District of Columbia	Washington Gas Light Co.	ALA	FC-1137	Natural Gas	Distribution	2/26/2016	3/1/2017	9.25%	55.70%
Arizona	Southwest Gas Corp.	SWX	D-G-01551A-16-0107	Natural Gas	Distribution	5/2/2016	4/11/2017	9.50%	51.70%
New York	Natl Fuel Gas Distribution Cor	NFG	C-16-G-0257	Natural Gas	Distribution	4/28/2016	4/20/2017	8.70%	42.90%
Idaho	Intermountain Gas Co.	MDU	C-INT-G-16-2	Natural Gas	Distribution	8/12/2016	4/28/2017	9.50%	50.00%
Texas	CenterPoint Energy Resources	CNP	D-GUD-10567	Natural Gas	Distribution	11/16/2016	5/23/2017	9.60%	55.15%
Delaware	Delmarva Power & Light Co.	EXC	D-16-0650	Natural Gas	Distribution	5/17/2016	6/6/2017	9.70%	NA
Kentucky	Louisville Gas & Electric Co.	PPL	C-2016-00371 (gas)	Natural Gas	Distribution	11/23/2016	6/22/2017	9.70%	NA
New Jersey	Elizabethtown Gas Co.	SJI	D-GR-16090826	Natural Gas	Distribution	8/31/2016	6/30/2017	9.60%	46.00%
Montana	NorthWestern Corp.	NWE	D-D2016.9.68	Natural Gas	Distribution	9/30/2016	7/20/2017	9.55%	46.79%
Michigan	Consumers Energy Co.	CMS	C-U-18124	Natural Gas	Distribution	8/1/2016	7/31/2017	10.10%	41.27%
Oregon	Avista Corp.	AVA	D-UG 325	Natural Gas	Distribution	11/30/2016	9/13/2017	9.40%	50.00%
Maryland	Columbia Gas of Maryland Inc	NI	C-9447	Natural Gas	Distribution	4/14/2017	9/19/2017	9.70%	NA
Alaska	ENSTAR Natural Gas Co.	ALA	D-U-16-066	Natural Gas	Distribution	6/1/2016	9/22/2017	11.88%	51.81%
South Carolina	Piedmont Natural Gas Co.	DUK	D-2017-7-G	Natural Gas	Distribution	6/15/2017	9/27/2017	10.20%	53.00%
New Jersey	South Jersey Gas Co.	SJI	D-GR-17010071	Natural Gas	Distribution	1/27/2017	10/20/2017	9.60%	52.50%
California	San Diego Gas & Electric Co.	SRE	Advice No. 2611-G	Natural Gas	Distribution	9/29/2017	10/26/2017	10.20%	52.00%
California	Southern California Gas Co.	SRE	Advice No. 5192	Natural Gas	Distribution	9/29/2017	10/30/2017	10.05%	52.00%
Washington	Puget Sound Energy Inc.		D-UG-170034	Natural Gas	Distribution	1/13/2017	12/5/2017	9.50%	48.50%
Wisconsin	Northern States Power Co.	XEL	D-4220-UR-123 (Gas)	Natural Gas	Distribution	5/4/2017	12/7/2017	9.80%	51.45%
Connecticut	The Sthrn CT Gas Co	IBE	D-17-05-42	Natural Gas	Distribution	6/30/2017	12/13/2017	9.25%	52.19%
Idaho	Avista Corp.	AVA	C-AVU-G-17-01	Natural Gas	Distribution	6/9/2017	12/28/2017	9.50%	50.00%
Illinois	Northern Illinois Gas Co.	SO	D-17-0124	Natural Gas	Distribution	3/10/2017	1/31/2018	9.80%	52.00%
Missouri	Missouri Gas Energy	SR	C-GR-2017-0216	Natural Gas	Distribution	4/11/2017	2/21/2018	9.80%	54.16%
Missouri	Spire Missouri Inc.	SR	C-GR-2017-0215	Natural Gas	Distribution	4/11/2017	2/21/2018	9.80%	54.16%
Maine	Northern Utilities Inc.	UTL	D-2017-00065	Natural Gas	Distribution	5/31/2017	2/28/2018	9.50%	50.00%
New York	Niagara Mohawk Power Corp.	NG.	C-17-G-0239	Natural Gas	Distribution	4/28/2017	3/15/2018	9.00%	48.00%
Florida	Pivotal Utility Holdings Inc.	NEE	20170179-GU	Natural Gas	Distribution	10/23/2017	3/26/2018	10.19%	48.00%
Washington	Avista Corp.	AVA	D-UG-170486	Natural Gas	Distribution	5/26/2017	4/26/2018	9.50%	48.50%
New Hampshire	Liberty Utilities EnergyNorth	AQN	D-DG-17-048	Natural Gas	Distribution	4/28/2017	4/27/2018	9.30%	49.21%
New Hampshire	Northern Utilities Inc.	UTL	D-DG-17-070	Natural Gas	Distribution	6/5/2017	5/2/2018	9.50%	51.70%
Kentucky	Atmos Energy Corp.	ATO	C-2017-00349	Natural Gas	Distribution	9/28/2017	5/3/2018	9.70%	52.57%
Montana	MDU Resources Group	MDU	D2017.9.79	Natural Gas	Distribution	9/25/2017	5/29/2018	9.40%	51.62%
Missouri	Liberty Utilities (Midstates)	AQN	C-GR-2018-0013	Natural Gas	Distribution	9/29/2017	6/6/2018	9.80%	NA
New York	Central Hudson Gas & Electric	FTS	C-17-G-0460	Natural Gas	Distribution	7/28/2017	6/14/2018	8.80%	48.00%
Wyoming	Black Hills Northwest Wyoming	BKH	D-30011-97-GR-17	Natural Gas	Distribution	11/17/2017	7/16/2018	9.60%	54.00%
Washington	Cascade Natural Gas Corp.	MDU	D-UG-170929	Natural Gas	Distribution	8/31/2017	7/20/2018	9.40%	49.00%
Rhode Island	Narragansett Electric Co.	PPL	D-4770 (gas)	Natural Gas	Distribution	11/27/2017	8/24/2018	9.28%	50.95%
Michigan	Consumers Energy Co.	CMS	C-U-18424	Natural Gas	Distribution	10/31/2017	8/28/2018	10.00%	40.91%
Michigan	DTE Gas Co.	DTE	C-U-18999	Natural Gas	Distribution	11/22/2017	9/13/2018	10.00%	38.30%
Wisconsin	Wisconsin Power and Light Co	LNT	D-6680-UR-121 (Gas)	Natural Gas	Distribution	5/24/2018	9/14/2018	10.00%	52.00%
Indiana	Northern IN Public Svc Co.	NI	Ca-44988	Natural Gas	Distribution	9/27/2017	9/19/2018	9.85%	46.88%
Wisconsin	Madison Gas and Electric Co.	MGEE	D-3270-UR-122 (Gas)	Natural Gas	Distribution	7/17/2018	9/20/2018	9.80%	56.06%
North Dakota	MDU Resources Group	MDU	C-PU-17-295	Natural Gas	Distribution	7/21/2017	9/26/2018	9.40%	51.00%
South Carolina	Piedmont Natural Gas Co.	DUK	D-2018-7-G	Natural Gas	Distribution	6/15/2018	9/26/2018	10.20%	53.00%
Massachusetts	Boston Gas Co.	NG.	DPU-17-170 (Boston Gas)	Natural Gas	Distribution	11/15/2017	9/28/2018	9.50%	53.04%
Massachusetts	Colonial Gas Co.	NG.	DPU-17-170 (Colonial Gas)	Natural Gas	Distribution	11/15/2017	9/28/2018	9.50%	53.04%
Arkansas	Black Hills Energy Arkansas	BKH	D-17-071-U	Natural Gas	Distribution	12/15/2017	10/5/2018	9.61%	40.43%
Tennessee	Chattanooga Gas Co.	SO	D-18-00017	Natural Gas	Distribution	2/15/2018	10/15/2018	9.80%	49.23%
Oregon	Northwest Natural Gas Co.	NWN	D-UG-344	Natural Gas	Distribution	12/29/2017	10/26/2018	9.40%	50.00%
New Jersey	Public Service Electric Gas	PEG	D-GR18010030	Natural Gas	Distribution	1/12/2018	10/29/2018	9.60%	54.00%
Illinois	Ameren Illinois	AEE	D-18-0463	Natural Gas	Distribution	1/31/2018	11/1/2018	9.87%	50.00%
Delaware	Delmarva Power & Light Co.	EXC	D-17-0978	Natural Gas	Distribution	8/17/2017	11/8/2018	9.70%	50.52%
Minnesota	Minnesota Energy Resources	WEC	D-G-011/GR-17-563	Natural Gas	Distribution	10/13/2017	11/8/2018	9.70%	50.90%
Maryland	Washington Gas Light Co.	ALA	C-9481	Natural Gas	Distribution	5/15/2018	12/11/2018	9.70%	51.69%
Connecticut	Yankee Gas Services Co.	ES	D-18-05-10	Natural Gas	Distribution	6/15/2018	12/12/2018	9.30%	53.76%
Iowa	Interstate Power & Light Co.	LNT	D-RPU-2018-0002	Natural Gas	Distribution	5/2/2018	12/13/2018	9.60%	51.00%
Connecticut	CT Natural Gas Corp.	IBE	D-18-05-16	Natural Gas	Distribution	6/29/2018	12/19/2018	9.30%	55.00%
Colorado	Public Service Co. of CO	XEL	D-17AL-0363G	Natural Gas	Distribution	6/2/2017	12/21/2018	9.35%	54.60%
Nevada	Southwest Gas Corp.	SWX	D-18-05031 (Southern)	Natural Gas	Distribution	5/29/2018	12/24/2018	9.25%	49.66%
Nevada	Southwest Gas Corp.	SWX	D-18-05031 (Northern)	Natural Gas	Distribution	5/29/2018	12/24/2018	9.25%	49.66%
Maryland	Baltimore Gas and Electric Co.	EXC	C-9484	Natural Gas	Distribution	6/8/2018	1/4/2019	9.80%	52.85%
Massachusetts	The Berkshire Gas Co.	IBE	DPU 18-40	Natural Gas	Distribution	5/17/2018	1/18/2019	9.70%	54.00%

State	Utility	Parent Company Ticker	Case Identification	Service Type	Case Type	Date Rate Case Filed	Date Authorized	Authorized ROE	Authorized Equity % Total Capital
New York	Orange & Rockland Utlts Inc.	ED	C-18-G-0068	Natural Gas	Distribution	1/26/2018	3/14/2019	9.00%	48.00%
Kentucky	Duke Energy Kentucky Inc.	DUK	C-2018-00261	Natural Gas	Distribution	8/31/2018	3/27/2019	9.70%	50.76%
Kentucky	Louisville Gas & Electric Co.	PPL	C-2018-00295 (gas)	Natural Gas	Distribution	9/28/2018	4/30/2019	9.73%	NA
Kentucky	Atmos Energy Corp.	ATO	C-2018-00281	Natural Gas	Distribution	9/28/2018	5/7/2019	9.65%	58.06%
Texas	Atmos Energy Corp.	ATO	GUD-10779 (Mid-Tex Divisi	Natural Gas	Distribution	10/11/2018	5/21/2019	9.80%	60.18%
Wisconsin	Northern States Power Co.	XEL	D-4220-UR-124 (Gas)	Natural Gas	Distribution	5/23/2019	9/4/2019	10.00%	52.52%
Michigan	Consumers Energy Co.	CMS	C-U-20322	Natural Gas	Distribution	11/30/2018	9/26/2019	9.90%	41.78%
Illinois	Northern Illinois Gas Co.	SO	D-18-1775	Natural Gas	Distribution	11/9/2018	10/2/2019	9.73%	54.20%
South Carolina	Piedmont Natural Gas Co.	DUK	D-2019-7-G	Natural Gas	Distribution	6/14/2019	10/2/2019	9.90%	55.35%
Oregon	Avista Corp.	AVA	D-UG 366	Natural Gas	Distribution	3/15/2019	10/8/2019	9.40%	50.00%
Maryland	Washington Gas Light Co.	ALA	C-9605	Natural Gas	Distribution	4/22/2019	10/15/2019	9.70%	53.50%
Washington	Northwest Natural Gas Co.	NWN	D-UG-181053	Natural Gas	Distribution	12/31/2018	10/21/2019	9.40%	49.00%
North Carolina	Piedmont Natural Gas Co.	DUK	D-G-9, Sub 743	Natural Gas	Distribution	4/1/2019	10/31/2019	9.70%	52.00%
Wisconsin	Wisconsin Electric Power Co.	WEC	D-05-UR-109 (WEP-Gas)	Natural Gas	Distribution	3/28/2019	10/31/2019	10.00%	54.46%
Wisconsin	Wisconsin Public Service Corp.	WEC	D-6690-UR-126 (Gas)	Natural Gas	Distribution	3/28/2019	10/31/2019	10.00%	51.96%
Wisconsin	Wisconsin Gas LLC	WEC	D-05-UR-109	Natural Gas	Distribution	3/28/2019	10/31/2019	10.20%	52.02%
Louisiana	Entergy New Orleans LLC	ETR	D-UD-18-07 (gas)	Natural Gas	Distribution	9/21/2018	11/7/2019	9.35%	50.00%
New Jersey	Elizabethtown Gas Co.	SJI	D-GR19040486	Natural Gas	Distribution	4/18/2019	11/13/2019	9.60%	51.50%
New Jersey	New Jersey Natural Gas Co.	NJR	D-GR19030420	Natural Gas	Distribution	3/28/2019	11/13/2019	9.60%	54.00%
Michigan	SEMCO Energy Inc.	ALA	C-U-20479	Natural Gas	Distribution	5/31/2019	12/6/2019	9.87%	54.00%
Wyoming	Black Hills Gas Distribution	BKH	D-30026-2-GR-19	Natural Gas	Distribution	6/3/2019	12/11/2019	9.40%	50.23%
Maryland	Baltimore Gas and Electric Co.	EXC	C-9610 (GAS)	Natural Gas	Distribution	5/24/2019	12/17/2019	9.75%	NA
Iowa	Interstate Power & Light Co.	LNT	D-RPU-2019-0002	Natural Gas	Distribution	3/1/2019	12/18/2019	9.60%	51.00%
Maryland	Columbia Gas of Maryland Inc	NI	C-9609	Natural Gas	Distribution	5/22/2019	12/18/2019	9.60%	52.90%
California	Southern California Gas Co.	SRE	A-19-04-018	Natural Gas	Distribution	4/22/2019	12/19/2019	10.05%	52.00%
California	San Diego Gas & Electric Co.	SRE	A-19-04-017 (Gas)	Natural Gas	Distribution	4/22/2019	12/19/2019	10.20%	52.00%
Georgia	Atlanta Gas Light Co.	SO	D-42315	Natural Gas	Distribution	6/3/2019	12/19/2019	10.25%	56.00%
Virginia	Washington Gas Light Co.	ALA	C-PUR-2018-00080	Natural Gas	Distribution	7/31/2018	12/20/2019	9.20%	53.48%
West Virginia	Mountaineer Gas Co.	UGI	C-19-0316-G-42T	Natural Gas	Distribution	3/6/2019	12/26/2019	9.75%	NA
Wyoming	MDU Resources Group	MDU	D-30013-351-GR-19	Natural Gas	Distribution	5/23/2019	1/15/2020	9.35%	51.25%
New York	Consolidated Edison Co. of NY	ED	C-19-G-0066	Natural Gas	Distribution	1/31/2019	1/16/2020	8.80%	48.00%
Virginia	Roanoke Gas Co.	RGCO	C-PUR-2018-00013	Natural Gas	Distribution	10/10/2018	1/24/2020	9.44%	59.64%
Washington	Cascade Natural Gas Corp.	MDU	D-UG-190210	Natural Gas	Distribution	3/29/2019	2/3/2020	9.40%	49.10%
Kansas	Atmos Energy Corp.	ATO	D-19-ATMG-525-RTS	Natural Gas	Distribution	6/28/2019	2/24/2020	9.10%	56.32%
Utah	Questar Gas Co.	D	D-19-057-02	Natural Gas	Distribution	7/1/2019	2/25/2020	9.50%	55.00%
Massachusetts	Fitchburg Gas & Electric Light	UTL	DPU 19-131	Natural Gas	Distribution	12/17/2019	2/28/2020	9.70%	52.45%
Washington	Avista Corp.	AVA	D-UG-190335	Natural Gas	Distribution	4/30/2019	3/25/2020	9.40%	48.50%
Maine	Northern Utilities Inc.	UTL	D-2019-00092	Natural Gas	Distribution	6/28/2019	3/26/2020	9.48%	50.00%
Texas	Atmos Energy Corp.	ATO	D-GUD-10900	Natural Gas	Distribution	9/27/2019	4/21/2020	9.80%	60.12%
Colorado	Black Hills Colorado Gas Inc.	BKH	D-19AL-0075G	Natural Gas	Distribution	2/1/2019	5/19/2020	9.20%	50.15%
Texas	CenterPoint Energy Resources	CNP	D-GUD-10920	Natural Gas	Distribution	11/14/2019	6/16/2020	9.65%	56.95%
Washington	Puget Sound Energy Inc.		D-UG-190530	Natural Gas	Distribution	6/20/2019	7/8/2020	9.40%	48.50%
Texas	Texas Gas Service Co.	OGS	D-GUD-10928	Natural Gas	Distribution	12/20/2019	8/4/2020	9.50%	59.00%
Michigan	DTE Gas Co.	DTE	C-U-20642	Natural Gas	Distribution	11/25/2019	8/20/2020	9.90%	NA
Wyoming	Questar Gas Co.	D	D-30010-187-GR-19	Natural Gas	Distribution	11/1/2019	8/21/2020	9.35%	55.00%
Michigan	Consumers Energy Co.	CMS	C-U-20650	Natural Gas	Distribution	12/16/2019	9/10/2020	9.90%	NA
New Jersey	South Jersey Gas Co.	SJI	D-GR20030243	Natural Gas	Distribution	3/13/2020	9/23/2020	9.60%	54.00%
Nevada	Southwest Gas Corp.	SWX	D-20-02023 (Southern)	Natural Gas	Distribution	2/28/2020	9/25/2020	9.25%	49.26%
Nevada	Southwest Gas Corp.	SWX	D-20-02023 (Northern)	Natural Gas	Distribution	2/28/2020	9/25/2020	9.25%	49.26%
South Carolina	Piedmont Natural Gas Co.	DUK	D-2020-7-G	Natural Gas	Distribution	6/15/2020	10/4/2020	9.80%	52.31%
Massachusetts	Eversource Gas Company of MA	ES	DPU 20-59	Natural Gas	Distribution	7/2/2020	10/7/2020	9.70%	53.25%
Colorado	Public Service Co. of CO	XEL	D-20AL-0049G	Natural Gas	Distribution	2/5/2020	10/12/2020	9.20%	55.62%
Oregon	Northwest Natural Gas Co.	NWN	D-UG-388	Natural Gas	Distribution	12/30/2019	10/16/2020	9.40%	50.00%
Massachusetts	NSTAR Gas Co.	ES	DPU 19-120	Natural Gas	Distribution	11/8/2019	10/30/2020	9.90%	54.77%
Maryland	Columbia Gas of Maryland Inc	NI	C-9644	Natural Gas	Distribution	5/15/2020	11/7/2020	9.60%	52.63%
New York	NY State Electric & Gas Corp.	IBE	C-19-G-0379	Natural Gas	Distribution	5/20/2019	11/19/2020	8.80%	48.00%
New York	Rochester Gas & Electric Co	IBE	C-19-G-0381	Natural Gas	Distribution	5/20/2019	11/19/2020	8.80%	48.00%
Florida	Peoples Gas System	EMA	D-20200051	Natural Gas	Distribution	6/8/2020	11/19/2020	9.90%	54.70%
Wisconsin	Madison Gas and Electric Co.	MGEE	D-3270-UR-123 (Gas)	Natural Gas	Distribution	8/28/2020	11/24/2020	9.80%	55.00%
Arizona	Southwest Gas Corp.	SWX	D-G-01551A-19-0055	Natural Gas	Distribution	5/1/2019	12/9/2020	9.10%	51.10%
Oregon	Avista Corp.	AVA	D-UG 389	Natural Gas	Distribution	3/16/2020	12/10/2020	9.40%	50.00%
New Mexico	New Mexico Gas Co.	EMA	C-19-00317-UT	Natural Gas	Distribution	12/23/2019	12/16/2020	9.38%	52.00%
Maryland	Baltimore Gas and Electric Co.	EXC	C-9645 (Gas)	Natural Gas	Distribution	5/15/2020	12/16/2020	9.65%	52.00%
Wisconsin	Wisconsin Power and Light Co	LNT	D-6680-UR-122 (Gas)	Natural Gas	Distribution	5/1/2020	12/23/2020	10.00%	52.53%
Oregon	Cascade Natural Gas Corp.	MDU	D-UG 390	Natural Gas	Distribution	3/31/2020	1/6/2021	9.40%	50.00%
Delaware	Delmarva Power & Light Co.	EXC	D-20-0150	Natural Gas	Distribution	2/21/2020	1/6/2021	9.60%	50.37%
Illinois	Ameren Illinois	AEE	D-20-0308	Natural Gas	Distribution	2/21/2020	1/13/2021	9.67%	52.00%
Nebraska	Black Hills Nebraska Gas LLC	BKH	D-NG-109	Natural Gas	Distribution	6/1/2020	1/26/2021	9.50%	50.00%
Tennessee	Piedmont Natural Gas Co.	DUK	D-20-00086	Natural Gas	Distribution	7/2/2020	2/16/2021	9.80%	50.50%
Pennsylvania	Columbia Gas of Pennsylvania	NI	D-R-2020-3018835	Natural Gas	Distribution	4/24/2020	2/19/2021	9.86%	54.19%
District of Columbia	Washington Gas Light Co.	ALA	FC-1162	Natural Gas	Distribution	1/13/2020	2/24/2021	9.25%	52.10%
California	Southwest Gas Corp.	SWX	A-19-08-015 (SoCal)	Natural Gas	Distribution	8/30/2019	3/25/2021	10.00%	52.00%
California	Southwest Gas Corp.	SWX	A-19-08-015 (NoCal)	Natural Gas	Distribution	8/30/2019	3/25/2021	10.00%	52.00%
California	Southwest Gas Corp.	SWX	A-19-08-015 (LkTah)	Natural Gas	Distribution	8/30/2019	3/25/2021	10.00%	52.00%
Maryland	Washington Gas Light Co.	ALA	C-9651	Natural Gas	Distribution	8/28/2020	4/9/2021	9.70%	52.03%
North Dakota	MDU Resources Group	MDU	C-PU-20-379	Natural Gas	Distribution	8/26/2020	5/5/2021	9.30%	50.31%
Washington	Cascade Natural Gas Corp.	MDU	D-UG-200568	Natural Gas	Distribution	6/19/2020	5/18/2021	9.40%	49.10%
New York	Corning Natural Gas Corp.		C-20-G-0101	Natural Gas	Distribution	2/27/2020	5/19/2021	8.80%	48.00%
Pennsylvania	PECO Energy Co	EXC	D-R-2020-3018929	Natural Gas	Distribution	9/30/2020	6/17/2021	10.24%	53.38%
Kentucky	Louisville Gas & Electric Co.	PPL	C-2020-00350 (gas)	Natural Gas	Distribution	11/25/2020	6/30/2021	9.43%	NA
West Virginia	Hope Gas Inc.		C-20-0746-G-42T	Natural Gas	Distribution	9/30/2020	7/27/2021	9.54%	46.26%
New Hampshire	Liberty Utilities EnergyNorth	AQN	D-DG-20-105	Natural Gas	Distribution	7/31/2020	7/30/2021	9.30%	52.00%
New York	Brooklyn Union Gas Co.	NG.	C-19-G-0309	Natural Gas	Distribution	4/30/2019	8/12/2021	8.80%	48.00%
New York	KeySpan Gas East Corp.	NG.	C-19-G-0310	Natural Gas	Distribution	4/30/2019	8/12/2021	8.80%	48.00%
Idaho	Avista Corp.	AVA	C-AVU-G-21-01	Natural Gas	Distribution	1/29/2021	9/1/2021	9.40%	50.00%
Illinois	North Shore Gas Co.	WEC	D-20-0810	Natural Gas	Distribution	10/15/2020	9/8/2021	9.67%	51.58%
Michigan	Michigan Gas Utilities Corp.	WEC	C-U-20718	Natural Gas	Distribution	3/22/2021	9/9/2021	9.85%	NA
Virginia	Virginia Natural Gas Inc.	SO	C-PUR-2020-00095	Natural Gas	Distribution	6/1/2020	9/14/2021	9.50%	51.89%
Washington	Avista Corp.	AVA	D-UG-200901	Natural Gas	Distribution	10/30/2020	9/27/2021	9.40%	48.50%
South Carolina	Piedmont Natural Gas Co.	DUK	D-2021-7-G	Natural Gas	Distribution	6/15/2021	9/29/2021	9.80%	52.20%
Massachusetts	Boston Gas Co.	NG.	DPU 20-120	Natural Gas	Distribution	11/13/2020	9/30/2021	9.70%	53.44%
Indiana	Sthrn IN Gas & Electric Co.	CNP	Ca-45447	Natural Gas	Distribution	10/30/2020	10/6/2021	9.70%	45.74%
Missouri	Spire Missouri Inc.	SR	C-GR-2021-0108	Natural Gas	Distribution	12/11/2020	10/27/2021	9.37%	49.86%
New Jersey	New Jersey Natural Gas Co.	NJR	D-GR21030679	Natural Gas	Distribution	3/30/2021	11/17/2021	9.60%	54.00%

State	Utility	Parent Company Ticker	Case Identification	Service Type	Case Type	Date Rate Case Filed	Date Authorized	Authorized ROE	Authorized Equity % Total Capital
Indiana	Indiana Gas Co.	CNP	Ca-45468	Natural Gas	Distribution	12/18/2020	11/17/2021	9.80%	46.21%
New York	Central Hudson Gas & Electric	FTS	C-20-G-0429	Natural Gas	Distribution	8/27/2020	11/18/2021	9.00%	50.00%
Illinois	Northern Illinois Gas Co.	SO	D-21-0098	Natural Gas	Distribution	1/14/2021	11/18/2021	9.75%	54.46%
Wisconsin	Northern States Power Co.	XEL	D- 4220-UR-125 (Gas)	Natural Gas	Distribution	7/2/2021	11/18/2021	10.00%	52.50%
Wisconsin	Wisconsin Power and Light Co	LNT	D-6680-UR-123 (Gas)	Natural Gas	Distribution	5/5/2021	11/18/2021	10.00%	52.50%
Wisconsin	Madison Gas and Electric Co.	MGEE	D-3270-UR-124 (Gas)	Natural Gas	Distribution	5/3/2021	11/23/2021	9.80%	55.00%
Oklahoma	Oklahoma Natural Gas Co	OGS	Ca-PUD202100063	Natural Gas	Distribution	5/28/2021	11/30/2021	9.40%	58.55%
Maryland	Columbia Gas of Maryland Inc	NI	C-9664	Natural Gas	Distribution	5/14/2021	12/3/2021	9.65%	52.95%
Michigan	DTE Gas Co.	DTE	C-U-20940	Natural Gas	Distribution	2/12/2021	12/9/2021	9.90%	39.23%
Colorado	Black Hills Colorado Gas Inc.	BKH	D-21AL-0236G	Natural Gas	Distribution	6/1/2021	12/13/2021	9.20%	50.26%
Kentucky	Columbia Gas of Kentucky Inc	NI	C-2021-00183	Natural Gas	Distribution	5/28/2021	12/28/2021	9.35%	52.64%
Kentucky	Duke Energy Kentucky Inc.	DUK	C-2021-00190	Natural Gas	Distribution	6/1/2021	12/28/2021	9.38%	51.34%
Iowa	Black Hills Iowa Gas Utility	BKH	D-RPU-2021-0002	Natural Gas	Distribution	6/1/2021	12/28/2021	9.60%	50.01%
Kentucky	Delta Natural Gas Co.	WTRG	C-2021-00185	Natural Gas	Distribution	5/28/2021	1/3/2022	9.25%	NA
North Carolina	Piedmont Natural Gas Co.	DUK	D-G-9, Sub 781	Natural Gas	Distribution	3/22/2021	1/6/2022	9.60%	51.60%
New York	Niagara Mohawk Power Corp.	NG.	C-20-G-0381	Natural Gas	Distribution	7/31/2020	1/20/2022	9.00%	48.00%
North Carolina	Public Service Co. of NC	D	D-G-5 Sub 632	Natural Gas	Distribution	4/1/2021	1/21/2022	9.60%	51.60%
Nevada	Southwest Gas Corp.	SWX	D-21-09001 (Southern)	Natural Gas	Distribution	9/1/2021	3/22/2022	9.40%	50.00%
Nevada	Southwest Gas Corp.	SWX	D-21-09001 (Northern)	Natural Gas	Distribution	9/1/2021	3/22/2022	9.40%	50.00%
New York	Orange & Rockland Utlts Inc.	ED	C-21-G-0073	Natural Gas	Distribution	1/29/2021	4/14/2022	9.20%	48.00%
Kentucky	Atmos Energy Corp.	ATO	C-2021-00214	Natural Gas	Distribution	6/30/2021	5/19/2022	9.23%	54.50%
New York	Corning Natural Gas Corp.		C-21-G-0394	Natural Gas	Distribution	7/16/2021	6/16/2022	9.25%	48.00%
Michigan	Consumers Energy Co.	CMS	C-U-21148	Natural Gas	Distribution	12/1/2021	7/7/2022	9.90%	NA
New Hampshire	Northern Utilities Inc.	UTL	D-DG-21-104	Natural Gas	Distribution	8/2/2021	7/20/2022	9.30%	52.00%
Indiana	Northern IN Public Svc Co.	NI	Ca-45621	Natural Gas	Distribution	9/29/2021	7/27/2022	9.85%	49.47%
Oregon	Avista Corp.	AVA	D-UG 433	Natural Gas	Distribution	10/22/2021	8/2/2022	9.40%	50.00%
New Jersey	Elizabethtown Gas Co.	SJI	D-GR21121254	Natural Gas	Distribution	12/28/2021	8/17/2022	9.60%	52.00%
Minnesota	CenterPoint Energy Resources	CNP	D-G-008/GR-21-435	Natural Gas	Distribution	11/1/2021	8/18/2022	9.39%	51.00%
Washington	Cascade Natural Gas Corp.	MDU	D-UG-210755	Natural Gas	Distribution	9/30/2021	8/23/2022	9.40%	47.00%

Average July-August 2022		9.55%

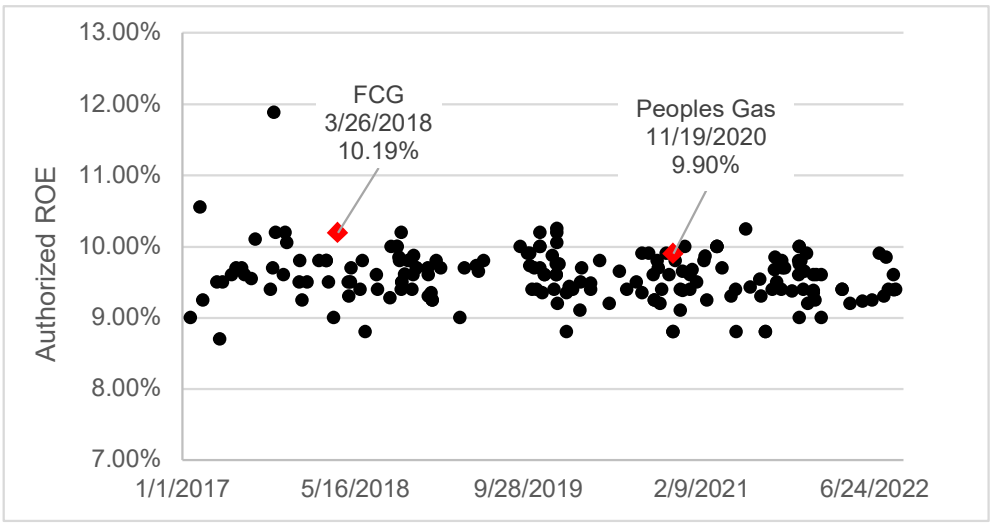
Authorized Equity Ratio Excluding Non-Investor Supplied Capital

	Min Authorized Equity Ratio	Max Authorized Equity Ratio
2019-2022	46.26%	60.18%

Median 2017-2022	9.60%
# 9.6% and higher	101
# rate cases	187
% of Authorized ROEs 9.6% and higher	54.01%

		Percentile Rank
OPC	9.25%	11.20%
FEA	9.40%	24.70%

Source: Regulatory Research Associates


13.00%
12.00%
11.00%
10.00%
9.00%
8.00%
7.00%
Authorized ROE
FCG
3/26/2018
10.19%
Peoples Gas
11/19/2020
9.90%
1/1/2017
5/16/2018
9/28/2019
2/9/2021
6/24/2022

Source: Value Line Screener accessed 9/11/2022

Industry Debt Ratios and Beta Coefficients

Industry	Avg Long-Term Debt/Capital (%)	Average Beta
Hotel/Gaming	72.85	1.481
Pipeline MLPs	68.53	1.182
Packaging & Container	62.13	1.008
Household Products	61.56	0.805
Public/Private Equity	59.58	1.260
Cable TV	57.83	1.050
Railroad	56.43	1.079
Air Transport	56.22	1.355
Wireless Networking	55.87	1.043
Electric Util. (Central)	55.58	0.900
Electric Utility (East)	53.69	0.885
Natural Gas Utility	53.35	0.865
Electric Utility (West)	52.88	0.882
Tobacco	52.44	0.850
Water Utility	51.52	0.783
Computers/Peripherals	51.25	1.136
Medical Services	50.18	1.134
Entertainment	50.12	1.117
Retail Automotive	49.88	1.254
Advertising	48.85	1.380
Oil/Gas Distribution	48.72	1.279
Power	47.69	1.114
Metals & Mining (Div.)	46.54	1.500
Environmental	45.51	1.014
Financial Svcs. (Div.)	45.45	1.173
Petroleum (Integrated)	45.35	1.445
Auto Parts	45.19	1.294
Automotive	45.08	1.333
Information Services	44.58	1.013
Retail/Wholesale Food	44.07	0.900
Office Equip/Supplies	43.61	1.350
Cyber Security	43.25	0.971
Natural Gas (Div.)	43.20	1.235
Industrial Services	42.96	1.069
Chemical (Specialty)	42.53	1.114
Chemical (Diversified)	42.21	1.200
Toiletries/Cosmetics	41.58	1.143
Chemical (Basic)	40.72	1.131
Engineering & Const	39.88	1.191
Recreation	39.87	1.229
Telecom. Services	39.71	0.910

Industry	Avg Long-Term Debt/Capital (%)	Average Beta
Computer Software	39.39	1.085
E-Commerce	37.36	1.039
Furn/Home Furnishings	37.32	1.223
Drug	37.22	0.955
Retail (Hardlines)	37.07	1.254
Building Materials	35.87	1.288
Food Processing	35.49	0.785
Apparel	35.42	1.305
Retail Store	35.37	1.016
Diversified Co.	35.31	1.158
Restaurant	35.18	1.239
Aerospace/Defense	34.61	1.175
Precision Instrument	34.14	1.047
Paper/Forest Products	32.88	1.150
Investment Banking	32.27	1.192
Machinery	32.11	1.142
Electrical Equipment	31.83	1.168
Educational Services	31.34	0.958
Heavy Truck & Equip	30.82	1.185
Telecom. Equipment	29.85	1.054
Metal Fabricating	29.79	1.321
Homebuilding	29.72	1.364
Asset Management	29.25	1.308
Electronics	29.01	1.190
Shoe	28.84	1.293
Med Supp Invasive	28.69	1.152
IT Services	28.41	1.028
Retail Building Supply	27.98	0.950
Beverage	27.79	0.865
Publishing	27.77	0.970
Internet	27.67	1.091
Human Resources	27.01	1.029
Steel	26.61	1.250
Med Supp Non-Invasive	26.39	0.973
Bank	26.37	1.242
Oilfield Svcs/Equip.	25.51	1.432
Brokers & Exchanges	25.20	1.013
Bank (Midwest)	22.85	1.169
Biotechnology	22.38	0.830
Semiconductor	22.36	1.144
Insurance (Life)	20.65	1.435
Trucking	20.40	0.908
Precious Metals	19.80	0.750
Healthcare Information	18.79	1.050

Industry	Avg Long-Term Debt/Capital (%)	Average Beta
Insurance (Prop/Cas.)	18.48	1.022
Retail (Softlines)	18.41	1.277
Semiconductor Equip	15.35	1.233
Entertainment Tech	9.19	0.700
Thrift	5.33	0.983
R.E.I.T.	3.15	1.129

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.07799
R Square	0.006082
Adjusted R Square	-0.00509
Standard Error	13.63723
Observations	91

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	101.2915116	101.2915	0.544654	0.46245175
Residual	89	16551.68287	185.974		
Total	90	16652.97438			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	30.86707	9.188121024	3.359454	0.001151	12.6104691	49.12367063
Average Beta	6.000997	8.131356173	0.738007	0.462452	-10.155834	22.15782887

Gross Domestic Product by Industry

Industry	1947	2021	CAGR
Agriculture, forestry, fishing, and hunting	19.9	246.4	3.46%
Mining	5.8	283.7	5.40%
Utilities	3.5	380.6	**6.54%**
Construction	8.9	958.8	**6.53%**
Manufacturing	63.4	2,563.3	5.13%
Wholesale trade	15.6	1,383.0	6.25%
Retail trade	23.2	1,385.5	5.68%
Transportation and warehousing	14.1	642.6	5.30%
Information	7.7	1,300.7	**7.18%**
Finance, insurance, real estate, rental, and leasing	25.8	4,885.0	**7.34%**
Professional and business services	8.2	2,973.4	**8.29%**
Educational services, health care, and social assistance	4.6	1,932.9	**8.51%**
Arts, entertainment, recreation, accommodation, and food services	8.0	839.6	**6.49%**
Other services, except government	7.5	447.9	5.68%
Government	33.5	2,772.6	6.15%
Total Gross Domestic Product	**249.7**	**22,996.0**	**6.30%**

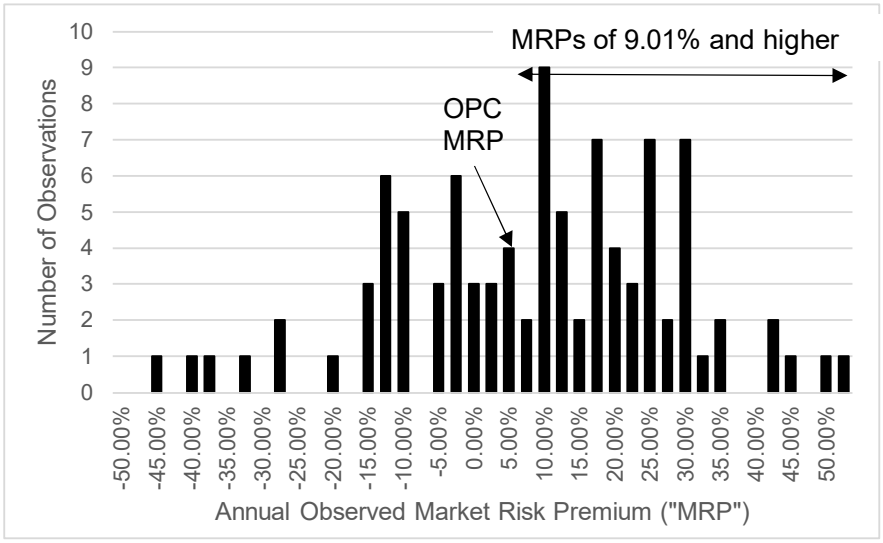
Source: Bureau of Economic Analysis.

Annual Observed Market Risk Premium, 1926 - 2021

Source: Kroll, 2022 SBBI Yearbook, Appendix A-1, A-7

Year	Large Company Stocks Total Returns Jan-Dec*	Long-Term Government Bond Income Returns Jan-Dec*	Observed Market Risk Premium
1926	0.1162	0.0373	0.0789
1927	0.3749	0.0341	0.3408
1928	0.4361	0.0322	0.4039
1929	-0.0842	0.0347	-0.1189
1930	-0.2490	0.0332	-0.2822
1931	-0.4334	0.0333	-0.4667
1932	-0.0819	0.0369	-0.1188
1933	0.5399	0.0312	0.5087
1934	-0.0144	0.0318	-0.0462
1935	0.4767	0.0281	0.4486
1936	0.3392	0.0277	0.3115
1937	-0.3503	0.0266	-0.3769
1938	0.3112	0.0264	0.2848
1939	-0.0041	0.0240	-0.0281
1940	-0.0978	0.0223	-0.1201
1941	-0.1159	0.0194	-0.1353
1942	0.2034	0.0246	0.1788
1943	0.2590	0.0244	0.2346
1944	0.1975	0.0246	0.1729
1945	0.3644	0.0234	0.3410
1946	-0.0807	0.0204	-0.1011
1947	0.0571	0.0213	0.0358
1948	0.0550	0.0240	0.0310
1949	0.1879	0.0225	0.1654
1950	0.3171	0.0212	0.2959
1951	0.2402	0.0238	0.2164
1952	0.1837	0.0266	0.1571
1953	-0.0099	0.0284	-0.0383
1954	0.5262	0.0279	0.4983
1955	0.3156	0.0275	0.2881
1956	0.0656	0.0299	0.0357
1957	-0.1078	0.0344	-0.1422
1958	0.4336	0.0327	0.4009
1959	0.1196	0.0401	0.0795
1960	0.0047	0.0426	-0.0379
1961	0.2689	0.0383	0.2306
1962	-0.0873	0.0400	-0.1273
1963	0.2280	0.0389	0.1891
1964	0.1648	0.0415	0.1233
1965	0.1245	0.0419	0.0826
1966	-0.1006	0.0449	-0.1455
1967	0.2398	0.0459	0.1939
1968	0.1106	0.0550	0.0556
1969	-0.0850	0.0595	-0.1445
1970	0.0386	0.0674	-0.0288
1971	0.1430	0.0632	0.0798
1972	0.1900	0.0587	0.1313
1973	-0.1469	0.0651	-0.2120
1974	-0.2647	0.0727	-0.3374
1975	0.3723	0.0799	0.2924
1976	0.2393	0.0789	0.1604
1977	-0.0716	0.0714	-0.1430
1978	0.0657	0.0790	-0.0133
1979	0.1861	0.0886	0.0975
1980	0.3250	0.0997	0.2253
1981	-0.0492	0.1155	-0.1647
1982	0.2155	0.1350	0.0805
1983	0.2256	0.1038	0.1218
1984	0.0627	0.1174	-0.0547
1985	0.3173	0.1125	0.2048
1986	0.1867	0.0898	0.0969
1987	0.0525	0.0792	-0.0267
1988	0.1661	0.0897	0.0764
1989	0.3169	0.0881	0.2288
1990	-0.0310	0.0819	-0.1129
1991	0.3047	0.0822	0.2225
1992	0.0762	0.0726	0.0036
1993	0.1008	0.0717	0.0291
1994	0.0132	0.0659	-0.0527
1995	0.3758	0.0760	0.2998
1996	0.2296	0.0618	0.1678
1997	0.3336	0.0664	0.2672
1998	0.2858	0.0583	0.2275
1999	0.2104	0.0557	0.1547
2000	-0.0910	0.0650	-0.1560
2001	-0.1189	0.0553	-0.1742
2002	-0.2210	0.0559	-0.2769
2003	0.2868	0.0480	0.2388
2004	0.1088	0.0502	0.0586
2005	0.0491	0.0469	0.0022
2006	0.1579	0.0468	0.1111
2007	0.0549	0.0486	0.0063
2008	-0.3700	0.0445	-0.4145
2009	0.2646	0.0347	0.2299
2010	0.1506	0.0425	0.1081
2011	0.0211	0.0382	-0.0171
2012	0.1600	0.0246	0.1354
2013	0.3239	0.0288	0.2951
2014	0.1369	0.0341	0.1028
2015	0.0138	0.0247	-0.0109
2016	0.1196	0.0230	0.0966
2017	0.2183	0.0267	0.1916
2018	-0.0438	0.0282	-0.0720
2019	0.3149	0.0255	0.2894
2020	0.1840	0.0142	0.1698
2021	0.2871	0.0173	0.2698
Average	0.1233	0.0487	0.0746
Std. Dev.	0.1964	0.0264	0.1979

2010-2021 12.99%



Market Risk Premium

Bin	*Frequency*	*Cumulative %*
-50.00%	0	0.0%
-47.50%	0	0.0%
-45.00%	1	1.0%
-42.50%	0	1.0%
-40.00%	1	2.1%
-37.50%	1	3.1%
-35.00%	0	3.1%
-32.50%	1	4.2%
-30.00%	0	4.2%
-27.50%	2	6.3%
-25.00%	0	6.3%
-22.50%	0	6.3%
-20.00%	1	7.3%
-17.50%	0	7.3%
-15.00%	3	10.4%
-12.50%	6	16.7%
-10.00%	5	21.9%
-7.50%	0	21.9%
-5.00%	3	25.0%
-2.50%	6	31.3%
0.00%	3	34.4%
2.50%	3	37.5%
5.00%	4	41.7%
7.50%	2	43.8%
10.00%	9	53.1%
12.50%	5	58.3%
15.00%	2	60.4%
17.50%	7	67.7%
20.00%	4	71.9%
22.50%	3	75.0%
25.00%	7	82.3%
27.50%	2	84.4%
30.00%	7	91.7%
32.50%	1	92.7%
35.00%	2	94.8%
37.50%	0	94.8%
40.00%	0	94.8%
42.50%	2	96.9%
45.00%	1	97.9%
47.50%	0	97.9%
50.00%	1	99.0%
55.00%	1	100.0%
Count:	96	

Historical Market Risk Premium

	% Rank	Occurrence	
9.01%	50.50%	48	50.00%
		96	

Docket No. 20220069-GU
Adjustments to OPC Witness Garrett's Implied
Equity Risk Premium Analysis
Exhibit JEN-21, 1 of 1

Adjustments to OPC Witness Garrett's Implied Risk Premium

Year	[1] Market Value	[2] Operating Earnings	[3] Dividends	[4] Buybacks	[5] Earnings Yield	[6] Dividend Yield	[7] Buyback Yield	[8] Gross Cash Yield
2011	11,385	877	240	405	7.70%	2.11%	3.56%	5.67%
2012	12,742	870	281	399	6.83%	2.20%	3.13%	5.33%
2013	16,495	956	312	476	5.80%	1.89%	2.88%	4.77%
2014	18,245	1,004	350	553	5.50%	1.92%	3.03%	4.95%
2015	17,900	885	382	572	4.95%	2.14%	3.20%	5.33%
2016	19,268	920	397	536	4.77%	2.06%	2.78%	4.85%
2017	22,821	1,066	420	519	4.67%	1.84%	2.28%	4.12%
2018	21,027	1,282	456	806	6.10%	2.17%	3.84%	6.01%
2019	26,760	1,305	485	729	4.88%	1.81%	2.72%	4.54%
2020	31,659	1,019	480	520	3.22%	1.52%	1.64%	3.16%
2021	40,356	1,739	511	882	4.31%	1.27%	2.18%	3.45%

Cash Yield	4.74%	[9]
Growth Rate	10.71%	[10]
Risk-free Rate	3.21%	[11]
Current Index Value	3,882	[12]

Growth Rates

Market Value	Operating Earnings	Dividends	Buybacks	Average
11.92%	-0.75%	16.86%	-1.52%	
29.45%	9.86%	11.07%	19.22%	
10.61%	5.04%	12.40%	16.34%	
-1.89%	-11.83%	9.10%	3.41%	
7.65%	3.89%	3.90%	-6.25%	
18.44%	15.89%	5.68%	-3.17%	
-7.86%	20.23%	8.70%	55.26%	
27.26%	1.79%	6.39%	-9.63%	
18.31%	-21.89%	-1.05%	-28.69%	
27.47%	70.61%	6.42%	69.66%	
14.14%	9.28%	7.95%	11.46%	10.71%

Year	[13] 1	[14] 2	[15] 3	[16] 4	[17] 5
Expected Dividends	204	226	250	277	306
Expected Terminal Value					4718
Present Value	185	187	188	189	3132
Intrinsic Index Value	3882	[18]	0		*82.28% % Terminal Value*
Required Return on Market	9.91%	[19]			
Implied Equity Risk Premium	**6.7%**	[20]			

[1-4] Columns [1]-[4] from DJG-9
[1] Market value of S&P 500
[5] = [2] / [1]
[6] = [3] / [1]
[7] = [4] / [1]
[8] = [6] + [7]
[9] = Average of [8]
[10] Average arithmetic growth rate (Market Value, Operating Earnings, Dividends, Buybacks)
[11] Risk-free rate from DJG-7
[12] 30-day average of closing index prices from DJG-3 (^GSPC column)
[13-16] Expected dividends = [9]*[12]*(1+[10])^{n} ; Present value = expected dividend / (1+[11]+[19])^{n}
[17] Expected terminal value = expected dividend * (1+[11]) / [19] ; Present value = (expected dividend + expected terminal value) / (1+[11]+[19])^{n}
[18] = Sum([13-17]) present values.
[19] = [20] + [11]
[20] Internal rate of return calculation setting [18] equal to [12] and solving for the discount rate

Source: S&P Global Market Intelligence "Beta Generator" model provided as a confidential workpaper
Index: S&P 500 Price Index
Frequency: Weekly
Start Date: 7/8/2017
End Date: 7/8/2022

		Adjusted Beta
ATO-US	Atmos Energy Corporation	0.68
NJR-US	New Jersey Resources Corporation	0.72
NI-US	NiSource Inc.	0.73
NWN-US	Northwest Natural Holding Company	0.65
OGS-US	ONE Gas, Inc.	0.71
SR-US	Spire Inc.	0.69
	Average	0.70

FEA Witness Walters' Revised CAPM Analyses

Description	Risk Premium[2] Derived MRP (As filed) (1)	Average S&P 500 DCF[3] Derived MRP (As Filed) (2)	S&P 500 DCF ALL companies MRP[4] (Revised) (3)
Current Beta			
Risk-Free Rate[1]	3.80%	3.80%	3.80%
Market Risk Premium	8.10%	8.60%	10.70%
Beta[5]	0.83	0.83	0.83
CAPM	**10.55%**	**10.97%**	**12.72%**
Historical Beta			
Risk-Free Rate[1]	3.80%	3.80%	3.80%
Market Risk Premium	8.10%	8.60%	10.70%
Beta[5]	0.74	0.74	0.74
CAPM	**9.78%**	**10.15%**	**11.70%**
Current S&P Global Market Intelligence Beta (Corrected)			
Risk-Free Rate[1]	3.80%	3.80%	**3.80%**
Market Risk Premium	8.10%	8.60%	**10.70%**
Beta[6]	0.70	0.70	0.70
CAPM	**9.45%**	**9.80%**	**11.26%**
		Mean	10.71%
		Median	10.55%
		Average	10.63%

Sources:
1 *Blue Chip Financial Forecasts,* July 1, 2022 at 2.
2 *Kroll 2022 SBBI Yearbook* , page 146; Exhibit CCW-16 page 2.
3 Exhibit CCW-16, page 2.
4 S&P 500 DCF of ALL companies
5 Exhibit CCW-16, page 1
6 S&P MI Beta Generator model downloaded 9/14/2022