BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the Application of Black Hills/Kansas Gas Utility Company, LLC, d/b/a Black Hills Energy, for Approval of the Commission to Make Certain Changes in its Rates for Natural Gas Service	**)** **)** **)** **)** **)**	**Docket No. 21-BHCG-418-RTS**

DIRECT TESTIMONY OF ADRIEN M. MCKENZIE

ON BEHALF OF

BLACK HILLS/KANSAS GAS UTILITY COMPANY, LLC, d/b/a BLACK HILLS ENERGY

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EXHIBITS

LIST OF ACRONYMS

Atmos	Atmos Energy Corporation
Black Hills	Black Hills/Kansas Gas Utility Company, LLC
BHC	Black Hills Corporation
CAPM	Capital Asset Pricing Model
Chesapeake	Chesapeake Utilities Corporation
Commission	Kansas Corporation Commission
Company	Black Hills/Kansas Gas Utility Company, LLC
DCF	Discounted Cash Flow
DJUA	Dow Jones Utility Average
DPS	Dividends Per Share
DSM	Demand Side Management
ECAPM	Empirical Capital Asset Pricing Model
EPS	Earnings Per Share
FERC	Federal Energy Regulatory Commission
FINCAP	Financial Concepts and Applications, Inc.
Fitch	Fitch Ratings, Inc.
Gas Group	Proxy group composed of nine companies
GDP	Gross Domestic Product
KCC	Kansas Corporation Commission
Moody's	Moody's Investors Service
RCA	Regulatory Commission of Alaska
ROE	Return on Equity
RRA	S&P Global Market Intelligence, RRA Regulatory Focus (formerly Regulatory Research Associates, Inc.
S&P	S&P Global Ratings
Value Line	Value Line Investment Survey
Zacks	Zacks Investment Research, Inc.

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Adrien M. McKenzie, and my business address is 3907 Red River Street, Austin, Texas, 78751.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am President of FINCAP, a firm providing financial, economic, and policy consulting services to business and government.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of Black Hills.

A. Statement of Qualifications

Q. WILL YOU PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE?

A. My education, employment history, and professional experience are provided on KSG Direct Exhibit AMM-1.

Q. WHAT ARE YOUR CURRENT JOB RESPONSIBILITIES?

A. I have extensive experience in economic and financial analysis for regulated industries and have participated in consulting assignments involving a broad range of economic and financial issues, including cost of capital, cost of service, rate design, economic damages, and business valuation.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE ANY REGULATORY BODIES?

A. Yes. I have personally sponsored testimony in over 150 proceedings filed with FERC and regulatory agencies in Alaska, Arkansas, Colorado, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Montana, Nebraska, New Mexico, Ohio, Oklahoma, Oregon, South Dakota, Texas, Virginia, Washington, West Virginia, and Wyoming.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes, I am sponsoring the following KSG Direct Exhibits:

KSG Direct Exhibit AMM-1	Statement of Qualifications
KSG Direct Exhibit AMM-2	Summary of Results
KSG Direct Exhibit AMM-3	Regulatory Mechanisms
KSG Direct Exhibit AMM-4	Constant Growth DCF Model
KSG Direct Exhibit AMM-5	Sustainable Growth Rate
KSG Direct Exhibit AMM-6	CAPM
KSG Direct Exhibit AMM-7	Empirical CAPM
KSG Direct Exhibit AMM-8	Risk Premium Method
KSG Direct Exhibit AMM-9	Expected Earnings Approach
KSG Direct Exhibit AMM-10	DCF Model—Non-Utility Group
KSG Direct Exhibit AMM-11	Capital Structure

Q. HAVE THE TESTIMONY AND EXHIBITS THAT YOU ARE SPONSORING BEEN PREPARED BY YOU OR UNDER YOUR SUPERVISION?

A. Yes.

B. Purpose of Testimony

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?

A. The purpose of my testimony is to present to the KCC my independent assessment of the fair ROE for the jurisdictional gas utility operations of Black Hills. In addition, I also

examined the reasonableness of Black Hills' requested capital structure, considering both the specific risks faced by the Company and other industry guidelines.

C. Overview

Q. PLEASE SUMMARIZE THE INFORMATION AND MATERIALS YOU RELY ON TO SUPPORT THE OPINIONS AND CONCLUSIONS CONTAINED IN YOUR TESTIMONY.

A. To prepare my testimony, I used information from a variety of sources that would normally be relied upon by a person in my capacity. In connection with the present filing, I considered and relied upon corporate disclosures, publicly available financial reports and filings, and other published information relating to BHC and Black Hills. I also reviewed information relating generally to capital market conditions and specifically to investor perceptions, requirements, and expectations for utilities. These sources, coupled with my experience in the fields of finance and utility regulation, have given me a working knowledge of the issues relevant to investors' required return for Black Hills, and they form the basis of my analyses and conclusions.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. After first summarizing my conclusion and recommendations, I briefly review the Company's operations and finances, develop a relevant proxy group of natural gas utilities, and examine Black Hills' risk profile in relation to this group, including the implications of regulatory mechanisms. I then consider current conditions in the capital markets and their implications in evaluating a fair ROE for Black Hills. With this as a background, I discuss well-accepted quantitative analyses to estimate the current cost of equity for my proxy group.

These include the DCF model, the CAPM, the ECAPM, an equity risk premium approach based on allowed equity returns, and reference to expected earned rates of return for gas utilities, which are all methods that are commonly relied on in regulatory proceedings. Finally, consistent with the fact that utilities must compete for capital with firms outside their own industry, I corroborate my utility quantitative analyses by applying the DCF model to a group of low risk non-utility firms.

Based on the cost of equity estimates indicated by my analyses, the Company's ROE is evaluated taking into account the specific risks for Black Hills and its requirements for financial strength. I also consider the Company's requested capital structure in relation to industry benchmarks and in relation to the Company's ongoing efforts to maintain its credit standing and support access to capital on reasonable terms.

D. Summary and Conclusions

Q. WHAT IS YOUR RECOMMENDED ROE FOR BLACK HILLS?

A. I apply the DCF, CAPM, ECAPM, risk premium, and expected earnings analyses to a proxy group of utilities, with the results being summarized on KSG Direct Exhibit AMM-2. As shown there, based on the results of my analysis, I recommend a cost of equity range for the Company's operations of 9.5% to 10.8%. It is my conclusion that 10.15%, which falls at the midpoint of this range, represents a just and reasonable cost of equity that is adequate to compensate the Company's investors, while maintaining Black Hills' financial integrity and ability to attract capital on reasonable terms.

II. FUNDAMENTAL ANALYSES

Q. WHAT IS THE PURPOSE OF THIS SECTION?

A. My objective is to evaluate and recommend a fair and reasonable ROE for Black Hills. Much of my work is predicated on a comparison of Black Hills with the utility industry, and more specifically to a proxy group of publicly traded natural gas distribution utilities. As a foundation for my opinions and subsequent quantitative analyses, this section briefly reviews the operations and finances of Black Hills. In addition, I explain the basis for the proxy group I used to estimate the cost of equity and examine alternative objective indicators of investment risk for these firms. I also compare the investment risks of Black Hills with my reference group, and examine specific conditions impacting today's capital markets. An understanding of the fundamental factors driving the risks and prospects of gas utilities is essential in developing an informed opinion of investors' expectations and requirements, which form the basis of a fair ROE.

A. Black Hills

Q. BRIEFLY DESCRIBE BLACK HILLS AND ITS GAS UTILITY OPERATIONS.

A. Black Hills is a natural gas utility in Kansas. Black Hills operates along with gas utilities in several other states as part of BHC. BHC, headquartered in Rapid City, South Dakota, operates regulated electric utilities, regulated gas utilities, and power generation and mining business segments. Its gas utilities segment serves over 1 million natural gas utility customers in Arkansas, Colorado, Iowa, Kansas, Nebraska, and Wyoming. The Company's Kansas jurisdictional gas utility system includes almost 3,000 miles of distribution mains, over 1,300 miles of gas service lines, and approximately 330 miles of natural gas

transmission pipelines. In 2020, the Company's gas utility operations in Kansas reported revenues of approximately $101 million, gas sold and transported of approximately 34 million dekatherms, and nearly 117,000 customers.[1]

Q. WHERE DOES BLACK HILLS OBTAIN THE CAPITAL USED TO FINANCE ITS INVESTMENT IN UTILITY PLANT?

A. Black Hills does not directly access the credit markets. As a subsidiary of BHC, it obtains its debt and equity capital solely from BHC. BHC's common stock is publicly traded on the New York Stock Exchange and it is assigned corporate credit ratings of BBB+ by S&P and Baa2 by Moody's. Fitch has assigned a long-term issuer rating of BBB+ to BHC.

Q. DOES BLACK HILLS ANTICIPATE THE NEED FOR CAPITAL GOING FORWARD?

A. Yes. The Company must undertake investments to meet customer demand and to provide for necessary maintenance and replacements of its natural gas utility system as it continues to provide safe and reliable service to its customers. Continued support for Black Hills' financial integrity and flexibility will be instrumental in attracting the capital necessary to fund these projects in an effective manner.

B. Determination of the Proxy Group

Q. HOW DO YOU IMPLEMENT QUANTITATIVE METHODS TO ESTIMATE THE COST OF COMMON EQUITY FOR BLACK HILLS?

A. Application of quantitative methods to estimate the cost of common equity requires observable capital market data, such as stock prices and beta values. Moreover, even for a

[1] Black Hills Corporation 10-K report for the fiscal year ended December 31, 2020 at 14, 47.

firm with publicly traded stock, the cost of common equity can only be estimated. As a result, applying quantitative models using observable market data only produces an estimate that inherently includes some degree of observation error. Thus, the accepted approach to increase confidence in the results is to apply alternative quantitative methods to a proxy group of publicly traded companies that investors regard as risk comparable. The results of the analysis for the sample of companies are relied upon to establish a range of reasonableness for the cost of equity for the specific company at issue.

Q. HOW DO YOU IDENTIFY THE SPECIFIC UTILITIES THAT ARE INCLUDED IN YOUR PROXY GROUP?

A. In order to reflect the risks and prospects associated with natural gas utility operations, I examine quantitative estimates of investors' required ROE for a group of nine natural gas utilities. To identify this group, I begin with those companies included in the Natural Gas Utility industry group compiled by Value Line. Value Line is one of the most widely available sources of investment advisory information, and its industry groups provide an objective source to identify publicly traded firms that investors would regard to be similar in operations.

Q. WHAT OTHER FACTORS DO YOU CONSIDER IN EVALUATING YOUR PROXY GROUP?

A. From the list of gas utilities compiled by Value Line, I exclude UGI Corporation because it is primarily engaged in propane sales and marketing, which are not directly comparable to Black Hills' distribution operations. Further, I confirm that all of the proxy group firms have

investment-grade credit ratings from S&P and Moody's.[2] Finally, I verify that the remaining firms are not currently involved in significant merger or acquisition activity, have not cut dividend payments during the past six months, and have not announced a dividend cut since that time. As shown in the table below, application of these criteria results in a proxy group composed of nine companies, which I refer to as the "Gas Group:"

TABLE AMM-1
GAS GROUP

Atmos Energy Corp.
Chesapeake Utilities
New Jersey Resources
NiSource Inc.
Northwest Natural
ONE Gas, Inc.
South Jersey Industries
Southwest Gas
Spire Inc.

C. Relative Risks of the Gas Group and Black Hills

Q. HOW DO YOU EVALUATE THE INVESTMENT RISKS OF THE GAS GROUP?

A. My evaluation of relative risk considers four objective published benchmarks that are widely relied on in the investment community. Credit ratings are assigned by independent rating agencies—such as S&P and Moody's—for the purpose of providing investors with a broad

[2] Credit rating firms, such as S&P and Moody's, use designations consisting of upper- and lower-case letters 'A' and 'B' to identify a bond's credit quality rating. 'Aaa', 'Aa', 'A', and 'Baa' ratings are considered investment grade. Credit ratings for bonds below these designations ('Ba', 'B', 'Caa', etc.) are considered speculative grade, and are commonly referred to as "junk bonds." The term "investment grade" refers to bonds with ratings in the 'Baa' category ('BBB' by S&P) and above.

While the debt of Chesapeake is not rated by S&P or Moody's, Value Line concluded in May 2020 that its "finances are in good condition," and that "long-term debt was a manageable 43% of total capital and short-term commitments of about $270 million did not appear to be a major obstacle." The Value Line Investment Survey, *Chesapeake Utilities* (May 29, 2020). Value Line continues to assign Chesapeake its second-best Safety Rank of "2." The Value Line Investment Survey, *Chesapeake Utilities* (Nov. 27, 2020).

assessment of the creditworthiness of a firm. Ratings generally extend from triple-A (the highest) to D (in default). Other symbols (*e.g.*, "+" or "-") are used to show relative standing within a category. Because the rating agencies' evaluation includes virtually all of the factors normally considered important in assessing a firm's relative credit standing, corporate credit ratings provide a broad, objective measure of overall investment risk that is readily available to investors. Widely cited in the investment community and referenced by investors, credit ratings are also frequently used as a primary risk indicator in establishing proxy groups to estimate the cost of common equity.

While credit ratings provide the most widely referenced benchmark for investment risks, other quality rankings published by investment advisory services also provide relative assessments of risks that are considered by investors in forming their expectations for common stocks. Value Line's primary risk indicator is its Safety Rank, which ranges from "1" (Safest) to "5" (Riskiest). This overall risk measure is intended to capture the total risk of a stock and incorporates elements of stock price stability and financial strength. Given that Value Line is perhaps the most widely available source of investment advisory information, its Safety Rank provides useful guidance regarding the risk perceptions of investors.

Value Line's Financial Strength Rating is designed as a guide to overall financial strength and creditworthiness, with the key inputs including financial leverage, business volatility measures, and company size. Value Line's Financial Strength Ratings range from "A++" (strongest) down to "C" (weakest) in nine steps. These published indicators

incorporate consideration of a broad spectrum of risks, including financial and business position, relative size, and exposure to firm-specific factors.

Finally, beta measures a utility's stock price volatility relative to the market as a whole and reflects the tendency of a stock's price to follow changes in the market. A stock that tends to respond less to market movements has a beta less than 1.00, while stocks that tend to move more than the market have betas greater than 1.00. Beta is the only relevant measure of investment risk under modern capital market theory and is widely cited in academics and in the investment industry as a guide to investors' risk perceptions. In my experience, Value Line is the most widely referenced source for beta in regulatory proceedings. As noted in *New Regulatory Finance*:

> Value Line is the largest and most widely circulated independent investment advisory service, and influences the expectations of a large number of institutional and individual investors. … Value Line betas are computed on a theoretically sound basis using a broadly based market index, and they are adjusted for the regression tendency of betas to converge to 1.00.[3]

Q. WHAT DO THESE MEASURES INDICATE WITH RESPECT TO THE OVERALL RISKS OF THE GAS GROUP?

A. The average risk indicators for the Gas Group are shown in Table AMM-2, below. Because Black Hills has no publicly traded common stock, the Value Line risk measures shown reflect those published for its parent, BHC:

[3] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports (2006) at 71.

TABLE AMM-2
COMPARISON OF RISK INDICATORS

	Credit Ratings		Value Line		
			Safety	Financial	
Proxy Group	S&P	Moody's	Rank	Strength	Beta
Gas Group	A-	A3	2	A	0.87
Black Hills Corp.	BBB+	Baa2	2	A	1.00

The average single-A minus ratings corresponding to the Gas Group place their credit risks solidly within the investment grade range. The somewhat lower ratings for BHC indicate slightly more risk. The average Value Line Safety Rank and Financial Strength indicators for the Gas Group are identical to those for BHC, although BHC's higher beta value indicates greater risk. Considered together, a comparison of these objective measures, which incorporate a broad spectrum of risks, including financial and business position, relative size, and exposure to company-specific factors, indicates that investors would likely conclude that the overall investment risks for Black Hills are comparable to, if not greater than, those of the firms in the Gas Group.

D. Implications of Regulatory Mechanisms

Q. DO YOU CONSIDER THE IMPLICATIONS OF COST RECOVERY MECHANISMS IN EVALUATING A FAIR ROE FOR THE COMPANY?

A. Yes. Adjustment mechanisms and cost trackers have been increasingly prevalent in the utility industry in recent years. Reflective of this trend, companies in the gas utility industry operate under a wide variety of cost adjustment mechanisms, in addition to the standard gas cost recovery clauses that they all have. These enhanced mechanisms range from revenue decoupling and adjustment clauses designed to address rising capital investment outside of a traditional rate case, to recovery riders for costs of environmental compliance measures,

bad debt expense, and post-retirement employee benefit costs. In its most recent review of adjustment clauses, RRA reported that "roughly half of the utilities utilize some type of decoupling mechanism."[4] RRA went on to conclude that:

> More recently and with greater frequency, commissions have approved mechanisms that permit the costs associated with the construction of new generation capacity or delivery infrastructure to be reflected in rates, effectively including these items in rate base without a full rate case. In some instances, these mechanisms may even provide the utilities a cash return on construction work in progress.[5]

Q. HAVE YOU SUMMARIZED THE VARIOUS REGULATORY MECHANISMS AVAILABLE TO THE GAS GROUP?

A. Yes. As summarized on KSG Direct Exhibit AMM-3, these mechanisms are ubiquitous and wide ranging. For example, of the 31 operating companies controlled by the Gas Group parent companies, 24 of them operate under some form of decoupling mechanism that accounts for the impact of various factors affecting sales volumes and revenues, with Atmos operating under formula rate provisions in four of its jurisdictions, which have a similar impact. In addition, a weather normalization mechanism has been approved for 18 of these utilities, while 24 of the 31 operating gas utilities benefit from trackers designed to address rising capital investment in utility infrastructure outside of a traditional rate case.

[4] S&P Global Market Intelligence, *Adjustment Clauses, A State-by-State Overview*, RRA Regulatory Focus (Nov. 12, 2019).
[5] *Id.*

Q. WHAT REGULATORY CLAUSES HAVE BEEN APPROVED FOR THE COMPANY'S KANSAS JURISDICTIONAL OPERATIONS?

A. Like all companies represented in the Gas Group, Black Hills has a gas cost adjustment mechanism that allows it to pass the prudently-incurred cost of gas, along with the cost of bad debts relating to the cost of gas, to the customer between rate reviews. In addition, the Company benefits from a Gas System Reliability Surcharge rider that allows for more timely recovery of capital investment in accelerated pipeline replacement and other system safety and integrity projects. The Company also has cost trackers or riders for weather normalization, employee benefit expenses, and ad valorem taxes that benefit both customers and the Company in that they allow the Company to recover its actual costs of those expenses.

Q. DOES THE COMPANY HAVE A REVENUE DECOUPLING MECHANISM?

A. No. In contrast to many of the specific operating utilities associated with the firms in the Gas Group, the Company lacks revenue decoupling.

Q. DO THE EXTREME WEATHER EVENTS RECENTLY EXPERIENCED ACROSS THE SOUTH-CENTRAL UNITED STATES IMPACT INVESTORS' RISK PERCEPTIONS FOR GAS UTILITIES, SUCH AS BLACK HILLS?

A. Yes. A severe winter storm in February 2021 resulted in uncharacteristically frigid temperatures that disrupted natural gas supplies at a time of unprecedented winter natural gas demand, with the Commission noting that "[t]he prolonged stretch of extremely cold temperatures has increased demand, created natural gas supply constraints, and potentially

reliability issues."[6] In turn, this produced dramatic spikes in the costs of natural gas and wholesale power throughout the region, with Barron's reporting to investors that "[t]he polar vortex that has pummeled most of the U.S. has sent natural gas prices in Oklahoma up to $317 per million British thermal units, or MMBtu . . .[7] In Kansas, the Commission noted that extreme weather led to "supply shortages and extraordinarily high energy prices,"[8] and that "[u]tilities are experiencing wholesale gas prices anywhere from 10 to 200 times higher than normal."[9] As a result, natural gas utilities incurred staggering incremental procurement costs in order to maintain service to customers. Market volatility in the 1970s spurred widespread adoption of automatic adjustment clauses but flowing incremental purchased gas costs through these recovery mechanisms is generally viewed as impracticable given the enormous magnitude of the spike in procurement expenses and the implications for customers' bills. Recognizing that existing adjustment clauses are ill-suited under these unprecedented circumstances, the investment community is concerned regarding the provisions under which energy costs incurred to maintain service during the polar vortex will be recovered.

Overhanging uncertainties regarding the timing and nature of recoupment for these extraordinary energy costs have impacted the credit standing of a number of regional gas utilities. For example, on February 22, 2021 S&P downgraded credit ratings for Atmos and

[6] Kansas Corporation Commission, *KCC issues emergency order to ensure adequate natural gas and electricity is available*, News Release (Feb. 15, 2021).
[7] Barron's, *A Polar Vortex Is Roiling Power Markets*, The Barron's Daily (Feb. 16, 2021).
[8] Kansas Corporation Commission, *Kansas Corporation Commission opens company specific investigations related to impacts of weather emergency*, News Release (Mar. 9, 2021).
[9] Kansas Corporation Commission, *KCC issues emergency order to ensure adequate natural gas and electricity is available*, News Release (Feb. 15, 2021).

placed its ratings on CreditWatch Negative, indicating the potential for further deterioration. S&P cited the extraordinary increase in gas costs incurred by Atmos during the storm, along with "uncertainty around the extra funding to support liquidity and rate recovery to prospectively support operating cash flows."[10] Similarly, Moody's assigned a negative outlook to Atmos due to "uncertainty surrounding the recovery timeline for the substantial gas cost incurred during the recent weather events."[11]

Q. DO THE FINANCIAL IMPACTS OF THE WINTER STORM EVENT HIGHLIGHT THE IMPORTANCE OF MAINTAINING BLACK HILLS' FINANCIAL INTEGRITY?

A. Yes. Utilities throughout the region, including Black Hills, were required to secure liquidity quickly in order to fund the extraordinary purchased gas costs necessary to maintain service to customers. Continued support for the Company's financial strength is instrumental to ensure that the Company can maintain access to the capital necessary to respond effectively under times of turmoil in the energy and capital markets.

III. CAPITAL MARKET ANALYSES AND ESTIMATES

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. This section presents capital market estimates of the cost of equity. First, I discuss the current outlook for capital costs, including expectations for interest rates. Next, I address the concept of the cost of common equity, along with the risk-return tradeoff principle fundamental to

[10] S&P Global Ratings, *Atmos Energy Corp. Downgraded to 'A-' On Weakening Credit Metrics; Ratings Placed On CreditWatch Negative*, Research Update (Feb 22, 2021).
[11] Moody's Investors Service, *Moody's changes outlook of Atmos to negative*, Rating Action (Feb. 25, 2021).

capital markets. I then describe various quantitative analyses conducted to estimate the cost of common equity for the proxy group of comparable risk utilities..

A. Outlook for Capital Costs

Q. PLEASE SUMMARIZE CURRENT ECONOMIC AND CAPITAL MARKET CONDITIONS.

A. In the fourth quarter of 2020, U.S. real GDP expanded at an annualized pace of 4.0%. In the third quarter, real GDP increased 33.4%, following a decline of 31.4% in the second quarter. The economy contracted 3.5% for 2020 as a whole and the outlook remains clouded for the coming year as the U.S. remains stuck in the grip of the COVID-19 pandemic. Although weekly claims for unemployment remain historically high, the national unemployment rate in December 2020 remained unchanged from the previous month at 6.7%. While significantly lower than its peak at 14.7% in April 2020, the jobless rate is indicative of a frail but improving labor market and an economy that remains significantly below full employment.

While inflation has remained subdued, the Personal Consumption Expenditure Price Index has risen from 1.2% in November 2020 to 1.5% in January 2021. Considering hyper-stimulative monetary and fiscal policies, there is increasing concern that inflation could rise significantly above the 2% benchmark that has historically been cited by the Federal Reserve. Investors continue to face the prospect of volatility as capital markets respond to uncertainties surrounding the trajectory of the economy in light of the COVID-19 pandemic, the prospect for further economic stimulus measures, and the rollout of vaccines.

The underlying risk and unease have been felt worldwide as countries have struggled to manage the pandemic. In Britain, the economy and financial markets have been challenged by the severity of the COVID-19 pandemic and uncertainties regarding the impact of Brexit. Meanwhile, the European Union evidenced sharp declines in GDP during the first and second quarters of 2020, followed by significant snap back growth in the third quarter. Economic activity has been volatile in many emerging market economies, including Brazil and Mexico. China, however, reported that its economy expanded by 2.3% in 2020, after experiencing a sharp contraction in the first quarter of 2020. The global economic contraction comes on top of already heightened geopolitical tensions in the Middle East, which in the past have led to ongoing concerns over possible disruptions in crude oil supplies and attendant price volatility.

Q. HOW HAVE COMMON EQUITY MARKETS BEEN IMPACTED BY COVID-19?

A. The threat posed by the coronavirus pandemic has led to extreme volatility in the capital markets as investors dramatically revised their risk perceptions and return requirements in the face of the severe disruptions to commerce and the world economy.

Despite the actions of the world's central banks to ease market strains and bolster the economy, global financial markets experienced extreme volatility and precipitous declines in asset values in March 2020. While the broader stock market has fully recovered and currently stands at all-time highs, utility stock prices remain depressed. As of March 2021, the DJUA remained about 13% below its high achieved shortly before the pandemic on February 18, 2020. The broader stock market is also still experiencing heightened volatility relative to the period just before the pandemic. The Chicago Board Options Exchange

Volatility Index (commonly known as the "VIX"), which is a key measure of expectations of near-term volatility and market sentiment, rose to levels not seen since the 2008-2009 Financial Crisis and remains elevated when compared to pre-pandemic levels. The pronounced selloff in share prices and ongoing volatility evidence investors' trepidation to commit capital and marks a significant upward revision in their perceptions of risk and required returns.

Q. HAVE UTILITIES AND THEIR INVESTORS FACED SIMILAR TURMOIL?

A. Yes. Yes. Concerns over weakening credit quality prompted S&P to revise its outlook for the regulated utility industry from "stable" to "negative."[12] As S&P explained:

> Even before the current downturn and COVID-19, a confluence of factors, including the adverse impacts of tax reform, historically high capital spending, and associated increased debt, resulted in little cushion in ratings for unexpected operating challenges.[13]

While recognizing that regulatory protections have helped to mitigate the worst of the coronavirus pandemic, S&P concluded that credit quality in the U.S. utility industry weakened during 2020, noted that "[a]t the beginning of the year about 18% of the industry had a negative outlook or ratings on CreditWatch with negative implications. By the end of the year that percentage had doubled, to about 36%."[14] S&P observed that "[o]ne of the

[12] S&P Global Ratings, *COVID-19: The Outlook for North American Regulated Utilities Turns Negative*, RatingsDirect (April 2, 2020).
[13] S&P Global Ratings, *North American Regulated Utilities Face Tough Financial Policy Tradeoffs to Avoid Ratings Pressure Amid The COVID-19 Pandemic*, Ratings Direct (May 11, 2020).
[14] S&P Global Ratings *North American Regulated Utilities' Negative Outlook Could See Modest Improvement*, RatingsDirect (Jan. 20, 2021).

enduring effects of COVID-19 was regulatory lag," and concluded that "[f]or the first time in a decade we expect downgrades will outpace upgrades by about 7 to 1."[15]

Moody's noted that utilities were forced to seek alternatives to volatile commercial paper markets in order to fund operations, and emphasized the importance of maintaining adequate liquidity in the sector to weather a prolonged period of financial volatility and turbulent capital markets.[16] As Moody's concluded in its most recent review of BHC:

> The rapid spread of the coronavirus outbreak, severe global economic shock, low oil prices and asset price volatility are creating a severe and extensive credit shock across many sectors, regions and markets. The combined credit effects of these developments are unprecedented.[17]

Q. WHAT ACTIONS HAS THE FEDERAL RESERVE TAKEN IN RESPONSE TO THE THREAT TO THE ECONOMY POSED BY THE CORONAVIRUS PANDEMIC?

A. In early 2020, the Federal Reserve quickly lowered its policy rate to close to zero to support economic activity, stabilize markets and bolster the flow of credit to households, businesses, and communities. In March 2020, the Federal Reserve lowered the target range for its benchmark federal funds rate by a total of 150 basis points, to the current range of 0% to 0.25%. The FOMC expects to maintain this target range until it is confident that the economy has weathered recent events.

In addition, the Federal Reserve has announced a broad range of unprecedented programs designed to support financial market liquidity and economic stability. The

[15] S&P Global Ratings, *North America Regulated Utilities-An Industry with A Negative Outlook Despite Its Predictable Cash Flows*, Industry Top Trends 2021 (Dec. 10, 2020).
[16] Moody's Investors Service, *FAQ on credit implications of the coronavirus outbreak*, Sector Comment (Mar. 26, 2020).
[17] Moody's Investors Service, *Black Hills Corporation*, Credit Opinion (Dec. 21, 2020).

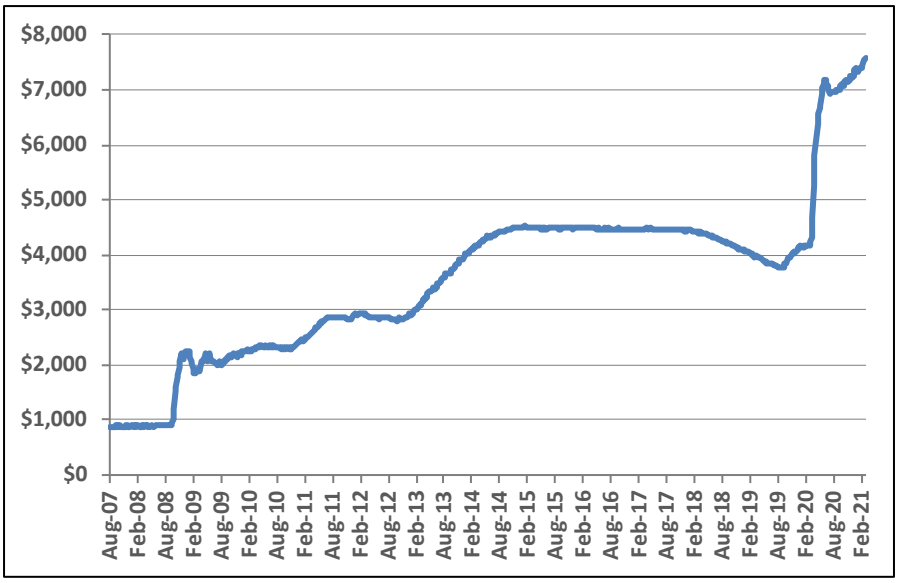
quantitative easing measures initially adopted in response to the 2008 financial crisis were reintroduced by directing the purchase of Treasury securities and agency mortgage-backed securities "in the amounts needed to support the smooth functioning of markets,"[18] while continuing to reinvest all principal payments from its existing holdings. In addition, the Federal Reserve has also announced wide-raging initiatives designed to support credit markets and ensure liquidity, including credit facilities to support households, businesses, and state and local governments, as well as the purchase of corporate bonds on the secondary market.[19]

As illustrated in Figure AMM-1 below, the Federal Reserve's asset holdings exceed $7 trillion, which is an all-time high, and the resulting effect on capital market conditions has likely never been more pronounced. While the Federal Reserve's aggressive monetary stimulus may help to ensure market liquidity and support the economy, these actions also support financial asset prices, which in turn place artificial downward pressure on bond yields.

[18] Federal Reserve, *Press Release* (Mar. 23, 2020). https://www.federalreserve.gov/monetarypolicy/files/monetary20200323a1.pdf.

[19] *See, e.g., Federal Reserve takes additional actions to provide up to $2.3 trillion in loans to support the economy*, Press Release (Apr. 9, 2020). https://www.federalreserve.gov/newsevents/pressreleases/monetary20200409a.htm.

FIGURE AMM-1
FEDERAL RESERVE BALANCE SHEET
(BILLION $)



https://fred.stlouisfed.org/series/WALCL

Q. DO TRENDS IN THE YIELDS ON TREASURY NOTES AND BONDS ACCURATELY REFLECT THE EXPECTATIONS AND REQUIREMENTS OF THE COMPANY'S EQUITY INVESTORS?

A. No. While Treasury bond yields provide one indicator of capital costs, they do not serve as a direct guide to the magnitude—or even direction—for changes in the cost of equity for utilities. For example, during times of heightened uncertainty and risk, investors may prefer the relative safety of U.S. government bonds, which can lead to a significant fall in Treasury bond yields while required returns on common stocks are increasing. Treasury bond yields may also be disproportionally impacted by monetary policies, such as quantitative easing, designed with the express intent of artificially suppressing bond yields. FERC has recognized that movements in Treasury bond yields do not provide a reliable guide to

changes in required returns for utilities, concluding that, "adjusting ROEs based on changes in U.S. Treasury bond yields may not produce a rational result, as both the magnitude and direction of the correlation may be inaccurate."[20]

Q. DO CHANGES IN UTILITY COMPANY BETA VALUES SINCE THE PANDEMIC BEGAN CORROBORATE AN INCREASE IN INDUSTRY RISK?

A. Yes. Beta measures a utility's stock price volatility relative to the market as a whole and reflects the tendency of a stock's price to follow changes in the market and the investment community relies on beta as an important guide to investors' risk perceptions. As shown in Table AMM-2, the current average beta for the proxy group of comparable utilities I rely on in this case for estimating the Company's ROE, is 0.87. The beta value for BHC is 1.00. Prior to the pandemic, the average beta for the same group of companies was 0.66[21] and the beta for BHC was 0.70.[22] This dramatic increase in a primary gauge of investors' risk perceptions is further proof of the rise in gas company risk in 2020.

Q. DOES THE UNCERTAIN PATH OF ECONOMIC GROWTH IMPLY LOWER CAPITAL COSTS?

A. No. Investors' required rates of return for Black Hills and other financial assets are a function of risk, with greater exposure to uncertainty requiring higher—not lower—rates of return to induce long-term investment. While expected growth rates may moderate as the economy softens, it is important not to confuse investors' expectations for future growth with their required rate of return. In fact, trends in growth rates say nothing at all about investors'

[20] *Coakley v. Bangor Hydro-Elec.,* Opinion No. 531, 147 FERC ¶ 61,234 at P 159 (2014).
[21] The Value Line Investment Survey (Nov. 29, 2019).
[22] The Value Line Investment Survey (Jan. 24, 2020).

overall risk perceptions. The fact that investors' required rates of return for long-term capital can rise in tandem with expectations of declining growth that might accompany an economic slowdown is demonstrated in the equity markets, where perceptions of greater risks led investors to sharply reevaluate what they are willing to pay for common stocks. While the decline in utility stock prices may in part be attributed to somewhat diminished expectations of future cash flows, there is also every indication that investors' discount rate, or cost of common equity, has moved significantly higher to accommodate the greater risks they now associate with equity investments.

Q. ARE TREASURY BOND YIELDS EXPECTED TO REMAIN AT CURRENT LEVELS OVER THE NEXT FEW YEARS?

A. No. Economic forecasters anticipate that yields on Treasury securities will increase significantly over the near-term. For example, the table below presents projections from the most recent long-term forecasts published by Blue Chip, HIS Markit, and Value Line:

TABLE AMM-3
INTEREST RATE TRENDS

	2021	2022	2023	2024	2025	Change (BP) 2021-25
10-Yr. Treasury						
Blue Chip	1.1%	1.3%	1.7%	2.0%	2.4%	130
IHS Markit	1.2%	1.7%	2.0%	2.2%	2.5%	124
Value Line	1.3%	1.6%	2.0%	2.3%	2.5%	120
30-Yr. Treasury						
Blue Chip	1.8%	2.1%	2.4%	2.8%	3.1%	130
IHS Markit	2.0%	2.4%	2.7%	2.8%	3.0%	104
Value Line	2.0%	2.3%	2.3%	2.5%	2.7%	70
Aaa Corporate						
Blue Chip	2.7%	2.8%	3.2%	3.6%	4.0%	130
IHS Markit	2.3%	2.2%	2.6%	2.8%	3.0%	68
Value Line	2.3%	2.4%	2.8%	3.1%	3.3%	100

Source
Wolters Kluwer, *Blue Chip Financial Forecasts* (Dec. 1, 2020).
IHS Markit, Long-Term Macro Forecast - Baseline (Mar. 1, 2021).
Value Line Investment Survey, Forecast for the U.S. Economy (Feb. 26, 2021).

This evidence suggests that investors continue to anticipate higher interest rates over the near-term.

Q. WOULD IT BE REASONABLE TO DISREGARD THE IMPLICATIONS OF CURRENT CAPITAL MARKET CONDITIONS IN ESTABLISHING A FAIR ROE FOR BLACK HILLS?

A. No. These implications reflect the circumstances under which Black Hills must attract and retain capital. The standards underlying a fair rate of return require that the Company's authorized ROE reflect a return competitive with other investments of comparable risk and preserve its ability to maintain access to capital on reasonable terms. These standards can only be met by considering the requirements of investors. As S&P concluded, challenges

posed by the COVID-19 crisis "have the potential to significantly impact the financial performance of the investor-owned utilities, increasing the overall level of investor risk, and will have to be addressed by state regulators."[23]

If the upward shift in investors' risk perceptions and required rates of return for long-term capital is not incorporated in the allowed ROE, the results will fail to meet the comparable earnings standard that is fundamental in determining the cost of capital. From a more practical perspective, failing to provide investors with the opportunity to earn a rate of return commensurate with Black Hills' risks will weaken its financial integrity, while hampering the Company's ability to attract necessary capital.

Q. MIGHT THE ECONOMIC DISLOCATIONS CAUSED BY THE COVID-19 PANDEMIC BE TEMPORARY?

A. No one knows the future of our complex global economy. While there is continued hope for a relatively swift economic rebound as vaccination becomes widespread, residual impacts of the unprecedented economic and health crisis could linger indefinitely.[24] In any event, it would be imprudent to gamble the interests of customers and the economy of Kansas in the hope that the harsh economic reality will suddenly be resolved. Black Hills must raise capital in the real world of financial markets. To ignore the current reality would be unwise given the importance of reliable gas service for customers and the economy.

[23] S&P Global Market Intelligence, *State Regulatory Evaluations*, RRA Regulatory Focus (Mar. 25, 2020).

[24] Already, new lockdowns are being imposed across Europe in attempt to avoid a third wave of the virus, caused in large measure by a more contagious variant of the COVID-19 virus.

B. Economic Standards

Q. WHAT FUNDAMENTAL ECONOMIC PRINCIPLE UNDERLIES THE COST OF EQUITY CONCEPT?

A. The fundamental economic principle underlying the cost of equity concept is the notion that investors are risk averse. In capital markets where relatively risk-free assets are available (*e.g.*, U.S. Treasury securities), investors can be induced to hold riskier assets only if they are offered a premium, or additional return, above the rate of return on a risk-free asset. Because all assets compete with each other for investor funds, riskier assets must yield a higher expected rate of return than safer assets to induce investors to invest and hold them.

Given this risk-return tradeoff, the required rate of return (k) from an asset (i) can generally be expressed as:

$$k_i = R_f + RP_i$$

where: R_f = Risk-free rate of return, and
RP_i = Risk premium required to hold riskier asset i.

Thus, the required rate of return for a particular asset at any time is a function of: (1) the yield on risk-free assets, and (2) the asset's relative risk, with investors demanding correspondingly larger risk premiums for bearing greater risk.

Q. IS THERE EVIDENCE THAT THE RISK-RETURN TRADEOFF PRINCIPLE ACTUALLY OPERATES IN THE CAPITAL MARKETS?

A. Yes. The risk-return tradeoff can be readily documented in segments of the capital markets where required rates of return can be directly inferred from market data and where generally accepted measures of risk exist. Bond yields, for example, reflect investors' expected rates of return, and bond ratings measure the risk of individual bond issues. Comparing the

observed yields on government securities, which are considered free of default risk, to the yields on bonds of various rating categories demonstrates that the risk-return tradeoff does, in fact, exist.

Q. DOES THE RISK-RETURN TRADEOFF OBSERVED WITH FIXED INCOME SECURITIES EXTEND TO COMMON STOCKS AND OTHER ASSETS?

A. It is widely accepted that the risk-return tradeoff evidenced with long-term debt extends to all assets. Documenting the risk-return tradeoff for assets other than fixed income securities, however, is complicated by two factors. First, there is no standard measure of risk applicable to all assets. Second, for most assets – including common stock – required rates of return cannot be directly observed. Yet there is every reason to believe that investors exhibit risk aversion in deciding whether or not to hold common stocks and other assets, just as when choosing among fixed-income securities.

Q. IS THIS RISK-RETURN TRADEOFF LIMITED TO DIFFERENCES BETWEEN FIRMS?

A. No. The risk-return tradeoff principle applies not only to investments in different firms, but also to different securities issued by the same firm. The securities issued by a utility vary considerably in risk because they have different characteristics and priorities. As noted earlier, long-term debt is senior among all capital in its claim on a utility's net revenues and is, therefore, the least risky. The last investors in line are common shareholders. They receive only the net revenues, if any, remaining after all other claimants have been paid. As a result, the rate of return that investors require from a utility's common stock, the most junior and

riskiest of its securities, must be considerably higher than the yield offered by the utility's senior, long-term debt.

Q. WHAT ARE THE CHALLENGES IN DETERMINING A JUST AND REASONABLE ROE FOR A REGULATED ENTERPRISE?

A. The actual return investors require is unobservable. Different methodologies have been developed to estimate investors' expected and required return on capital, but all such methodologies are merely theoretical tools and generally produce a range of estimates, based on different assumptions and inputs. The DCF method, which is frequently referenced and relied on by regulators, is only one theoretical approach to gain insight into the return investors require; there are numerous other methodologies for estimating the cost of capital and the ranges produced by the different approaches can vary widely.

Q. IS IT CUSTOMARY TO CONSIDER THE RESULTS OF MULTIPLE APPROACHES WHEN EVALUATING A JUST AND REASONABLE ROE?

A. Yes. In my experience, financial analysts and regulators routinely consider the results of alternative approaches in determining allowed ROEs. It is widely recognized that no single method can be regarded as a panacea; with all approaches having advantages and shortcomings. As FERC has noted, "[t]he determination of rate of return on equity starts from the premise that there is no single approach or methodology for determining the correct rate of return."[25] More recently, FERC recognized the potential for any application of the

[25] *Nw. Pipeline Co.*, Opinion No. 396-C, 81 FERC ¶ 61,036 at 61,188 (1997).

DCF model to produce unreliable results.[26] Similarly, a publication of the Society of Utility and Financial Analysts, concluded that:

> Each model requires the exercise of judgment as to the reasonableness of the underlying assumptions of the methodology and on the reasonableness of the proxies used to validate the theory. Each model has its own way of examining investor behavior, its own premises, and its own set of simplifications of reality. Each method proceeds from different fundamental premises, most of which cannot be validated empirically. Investors clearly do not subscribe to any singular method, nor does the stock price reflect the application of any one single method by investors.[27]

As this treatise succinctly observed, "no single model is so inherently precise that it can be relied on solely to the exclusion of other theoretically sound models."[28] Similarly, *New Regulatory Finance* concluded that:

> There is no single model that conclusively determines or estimates the expected return for an individual firm. Each methodology possesses its own way of examining investor behavior, its own premises, and its own set of simplifications of reality. Each method proceeds from different fundamental premises that cannot be validated empirically. Investors do not necessarily subscribe to any one method, nor does the stock price reflect the application of any one single method by the price-setting investor. There is no monopoly as to which method is used by investors. In the absence of any hard evidence as to which method outdoes the other, all relevant evidence should be used and weighted equally, in order to minimize judgmental error, measurement error, and conceptual infirmities.[29]

Thus, while the DCF model is a recognized approach to estimating the ROE, it is not without shortcomings and does not otherwise eliminate the need to ensure that the "end result" is fair. The Indiana Utility Regulatory Commission has recognized this principle:

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[26] *Coakley v. Bangor Hydro-Elec. Co.*, Opinion No. 531, 147 FERC ¶ 61,234 at P 41 (2014).

[27] David C. Parcell, *The Cost of Capital – A Practitioner's Guide*, Society of Utility and Regulatory Financial Analysts (1997) at Part 2, p. 4.

[28] *Id.*

[29] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 429.

> There are three principal reasons for our unwillingness to place a great deal of weight on the results of any DCF analysis. One is . . . the failure of the DCF model to conform to reality. The second is the undeniable fact that rarely if ever do two expert witnesses agree on the terms of a DCF equation for the same utility – for example, as we shall see in more detail below, projections of future dividend cash flow and anticipated price appreciation of the stock can vary widely. And, the third reason is that the unadjusted DCF result is almost always well below what any informed financial analysis would regard as defensible, and therefore require an upward adjustment based largely on the expert witness's judgment. In these circumstances, we find it difficult to regard the results of a DCF computation as any more than suggestive.[30]

As this discussion indicates, consideration of the results of alternative approaches reduces the potential for error associated with any single quantitative method. Just as investors inform their decisions using a variety of methodologies, my evaluation of a fair ROE for the Company considers the results of multiple financial models.

Q. DOES THE FACT THAT BLACK HILLS IS A SUBSIDIARY OF BLACK HILLS CORPORATION ALTER THESE FUNDAMENTAL STANDARDS?

A. No. While Black Hills has no publicly traded common stock and BHC is the ultimate owner, this does not change the standards governing the determination of a fair ROE for the jurisdictional gas utility. Ultimately, the common equity that is required to support the utility operations of Black Hills must be raised in the capital markets, where investors consider the Company's ability to offer a rate of return that is competitive with other risk-comparable alternatives. Black Hills must compete with other investment opportunities and unless investors have a reasonable expectation that they will earn a return commensurate with the underlying risks, capital will be allocated elsewhere, the Company's financial integrity will be weakened, and investors will demand an even higher rate of return. Black Hills' ability to

[30] *Ind. Michigan Power Co.*, Cause No. 38728, 116 PUR4th, 1, 17-18 (IURC 8/24/1990).

offer a reasonable return on investment is a necessary ingredient in ensuring that customers continue to enjoy economical rates and reliable service.

Q. WHAT DOES THE ABOVE DISCUSSION IMPLY WITH RESPECT TO ESTIMATING THE ROE FOR A UTILITY?

A. Although the ROE cannot be observed directly, it is a function of the returns available from other investment alternatives and the risks to which the equity capital is exposed. Because it is not readily observable, the ROE for a particular utility must be estimated by analyzing information about capital market conditions generally, assessing the relative risks of the company specifically, and employing various quantitative methods that focus on investors' required rates of return. These various quantitative methods typically attempt to infer investors' required rates of return from stock prices, interest rates, or other capital market data.

C. Discounted Cash Flow Analysis

Q. HOW IS THE DCF MODEL USED TO ESTIMATE THE COST OF COMMON EQUITY?

A. DCF models assume that the price of a share of common stock is equal to the present value of the expected cash flows (i.e., future dividends and stock price) that will be received while holding the stock, discounted at investors' required rate of return. Rather than developing annual estimates of cash flows into perpetuity, the DCF model can be simplified to a "constant growth" form:[31]

[31] The constant growth DCF model is dependent on a number of strict assumptions, which in practice are never met. These include a constant growth rate for both dividends and earnings; a stable dividend payout ratio; the discount rate

$$P_0 = \frac{D_1}{k_e - g}$$

where: P_0 = Current price per share;

D_1 = Expected dividend per share in the coming year;

k_e = Cost of equity; and,

g = Investors' long-term growth expectations.

The cost of common equity (k_e) can be isolated by rearranging terms within the equation:

$$k_e = \frac{D_1}{P_0} + g$$

This constant growth form of the DCF model recognizes that the rate of return to stockholders consists of two parts: 1) dividend yield (D_1/P_0); and, 2) growth (g). In other words, investors expect to receive a portion of their total return in the form of current dividends and the remainder through price appreciation.

Q. WHAT STEPS ARE REQUIRED TO APPLY THE CONSTANT GROWTH DCF MODEL?

A. The first step in implementing the constant growth DCF model is to determine the expected dividend yield (D_1/P_0) for the firm in question. This is usually calculated based on an estimate of dividends to be paid in the coming year divided by the current price of the stock. The second, and more controversial, step is to estimate investors' long-term growth

exceeds the growth rate; a constant growth rate for book value and price; a constant earned rate of return on book value; no sales of stock at a price above or below book value; a constant price-earnings ratio; a constant discount rate (*i.e.*, no changes in risk or interest rate levels and a flat yield curve); and all of the above extend to infinity. Nevertheless, the DCF method provides a workable and practical approach to estimate investors' required return that is widely referenced in utility ratemaking.

expectations (*g*) for the firm. The final step is to add the firm's dividend yield and estimated growth rate to arrive at an estimate of its cost of common equity.

Q. HOW DO YOU DETERMINE THE DIVIDEND YIELD FOR THE GAS GROUP?

A. Estimates of dividends to be paid by each of these utilities over the next twelve months, obtained from Value Line, serve as D_1. This annual dividend is then divided by a 30-day average stock price for each utility to arrive at the expected dividend yield. The expected dividends, stock prices, and resulting dividend yields for the firms in the Gas Group are presented on KSG Direct Exhibit AMM-4. As shown on page 1, dividend yields for the firms in the Gas Group range from 1.7% to 5.7% and average 3.7%.

Q. WHAT IS THE NEXT STEP IN APPLYING THE CONSTANT GROWTH DCF MODEL?

A. The next step is to evaluate long-term growth expectations, or "g", for the firm in question. In constant growth DCF theory, earnings, dividends, book value, and market price are all assumed to grow in lockstep, and the growth horizon of the DCF model is infinite. But implementation of the DCF model is more than just a theoretical exercise; it is an attempt to replicate the mechanism investors used to arrive at observable stock prices. A wide variety of techniques can be used to derive growth rates, but the only "g" that matters in applying the DCF model is the value that investors expect.

Q. WHAT ARE INVESTORS MOST LIKELY TO CONSIDER IN DEVELOPING THEIR LONG-TERM GROWTH EXPECTATIONS?

A. Implementation of the DCF model is solely concerned with replicating the forward-looking evaluation of real-world investors. In the case of utilities, dividend growth rates are not likely

to provide a meaningful guide to investors' current growth expectations. Utility dividend policies reflect the need to accommodate business risks and investment requirements in the industry, as well as potential uncertainties in the capital markets. As a result, trends in dividend payments do not provide a direct guide to the growth prospects that investors associate with the utility industry.

A measure that plays a pivotal role in determining investors' long-term growth expectations is future trends in EPS, which provide the source for future dividends and ultimately support share prices. The importance of earnings in evaluating investors' expectations and requirements is well accepted in the investment community, and surveys of analytical techniques relied on by professional analysts indicate that growth in earnings is far more influential than trends in DPS.

The availability of projected EPS growth rates also is key to investors relying on this measure as compared to future trends in DPS. Apart from Value Line, investment advisory services do not generally publish comprehensive DPS growth projections, and this scarcity of dividend growth rates relative to the abundance of earnings forecasts attests to their relative influence. The fact that securities analysts focus on EPS growth, and that DPS growth rates are not routinely published, indicates that projected EPS growth rates are likely to provide a superior indicator of investors' future expectations.

Q. DO THE GROWTH RATE PROJECTIONS OF SECURITY ANALYSTS CONSIDER HISTORICAL TRENDS?

A. Yes. Professional security analysts study historical trends extensively in developing their projections of future earnings. Hence, to the extent there is any useful information in historical patterns, that information is incorporated into analysts' growth forecasts.

Q. DID PROFESSOR MYRON J. GORDON, WHO ORIGINATED THE CONSTANT GROWTH DCF APPROACH, RECOGNIZE THE PIVOTAL ROLE THAT EARNINGS PLAY IN FORMING INVESTORS' EXPECTATIONS?

A. Yes. Dr. Gordon specifically recognized that "it is the growth that investors expect that should be used" in applying the DCF model and he concluded:

> A number of considerations suggest that investors may, in fact, use earnings growth as a measure of expected future growth.[32]

Q. ARE ANALYSTS' ASSESSMENTS OF GROWTH RATES APPROPRIATE FOR ESTIMATING INVESTORS' REQUIRED RETURN USING THE DCF MODEL?

A. Yes. In applying the DCF model to estimate the cost of common equity, the only relevant growth rate is the forward-looking expectations of investors that are captured in current stock prices. Investors, just like securities analysts and others in the investment community, do not know how the future will actually turn out. They can only make investment decisions based on their best estimate of what the future holds in the way of long-term growth for a particular stock, and securities prices are constantly adjusting to reflect their assessment of available information.

[32] Myron J. Gordon, *The Cost of Capital to a Public Utility*, MSU Public Utilities Studies (1974) at 89.

Any claims that analysts' estimates are not relied upon by investors are illogical given the reality of a competitive market for investment advice. If financial analysts' forecasts do not add value to investors' decision making, then it is irrational for investors to pay for these estimates. Similarly, those financial analysts who fail to provide reliable forecasts will lose out in competitive markets relative to those analysts whose forecasts investors find more credible. The reality that analyst estimates are routinely referenced in the financial media and in investment advisory publications (*e.g.*, Value Line) implies that investors use them as a basis for their expectations.

While the projections of securities analysts may be proven optimistic or pessimistic in hindsight, this is irrelevant in assessing the expected growth that investors have incorporated into current stock prices, and any bias in analysts' forecasts – whether pessimistic or optimistic – is irrelevant if investors share analysts' views. Earnings growth projections of security analysts provide the most frequently referenced guide to investors' views and are widely accepted in applying the DCF model. As explained in *New Regulatory Finance*:

> Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of *g* [growth]. The accuracy of these forecasts in the sense of whether they turn out to be correct is not an issue here, as long as they reflect widely held expectations.[33]

[33] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 298 (emphasis added).

Q. HAVE REGULATORS ALSO RECOGNIZED THAT ANALYSTS' GROWTH RATE ESTIMATES ARE AN IMPORTANT AND MEANINGFUL GUIDE TO INVESTORS' EXPECTATIONS?

A. Yes. The Kentucky Public Service Commission has indicated its preference for relying on analysts' projections in establishing investors' expectations:

> KU's argument concerning the appropriateness of using investors' expectations in performing a DCF analysis is more persuasive than the AG's argument that analysts' projections should be rejected in favor of historical results. The Commission agrees that analysts' projections of growth will be relatively more compelling in forming investors' forward-looking expectations than relying on historical performance, especially given the current state of the economy.[34]

Similarly, FERC has expressed a clear preference for projected EPS growth rates in applying the DCF model to estimate the cost of equity for both electric and natural gas pipeline utilities:

> Opinion No. 414-A held that the IBES five-year growth forecasts for each company in the proxy group are the best available evidence of the short-term growth rates expected by the investment community. It cited evidence that (1) those forecasts are provided to IBES by professional security analysts, (2) IBES reports the forecast for each firm as a service to investors, and (3) the IBES reports are well known in the investment community and used by investors. The Commission has also rejected the suggestion that the IBES analysts are biased and stated that "in fact the analysts have a significant incentive to make their analyses as accurate as possible to meet the needs of their clients since those investors will not utilize brokerage firms whose analysts repeatedly overstate the growth potential of companies."[35]

The Public Utility Regulatory Authority of Connecticut has also noted that "there is not growth in DPS without growth in EPS," and concluded that securities analysts' growth

[34] *Kentucky Utilities Co.*, Case No. 2009-00548 (Ky PSC Jul. 30, 2010) at 30-31.

[35] *Kern River Gas Transmission Co.*, 126 FERC ¶ 61,034 at P 121 (2009) (footnote omitted).

projections have a greater influence over investors' expectations and stock prices.[36] In addition, the Regulatory Commission of Alaska ("RCA") has previously determined that analysts' EPS growth rates provide a superior basis on which to estimate investors' expectations:

> We also find persuasive the testimony . . . that projected EPS returns are more indicative of investor expectations of dividend growth than historical growth data because persons making the forecasts already consider the historical numbers in their analyses.[37]

The RCA has concluded that arguments against exclusive reliance on analysts' EPS growth rates to apply the DCF model "are not convincing."[38]

Q. WHAT ARE SECURITY ANALYSTS CURRENTLY PROJECTING IN THE WAY OF GROWTH FOR THE FIRMS IN THE GAS GROUP?

A. The earnings growth projections for each of the firms in the Gas Group reported by Value Line, IBES,[39] and Zacks are displayed on page 2 of KSG Direct Exhibit AMM-4)

Q. HOW ELSE ARE INVESTORS' EXPECTATIONS OF FUTURE LONG-TERM GROWTH PROSPECTS OFTEN ESTIMATED WHEN APPLYING THE CONSTANT GROWTH DCF MODEL?

A. In constant growth theory, growth in book equity will be equal to the product of the earnings retention ratio (one minus the dividend payout ratio) and the earned rate of return on book equity. Furthermore, if the earned rate of return and the payout ratio are constant over time, growth in earnings and dividends will be equal to growth in book value. Despite the fact that

[36] *Decision*, Docket No. 13-02-20 (Sept. 24, 2013).
[37] Regulatory Commission of Alaska, U-07-76(8) at 65, n. 258.
[38] Regulatory Commission of Alaska, U-08-157(10) at 36.
[39] Formerly I/B/E/S International, Inc., IBES growth rates are now compiled and published by Refinitiv.

these conditions are never met in practice, this "sustainable growth" approach may provide a rough guide for evaluating a firm's growth prospects and is frequently proposed in regulatory proceedings.

The sustainable growth rate is calculated by the formula, g = br+sv, where "b" is the expected retention ratio, "r" is the expected earned return on equity, "s" is the percent of common equity expected to be issued annually as new common stock, and "v" is the equity accretion rate. Under DCF theory, the "sv" factor is a component of the growth rate designed to capture the impact of issuing new common stock at a price above, or below, book value. The sustainable, "br+sv" growth rates for each firm in the Gas Group are summarized on page 2 of KSG Direct Exhibit AMM-4, with the underlying details being presented in KSG Direct Exhibit AMM-5.

The sustainable growth rate analysis shown in KSG Direct Exhibit AMM-5 incorporates an "adjustment factor" because Value Line's reported returns are based on year-end book values. Since earnings is a flow over the year while book value is determined at a given point in time, the measurement of earnings and book value are distinct concepts. It is this fundamental difference between a flow (earnings) and point estimate (book value) that makes it necessary to adjust to mid-year in calculating the ROE. Given that book value will increase or decrease over the year, using year-end book value (as Value Line does) understates or overstates the average investment that corresponds to the flow of earnings. To address this concern, earnings must be matched with a corresponding representative measure of book value, or the resulting ROE will be distorted. The adjustment factor determined in

KSG Direct Exhibit AMM-5, is solely a means of converting Value Line's end-of-period values to an average return over the year.

Q. WHAT COSTS OF COMMON EQUITY ESTIMATES ARE IMPLIED FOR THE GAS GROUP USING THE DCF MODEL?

A. After combining the dividend yields and respective growth projections for each utility, the resulting cost of common equity estimates are shown on page 3 of KSG Direct Exhibit AMM-4.

Q. IN EVALUATING THE RESULTS OF THE CONSTANT GROWTH DCF MODEL, IS IT APPROPRIATE TO ELIMINATE ILLOGICAL ESTIMATES?

A. Yes. When applying quantitative methods to estimate the cost of equity, it is essential that the resulting values pass fundamental tests of reasonableness and economic logic. Accordingly, DCF estimates that are implausibly low or high should be eliminated when evaluating the results of this method.

Q. HOW DO YOU EVALUATE DCF ESTIMATES AT THE LOW END OF THE RANGE?

A. I base my evaluation of DCF estimates at the low end of the range on the fundamental risk-return tradeoff, which holds that investors will only take on more risk if they expect to earn a higher rate of return to compensate them for the greater uncertainty. Because common stocks lack the protections associated with an investment in long-term bonds, a utility's common stock imposes far greater risks on investors. As a result, the rate of return that investors require from a utility's common stock is considerably higher than the yield offered

by senior, long-term debt. Consistent with this principle, DCF results that are not sufficiently higher than the yield available on less risky utility bonds must be eliminated.

Q. HAVE SIMILAR TESTS BEEN APPLIED BY REGULATORS?

A. Yes. FERC has noted that adjustments are justified where applications of the DCF approach produce illogical results. FERC previously evaluated DCF results against observable yields on long-term public utility debt and recognized that it is appropriate to eliminate estimates that do not sufficiently exceed this threshold,[40] and also exclude estimates that are "irrationally or anomalously high."[41]

Q. DO YOU EXCLUDE ANY ESTIMATES AT THE LOW OR HIGH END OF THE RANGE OF RESULTS?

A. Yes. As highlighted on page 3 of KSG Direct Exhibit AMM-4, I eliminate two low-end DCF estimates of 5.4% and 5.8%. Based on my review of the array of DCF results, I also determine that six DCF values in the 16.8% to 30.1% range should be removed. Beyond this, the upper end of the DCF results for the Gas Group is set by a return on equity estimate of 14.7%. While a 14.7% cost of equity estimate may exceed the majority of the remaining values, remaining low-end estimates in the 6.5% range are assuredly far below investors' required rate of return. Taken together and considered along with the balance of the results, the remaining values provide a reasonable basis on which to frame the range of plausible DCF estimates and evaluate investors' required rate of return.

[40] *See, e.g., Southern California Edison Co.,* 131 FERC ¶ 61,020 at P 55 (2010).

[41] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc*., 171 FERC ¶ 61,154 at P 152 (2020).

Q. WHAT ROE ESTIMATES ARE IMPLIED BY YOUR DCF RESULTS FOR THE GAS GROUP?

A. As shown on page 3 of KSG Direct Exhibit AMM-4 and summarized in Table AMM-4, below, after eliminating illogical values, application of the constant growth DCF model results in the following ROE estimates:

TABLE AMM-4
DCF RESULTS – GAS GROUP

	Cost of Equity	
Growth Rate	**Average**	**Midpoint**
Value Line	10.6%	11.3%
IBES	8.4%	8.1%
Zacks	9.1%	8.6%
br + sv	10.4%	11.3%

D. Capital Asset Pricing Model

Q. PLEASE DESCRIBE THE CAPM.

A. The CAPM is a theory of market equilibrium that measures risk using the beta coefficient. Assuming investors are fully diversified, the relevant risk of an individual asset (*e.g.*, common stock) is its volatility relative to the market as a whole, with beta reflecting the tendency of a stock's price to follow changes in the market. A stock that tends to respond less to market movements has a beta less than 1.00, while stocks that tend to move more than the market have betas greater than 1.00. The CAPM is mathematically expressed as:

$$R_j = R_f + \beta_j(R_m - R_f)$$

where: R_j = required rate of return for stock j;
R_f = risk-free rate;
R_m = expected return on the market portfolio; and,
β_j = beta, or systematic risk, for stock j.

Under the CAPM formula above, a stock's required return is a function of the risk-free rate (R_f), plus a risk premium that is scaled to reflect the relative volatility of a firm's stock price, as measured by beta (β). Like the DCF model, the CAPM is an *ex-ante,* or forward-looking model based on expectations of the future. As a result, in order to produce a meaningful estimate of investors' required rate of return, the CAPM must be applied using estimates that reflect the expectations of actual investors in the market, not with backward-looking, historical data.

Q. WHY IS THE CAPM APPROACH A RELEVANT COMPONENT WHEN EVALUATING THE COST OF EQUITY FOR BLACK HILLS?

A. The CAPM approach (which also forms the foundation of the ECAPM) generally is considered the most widely referenced method for estimating the cost of equity among academicians and professional practitioners, with the pioneering researchers of this method receiving the Nobel Prize in 1990. Because this is the dominant model for estimating the cost of equity outside the regulatory sphere, the CAPM (and ECAPM) provides important insight into investors' required rate of return for utility stocks, including the Company.

Q. HOW DO YOU APPLY THE CAPM TO ESTIMATE THE ROE?

A. Application of the CAPM to the Gas Group is based on a forward-looking estimate for investors' required rate of return from common stocks presented in KSG Direct Exhibit AMM-6. In order to capture the expectations of today's investors in current capital markets,

the expected market rate of return is estimated by conducting a DCF analysis on the dividend paying firms in the S&P 500.

The dividend yield for each firm is obtained from Value Line, and the growth rate is equal to the average of the earnings growth projections for each firm published by IBES, Zacks, and Value Line, with each firm's dividend yield and growth rate being weighted by its proportionate share of total market value. Based on the weighted average of the projections for the individual firms, current estimates imply an average growth rate over the next five years of 9.4%. Combining this average growth rate with a year-ahead dividend yield of 2.1% results in a current cost of common equity estimate for the market as a whole (R_m) of 11.5%. Subtracting a 1.7% risk-free rate based on the average yield on 30-year Treasury bonds for the six-months ending February 2021 produces a market equity risk premium of 9.8%.

Q. WHAT IS THE SOURCE OF THE BETA VALUES YOU USED TO APPLY THE CAPM?

A. As indicated earlier in my discussion of risk measures for the Gas Group, I rely on the beta values reported by Value Line, which in my experience is the most widely referenced source for beta in regulatory proceedings.

Q. WHAT ELSE SHOULD BE CONSIDERED IN APPLYING THE CAPM?

A. Financial research indicates that the CAPM does not fully account for observed differences in rates of return attributable to firm size. Accordingly, a modification is required to account for this size effect. As explained by *Morningstar*:

> One of the most remarkable discoveries of modern finance is the finding of a relationship between firm size and return. On average, small companies have higher returns than large ones. . . . The relationship between firm size and return cuts across the entire size spectrum; it is not restricted to the smallest stocks.[42]

According to the CAPM, the expected return on a security should consist of the riskless rate, plus a premium to compensate for the systematic risk of the particular security. The degree of systematic risk is represented by the beta coefficient. The need for the size adjustment arises because differences in investors' required rates of return that are related to firm size are not fully captured by beta. To account for this, researchers have developed size premiums that need to be added to account for the level of a firm's market capitalization in determining the CAPM cost of equity.[43] Accordingly, my CAPM analyses also incorporates an adjustment to recognize the impact of size distinctions, as measured by the market capitalization for the firms in the Gas Group.

Q. IS THIS ADJUSTMENT RELATED TO THE RELATIVE SIZE OF BLACK HILLS AS COMPARED WITH THE PROXY GROUP?

A. No. I am not proposing to apply a general size risk premium in evaluating a fair and reasonable ROE for the Company and my recommendation does not include any adjustment related to the relative size of Black Hills. Rather, this size adjustment is specific to the CAPM and merely corrects for an observed inability of the beta measure to fully reflect the risks

[42] Morningstar, *2015 Ibbotson SBBI Classic Yearbook,* at 99, 108.

[43] Originally compiled by Ibbotson Associates and published in their annual yearbook entitled, "Stocks, Bonds, Bills and Inflation," these size premia are now developed by Duff & Phelps.

perceived by investors for the firms in the Gas Group. As FERC has recognized, "[t]his type of size adjustment is a generally accepted approach to CAPM analyses."[44]

Q. WHAT IS THE IMPLIED ROE FOR THE GAS GROUP USING THE CAPM APPROACH?

A. As shown on page 1 of KSG Direct Exhibit AMM-6, after adjusting for the impact of firm size, the CAPM approach implies an average ROE of 11.6% and midpoint ROE of 11.8% for the Gas Group.

Q. DO YOU ALSO APPLY THE CAPM USING FORECASTED BOND YIELDS?

A. Yes. As discussed earlier, there is general consensus that interest rates will increase over the period when the rates established in this proceeding will be in effect. Accordingly, in addition to the use of current bond yields, I also apply the CAPM based on the forecasted long-term Treasury bond yields developed based on projections published by Value Line, IHS Markit, and Blue Chip. As shown on page 2 of KSG Direct Exhibit AMM-6, incorporating a forecasted Treasury bond yield for 2025 implies an average cost of equity estimate of 11.8% for the Gas Group after adjusting for the impact of relative size, with a midpoint of 11.9%.

E. Empirical Capital Asset Pricing Model

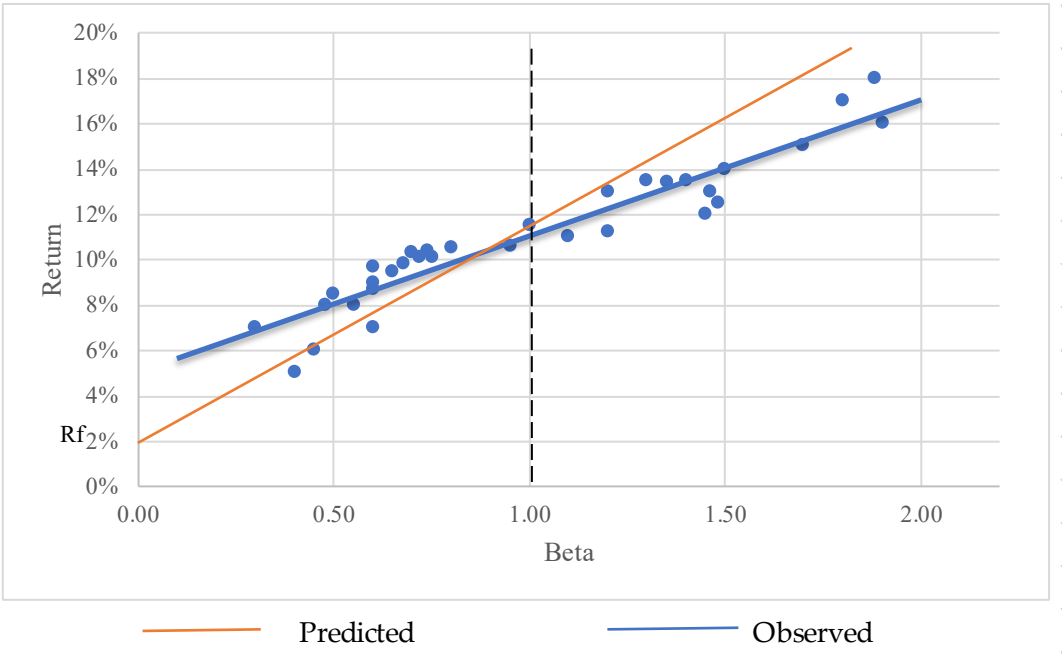
Q. HOW DOES THE ECAPM APPROACH DIFFER FROM TRADITIONAL APPLICATIONS OF THE CAPM?

A. Empirical tests of the CAPM have shown that low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. In other words, the CAPM tends to overstate the actual sensitivity of the cost of capital to beta,

[44] *Coakley v. Bangor Hydro-Elec. Co.*, Opinion No. 531-B, 150 FERC ¶ 61,165 at P 117 (2015).

with low-beta stocks tending to have higher returns and high-beta stocks tending to have lower risk returns than predicted by the CAPM. This is illustrated graphically in the figure below:

FIGURE AMM-2
CAPM – PREDICTED VS. OBSERVED RETURNS



Because the betas of utility stocks, including those in the Gas Group, are generally less than 1.0, this implies that cost of equity estimates based on the traditional CAPM would understate the cost of equity. This empirical finding is widely reported in the finance literature, as summarized in *New Regulatory Finance*:

> As discussed in the previous section, several finance scholars have developed refined and expanded versions of the standard CAPM by relaxing the constraints imposed on the CAPM, such as dividend yield, size, and skewness effects. These enhanced CAPMs typically produce a risk-return relationship that is flatter than the CAPM prediction in keeping with the actual observed risk-return relationship. The ECAPM makes use of these empirical relationships.[45]

As discussed in *New Regulatory Finance*, based on a review of the empirical evidence, the expected return on a security is related to its risk by the ECAPM, which is represented by the following formula:

$$R_j = R_f + 0.25(R_m - R_f) + 0.75[\beta_j(R_m - R_f)]$$

Like the CAPM formula presented earlier, the ECAPM represents a stock's required return as a function of the risk-free rate (R_f), plus a risk premium. In the formula above, this risk premium is composed of two parts: (1) the market risk premium ($R_m - R_f$) weighted by a factor of 25%, and (2) a company-specific risk premium based on the stock's relative volatility [$\beta_j(R_m - R_f)$] weighted by 75%. This ECAPM equation, and its associated weighting factors, recognizes the observed relationship between standard CAPM estimates and the cost of capital documented in the financial research, and corrects for the understated returns that would otherwise be produced for low beta stocks.

Q. IS THE USE OF THE ECAPM CONSISTENT WITH THE USE OF VALUE LINE BETAS?

A. Yes. Value Line beta values are adjusted for the observed tendency of beta to converge toward the mean value of 1.00 over time.[46] The purpose of this adjustment is to refine beta

[45] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports (2006) at 189.

[46] *See, e.g.,* Marshall E. Blume, *Betas and Their Regression Tendencies*, Journal of Finance, Vol. 30, No. 3 (Jun. 1975), pp. 785-795.

values determined using historical data to better match forward-looking estimates of beta, which are the relevant parameter in applying the CAPM or ECAPM models. Meanwhile, the ECAPM does not involve any adjustment to beta whatsoever. Rather, it represents a formal recognition of findings in the financial literature that the observed risk-return tradeoff illustrated in Figure AMM-2 is flatter than predicted by the CAPM. In other words, even if a firm's beta value were estimated with perfect precision, the CAPM would still understate the return for low-beta stocks and overstate the return for high-beta stocks. The ECAPM and the use of adjusted betas represent two separate and distinct issues in estimating returns.

Q. HAVE REGULATORS RELIED ON THE ECAPM?

A. Yes. The ECAPM approach has been relied on by the Staff of the Maryland Public Service Commission. For example, Staff Witness Julie McKenna noted that "the ECAPM model adjusts for the tendency of the CAPM model to underestimate returns for low Beta stocks," and concluded that, "I believe under current economic conditions that the ECAPM gives a more realistic measure of the ROE than the CAPM model does."[47] The staff of the Colorado Public Utilities Commission has recognized that, "The ECAPM is an empirical method that attempts to enhance the CAPM analysis by flattening the risk-return relationship,"[48] and relied on the exact same standard ECAPM equation presented above.[49] The New York Department of Public Service also routinely incorporates the results of the ECAPM

[47] *Direct Testimony and Exhibits of Julie McKenna*, Maryland PSC Case No. 9299 (Oct. 12, 2012) at 9.
[48] Proceeding No. 13AL-0067G, *Answer Testimony and Schedules of Scott England* (July 31, 2013) at 47.
[49] *Id.* at 48.

approach, which it refers to as the "zero-beta CAPM."[50] The Regulatory Commission of Alaska has also relied on the ECAPM approach, noting that:

> Tesoro averaged the results it obtained from CAPM and ECAPM while at the same time providing empirical testimony that the ECAPM results are more accurate then [sic] traditional CAPM results. The reasonable investor would be aware of these empirical results. Therefore, we adjust Tesoro's recommendation to reflect only the ECAPM result.[51]

Similarly, the Montana Public Service Commission more recently concluded that:

> [T]he evidence in this proceeding has convinced the Commission that the Empirical Capital Asset Pricing Model ("ECAPM") should be the primary method for estimating the [utility's] cost of equity."[52]

The Wyoming Office of Consumer Advocate, an independent division of the Wyoming Public Service Commission, has also relied on this ECAPM formula in estimating the cost of equity for a natural gas utility, as have witnesses for the Office of Arkansas Attorney General.[53]

Q. WHAT COST OF EQUITY ESTIMATES ARE INDICATED BY THE ECAPM?

A. My applications of the ECAPM are based on the same forward-looking market rate of return, risk-free rates, and beta values discussed earlier in connections with the CAPM. As shown on page 1 of KSG Direct Exhibit AMM-7, applying the forward-looking ECAPM approach to the firms in the Gas Group results in an average cost of equity estimate of 11.9% after

[50] *See, e.g..,* New York Department of Public Service, Cases 19-E-0065 19-G-0066, *Prepared Fully Redacted Testimony of Staff Finance Panel* (May 2019) at 94-95.

[51] Regulatory Commission of Alaska, Order No. P-97-004(151) (Nov. 27, 2002) at 145.

[52] *Mont. Pub. Serv. Comm'n*, Order No. 7575c at P114 (Sept. 26, 2018).

[53] *Pre-Filed Direct Testimony of Anthony J. Ornelas*, Docket No. 30011-97-GR-17, (May 1, 2018) at 52-53; *Direct Testimony of Marlon F. Griffing, PH.D.*, Docket No. 17-071-U, (May 29, 2018) at 33-35.

incorporating the size adjustment corresponding to the market capitalization of the individual utilities. The midpoint of the size adjusted ECAPM range is 12.0%.

As shown on page 2 of KSG Direct Exhibit AMM-7, incorporating a forecasted Treasury bond yield for 2025 implies an average cost of equity estimate of 12.0% for the Gas Group and a midpoint of 12.1%, after adjusting for the impact of relative size.

F. Utility Risk Premium Method

Q. BRIEFLY DESCRIBE THE RISK PREMIUM METHOD.

A. The risk premium method extends the risk-return tradeoff observed with bonds to estimate investors' required rate of return on common stocks. The cost of equity is estimated by first determining the additional return investors require to forgo the relative safety of bonds and to bear the greater risks associated with common stock, and by then adding this equity risk premium to the current yield on bonds. Like the DCF model, the risk premium method is capital market oriented. However, unlike DCF models, which indirectly impute the cost of equity, risk premium methods directly estimate investors' required rate of return by adding an equity risk premium to observable bond yields.

Q. IS THE RISK PREMIUM APPROACH A WIDELY ACCEPTED METHOD FOR ESTIMATING THE COST OF EQUITY?

A. Yes. The risk premium approach is based on the fundamental risk-return principle that is central to finance, which holds that investors will require a premium in the form of a higher return in order to assume additional risk. This method is routinely referenced by the investment community and in academia and regulatory proceedings and provides an important tool in estimating a fair ROE for Black Hills.

Q. HOW DO YOU IMPLEMENT THE RISK PREMIUM METHOD?

A. Estimates of equity risk premiums for utilities are based on surveys of previously authorized ROEs. Authorized ROEs presumably reflect regulatory commissions' best estimates of the cost of equity, however determined, at the time they issued their final order. Such ROEs should represent a balanced and impartial outcome that considers the need to maintain a utility's financial integrity and ability to attract capital. Moreover, allowed returns are an important consideration for investors and have the potential to influence other observable investment parameters, including credit ratings and borrowing costs. Thus, when considered in the context of a complete and rigorous analysis, this data provides a logical and frequently referenced basis for estimating equity risk premiums for regulated utilities.

Q. IS IT CIRCULAR TO CONSIDER RISK PREMIUMS BASED ON AUTHORIZED RETURNS IN ASSESSING A FAIR ROE FOR BLACK HILLS?

A. No. In establishing authorized ROEs, regulators typically consider the results of alternative market-based approaches. Because allowed risk premiums consider objective market data (*e.g.*, stock prices dividends, beta, and interest rates) and are not based strictly on past actions of other regulators, this mitigates concerns over any potential for circularity.

Q. HOW DO YOU CALCULATE THE EQUITY RISK PREMIUMS BASED ON ALLOWED RETURNS?

A. The equity returns authorized for gas utilities by regulatory commissions across the U.S. are compiled by RRA and published on a quarterly basis. In KSG Direct Exhibit AMM-8, the average yield on single-A public utility bonds is subtracted from the average allowed return for gas utilities to calculate equity risk premiums for each quarter between 1980 and 2020.

As shown on page 4 of KSG Direct Exhibit AMM-8, over this period, these equity risk premiums for gas utilities average 3.70%, and the yield on single-A public utility bonds average 7.80%.

Q. IS THERE ANY CAPITAL MARKET RELATIONSHIP THAT MUST BE CONSIDERED WHEN IMPLEMENTING THE RISK PREMIUM METHOD?

A. Yes. The magnitude of equity risk premiums is not constant and equity risk premiums tend to move inversely with interest rates. In other words, when interest rate levels are relatively high, equity risk premiums narrow, and when interest rates are relatively low, equity risk premiums widen. The implication of this inverse relationship is that the cost of equity does not move as much as, or in lockstep with, interest rates. Accordingly, for a 1% increase or decrease in interest rates, the cost of equity may only rise or fall some fraction of 1%. Therefore, when implementing the risk premium method, adjustments may be required to incorporate this inverse relationship if current interest rate levels have diverged from the average interest rate level represented in the data set.

As noted earlier, bond yields are at relatively low levels. Given that equity risk premiums move inversely with interest rates, these lower bond yields also imply an increase in the equity risk premium that investors require to accept the higher uncertainties associated with an investment in utility common stocks versus bonds. In other words, higher required equity risk premiums offset the impact of declining interest rates on the ROE.

Q. HAS THIS INVERSE RELATIONSHIP BEEN DOCUMENTED IN THE FINANCIAL RESEARCH?

A. Yes. There is considerable empirical evidence that when interest rates are relatively high, equity risk premiums narrow, and when interest rates are relatively low, equity risk premiums are greater. This inverse relationship between equity risk premiums and interest rates has been widely reported in the financial literature. As summarized by *New Regulatory Finance*:

> Published studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and Lakonishok (1983), Morin (2005), and McShane (2005), and others demonstrate that, beginning in 1980, risk premiums varied inversely with the level of interest rates – rising when rates fell and declining when rates rose.[54]

Other regulators have also recognized that, while the cost of equity trends in the same direction as interest rates, these variables do not move in lock-step.[55] This relationship is illustrated in the figure on page 5 of KSG Direct Exhibit AMM-8. As shown there, the "R-squared" value[56] for the equity risk premium-utility bond interest rate relationship is over 0.90. This regression analysis evidences a high degree of fit and indicates a strong inverse relationship between equity risk premiums and utility bond interest rates.

[54] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports (2006) at 128.

[55] *See, e.g.*, California Public Utilities Commission, Decision 08-05-035 (May 29, 2008); Entergy Mississippi Formula Rate Plan FRP-7, https://cdn.entergy-mississippi.com/userfiles/content/price/tariffs/eml_frp.pdf; *Coakley* at P 147.

[56] R-squared (R^2) is a statistical measure that represents the proportion of the variance for a dependent variable (in this case, the equity risk premium level) that is explained by an independent variable (utility bond yields) in a regression model.

Q. WHAT COST OF EQUITY IS IMPLIED BY THE RISK PREMIUM METHOD USING SURVEYS OF ALLOWED RETURNS?

A. Based on the regression output between the interest rates and equity risk premiums displayed on page 5 of KSG Direct Exhibit AMM-8, the equity risk premium for gas utilities increases approximately 48 basis points for each percentage point drop in the yield on average public utility bonds. As illustrated on page 1 of KSG Direct Exhibit. AMM-8, with an average yield on single-A public utility bonds for the six-months ending February 2021 of 2.90%, this implies a current equity risk premium of 6.04% for gas utilities. Adding this equity risk premium to the average yield on Baa-rated utility bonds of 3.20% implies a current ROE of 9.24%.

Q. WHAT IS THE RESULT OF THE RISK PREMIUM APPROACH AFTER INCORPORATING FORECASTED BOND YIELDS?

A. As shown on page 2 of KSG Direct Exhibit AMM-8, incorporating a forecasted yield for 2025 and adjusting for changes in interest rates since the study period implies an equity risk premium of 5.77% for gas utilities, which is less than the current equity risk premium. This lower equity risk premium is consistent with the inverse relationship I described above. Adding this equity risk premium to the implied average yield on Baa public utility bonds for 2025 of 3.77% results in an implied cost of equity of 9.54%.

G. Expected Earnings Approach

Q. WHAT OTHER ANALYSES DO YOU CONDUCT TO ESTIMATE THE ROE?

A. I also evaluate the ROE using the expected earnings method. Reference to rates of return available from alternative investments of comparable risk can provide an important

benchmark in assessing the return necessary to assure confidence in the financial integrity of a firm and its ability to attract capital. This expected earnings approach is consistent with the economic underpinnings for a fair rate of return established by the U.S. Supreme Court in *Bluefield*[57] and *Hope* [58] Moreover, it avoids the complexities and limitations of capital market methods and instead focuses on the returns earned on book equity, which are readily available to investors.

Q. WHAT ECONOMIC PREMISE UNDERLIES THE EXPECTED EARNINGS APPROACH?

A. The simple, but powerful concept underlying the expected earnings approach is that investors compare each investment alternative with the next best opportunity. If the utility is unable to offer a return similar to that available from other opportunities of comparable risk, investors will become unwilling to supply the capital on reasonable terms. For existing investors, denying the utility an opportunity to earn what is available from other similar risk alternatives prevents them from earning their opportunity cost of capital. Such an outcome would violate the *Hope* and *Bluefield* standards and undermine the utility's access to capital on reasonable terms.

Q. HOW IS THE EXPECTED EARNINGS APPROACH TYPICALLY IMPLEMENTED?

A. The traditional comparable earnings test identifies a group of companies that are believed to be comparable in risk to the utility. The actual earnings of those companies on the book value

[57] *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n*, 262 U.S. 679 (1923) ("*Bluefield*").
[58] *Fed. Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) ("*Hope*").

of their investment are then compared to the allowed return of the utility. While the traditional comparable earnings test is implemented using historical data taken from the accounting records, it is also common to use projections of returns on book investment, such as those published by recognized investment advisory publications (*e.g.*, Value Line). Because these returns on book value equity are analogous to the allowed return on a utility's rate base, this measure of opportunity costs results in a direct, "apples to apples" comparison.

Moreover, regulators do not set the returns that investors earn in the capital markets, which are a function of dividend payments and fluctuations in common stock prices – both of which are outside their control. Regulators can only establish the allowed ROE, which is applied to the book value of a utility's investment in rate base, as determined from its accounting records. This is directly analogous to the expected earnings approach, which measures the return that investors expect the utility to earn on book value. As a result, the expected earnings approach provides a meaningful guide to ensure that the allowed ROE is similar to what other utilities of comparable risk will earn on invested capital.

This expected earnings test does not require theoretical models to indirectly infer investors' perceptions from stock prices or other market data. As long as the proxy companies are similar in risk, their expected earned returns on invested capital provide a direct benchmark for investors' opportunity costs that is independent of fluctuating stock prices, market-to-book ratios, debates over DCF growth rates, or the limitations inherent in any theoretical model of investor behavior.

Q. WHAT EQUITY RETURNS ARE INDICATED FOR BLACK HILLS BASED ON THE EXPECTED EARNINGS APPROACH?

A. For the firms in the Gas Group, the year-end returns on common equity projected by Value Line over its forecast horizon are shown on KSG Direct Exhibit AMM-9. As I explained earlier in my discussion of the br+sv growth rates used in applying the DCF model, Value Line's returns on common equity are calculated using year-end equity balances, which understates the average return earned over the year.[59] Accordingly, these year-end values are converted to average returns using the same adjustment factor discussed earlier and developed on KSG Direct Exhibit AMM-5. As shown on KSG Direct Exhibit AMM-9, Value Line's projections for the Gas Group suggest an average ROE of 9.8%, with a midpoint value of 9.9%.

IV. NON-UTILITY BENCHMARK

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. This section presents the results of my DCF analysis applied to a group of low-risk firms in the competitive sector, which I refer to as the "Non-Utility Group." This analysis is not directly considered in arriving at my recommended ROE range of reasonableness; however, it is my opinion that this is a relevant consideration in evaluating a fair and reasonable ROE for the Company.

[59] For example, to compute the annual return on a passbook savings account with a beginning balance of $1,000 and an ending balance of $5,000, the interest income would be divided by the average balance of $3,000. Using the $5,000 balance at the end of the year would understate the actual return.

Q. DO UTILITIES HAVE TO COMPETE WITH NON-REGULATED FIRMS FOR CAPITAL?

A. Yes. The cost of capital is an opportunity cost based on the returns that investors could realize by putting their money in other alternatives. Clearly, the total capital invested in utility stocks is only the tip of the iceberg of total common stock investment, and there is an abundance of other enterprises available to investors beyond those in the utility industry. Utilities must compete for capital, not just against firms in their own industry, but with other investment opportunities of comparable risk. Indeed, modern portfolio theory is built on the assumption that rational investors will hold a diverse portfolio of stocks, not just companies in a single industry.

Q. IS IT CONSISTENT WITH THE *BLUEFIELD* AND *HOPE* CASES TO CONSIDER INVESTORS' REQUIRED ROE FOR NON-UTILITY COMPANIES?

A. Yes. The cost of equity capital in the competitive sector of the economy forms the very underpinning for utility ROEs because regulation purports to serve as a substitute for the actions of competitive markets. The Supreme Court has recognized that it is the degree of risk, not the nature of the business, which is relevant in evaluating an allowed ROE for a utility. The *Bluefield* case refers to "business undertakings attended with comparable risks and uncertainties." It does not restrict consideration to other utilities. Similarly, the *Hope* case states:

> By that standard, the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks.

As in the *Bluefield* decision, there is nothing to restrict "other enterprises" solely to the utility industry.

Q. DOES CONSIDERATION OF THE RESULTS FOR THE NON-UTILITY GROUP IMPROVE THE RELIABILITY OF DCF RESULTS?

A. Yes. The estimates of growth from the DCF model depend on analysts' forecasts. It is possible for utility growth rates to be distorted by short-term trends in the industry, or by the industry falling into favor or disfavor by analysts. Such distortions could result in biased DCF estimates for utilities. Because the Non-Utility Group includes low risk companies from more than one industry, it helps to insulate against any possible distortion that may be present in results for a particular sector.

Q. WHAT CRITERIA DO YOU APPLY TO DEVELOP THE NON-UTILITY GROUP?

A. My comparable risk proxy group is composed of those United States companies followed by Value Line that:

1) pay common dividends;

2) have a Safety Rank of "1,"

3) have a Financial Strength Rating of "B++" or greater;

4) have a beta less than 1.00; and

5) have investment grade credit ratings from S&P and Moody's.

Q. HOW DO THE OVERALL RISKS OF THIS NON-UTILITY GROUP COMPARE WITH THE GAS GROUP?

A. Table AMM-5 compares the Non-Utility Group with the Gas Group across the measures of investment risk discussed earlier:

TABLE AMM-5
COMPARISON OF RISK INDICATORS

	Credit Ratings		Value Line		
			Safety	Financial	
Proxy Group	S&P	Moody's	Rank	Strength	Beta
Non-Utility Group	A	A3	1	A+	0.81
Gas Group	A-	A3	2	A	0.87
Black Hills Corp.	BBB+	Baa2	2	A	1.00

As shown above, the risk indicators for the Non-Utility Group suggest less risk than for the Gas Group and Black Hills.

The companies that make up the Non-Utility Group are representative of the pinnacle of corporate America. These firms, which include household names such as Coca-Cola, Kellogg, Proctor & Gamble, and Walmart, have long corporate histories, well-established track records, and exceedingly conservative risk profiles. Many of these companies pay dividends on a par with utilities, with the average dividend yield for the group averaging 2.2%. Moreover, because of their significance and name recognition, these companies receive intense scrutiny by the investment community, which increases confidence that published growth estimates are representative of the consensus expectations reflected in common stock prices.

Q. WHAT ARE THE RESULTS OF YOUR DCF ANALYSIS FOR THE NON-UTILITY GROUP?

A. I apply the DCF model to the Non-Utility Group using the same analysts' EPS growth projections described earlier for the Gas Group. The results of my DCF analysis for the Non-Utility Group are presented in KSG Direct Exhibit AMM-10. As summarized in

Table AMM-6, below, after eliminating illogical values, application of the constant growth DCF model results in the following cost of equity estimates:

TABLE AMM-6
DCF RESULTS – NON-UTILITY GROUP

	Cost of Equity	
Growth Rate	**Average**	**Midpoint**
Value Line	10.5%	10.5%
IBES	10.1%	10.2%
Zacks	10.3%	10.6%

As discussed earlier, reference to the Non-Utility Group is consistent with established regulatory principles. Required returns for utilities should be in line with those of non-utility firms of comparable risk operating under the constraints of free competition. Because the actual cost of equity is unobservable, and DCF results inherently incorporate a degree of error, cost of equity estimates for the Non-Utility Group provide an important benchmark in evaluating a fair and reasonable ROE for Black Hills.

V. RETURN ON EQUITY FOR BLACK HILLS

Q. WHAT IS THE PURPOSE OF THIS SECTION?

A. This section presents an overview of the relationship between ROE and preservation of a utility's financial integrity and the ability to attract capital under reasonable terms and presents my conclusions regarding the fair and reasonable ROE applicable to Black Hills's utility operations. Finally, I discuss the reasonableness of the Company's capital structure request in this case.

A. Importance of Financial Strength

Q. WHAT IS THE ROLE OF THE ROE IN SETTING A UTILITY'S RATES?

A. The ROE is the cost of attracting and retaining common equity investment in the utility's physical plant and assets. This investment is necessary to finance the asset base needed to provide utility service. Investors commit capital only if they expect to earn a return on their investment commensurate with returns available from alternative investments with comparable risks. Moreover, a fair and reasonable ROE is integral in meeting sound regulatory economics and the standards set forth by the U.S. Supreme Court. The *Bluefield* case set the standard against which just and reasonable rates are measured:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties. . . . The return should be reasonable, sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise money necessary for the proper discharge of its public duties.

The *Hope* case expanded on the guidelines as to a reasonable ROE, reemphasizing its findings in *Bluefield* and establishing that the rate-setting process must produce an end-result that allows the utility a reasonable opportunity to cover its capital costs. The Court stated:

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

In summary, the Supreme Court's findings in *Hope* and *Bluefield* established that a just and reasonable ROE must be sufficient to: 1) fairly compensate the utility's investors, 2) enable the utility to offer a return adequate to attract new capital on reasonable terms, and 3) maintain the utility's financial integrity.[60] These standards should allow the utility to fulfill its obligation to provide reliable service while meeting the needs of customers through necessary system replacement and expansion, but the Supreme Court's requirements can only be met if the utility has a reasonable opportunity to actually earn its allowed ROE.

While the *Hope* and *Bluefield* decisions did not establish a particular method to be followed in fixing rates (or in determining the allowed ROE),[61] these and subsequent cases enshrined the importance of an end-result that meets the opportunity cost standard of finance. Under this doctrine, the required return is established by investors in the capital markets based on expected returns available from comparable risk investments. Coupled with modern financial theory, which has led to the development of formal risk-return models (*e.g.,* DCF and CAPM), practical application of the *Bluefield* and *Hope* standards involves the independent, case-by-case consideration of capital market data in order to evaluate an ROE that will produce a balanced and fair end result for investors and customers.

[60] These standards have also been recognized by the Colorado Supreme Court. *See, e.g., Public Utils. Comm'n v. District Court*, 527 P.2d 233 (Colo. 1974), *Public Serv. Co. of Colorado v. Public Utils. Comm'n*, 644 P.2d 933 (Colo. 1982).

[61] *Fed. Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. at 602 (1944) (*finding,* "the Commission was not bound to the use of any single formula or combination of formulae in determining rates." and, "[I]t is not theory but the impact of the rate order which counts.")

Q. THROUGHOUT YOUR TESTIMONY YOU REFER REPEATEDLY TO THE CONCEPTS OF "FINANCIAL STRENGTH," "FINANCIAL INTEGRITY," AND "FINANCIAL FLEXIBILITY." WOULD YOU BRIEFLY DESCRIBE WHAT YOU MEAN BY THESE TERMS?

A. These terms are generally synonymous and refer to the utility's ability to attract and retain the capital that is necessary to provide service at a reasonable cost, consistent with the Supreme Court standards. The Company's plans call for a continuation of capital investments in main replacement, system safety and integrity, and technology to preserve and enhance service reliability for its customers. The Company must generate adequate cash flow from operations to fund these requirements and for repayment of maturing debt, together with access to capital from external sources under reasonable terms, on a sustainable basis.

Rating agencies and potential debt investors tend to place significant emphasis on maintaining strong financial metrics and credit ratings that support access to debt capital markets under reasonable terms. This emphasis on financial metrics and credit ratings is shared by equity investors who also focus on cash flows, capital structure and liquidity, much like debt investors. Investors understand the important role that a supportive regulatory environment plays in establishing a sound financial profile that will permit the utility access to debt and equity capital markets on reasonable terms in both favorable financial markets and during times of potential disruption and crisis.

Q. WHAT PART DOES REGULATION PLAY IN ENSURING THAT BLACK HILLS HAS ACCESS TO CAPITAL UNDER REASONABLE TERMS AND ON A SUSTAINABLE BASIS?

A. Regulatory signals are a major driver of investors' risk assessment for utilities. Investors recognize that constructive regulation is a key ingredient in supporting utility credit ratings and financial integrity. Security analysts study commission orders and regulatory policy statements to advise investors about where to put their money. As Moody's noted, "the regulatory environment is the most important driver of our outlook because it sets the pace for cost recovery."[62] Similarly, S&P observed that, "Regulatory advantage is the most heavily weighted factor when S&P Global Ratings analyzes a regulated utility's business risk profile."[63] Value Line summarizes these sentiments:

> As we often point out, the most important factor in any utility's success, whether it provides electricity, gas, or water, is the regulatory climate in which it operates. Harsh regulatory conditions can make it nearly impossible for the best run utilities to earn a reasonable return on their investment.[64]

Furthermore, the ROE set by the Commission impacts investor confidence in not only the jurisdictional utility, but also in the ultimate parent company that is the entity that actually issues common stock.

[62] Moody's Investors Service, *Regulation Will Keep Cash Flow Stable As Major Tax Break Ends*, Industry Outlook (Feb. 19, 2014).
[63] S&P Global Ratings, *Assessing U.S. Investors-Owned Utility Regulatory Environments*, RatingsExpress (Aug. 10, 2016).
[64] Value Line Investment Survey, *Water Utility Industry* (January 13, 2017) at p. 1780.

Q. DO CUSTOMERS BENEFIT BY ENHANCING THE UTILITY'S FINANCIAL FLEXIBILITY?

A. Yes. Providing an ROE that is sufficient to maintain the Company's ability to attract capital under reasonable terms, even in times of financial and market stress, is not only consistent with the economic requirements embodied in the U.S. Supreme Court's *Hope* and *Bluefield* decisions, it is also in customers' best interests. Customers enjoy the benefits that come from ensuring that the utility has the financial wherewithal to take whatever actions are required to ensure safe and reliable service.

In contrast, denying a utility the opportunity to earn a fair ROE or attract capital on reasonable terms is ultimately detrimental to customers and the economy. The costs of obtaining capital rise as the risks of the utility mount, which ultimately increases the cost of providing service. Financial stress can also hinder the ability to provide safe, reliable service if the utility is unable to raise the capital necessary for system expansion and improvements.

B. Conclusions and Recommendations

Q. WHAT ARE YOUR FINDINGS REGARDING A FAIR ROE FOR BLACK HILLS?

A. Considering the economic requirements necessary to support continuous access to capital under reasonable terms and the results of my analysis, I recommend a 10.15% ROE for the Company's gas utility operations, which is consistent with the case-specific evidence presented in my testimony. The bases for my conclusion are summarized below:

- In order to reflect the risks and prospects associated with Black Hills's utility business, my analysis focuses on the nine gas utility firms in the Gas Group.

- Because investors' required ROE is unobservable, and no single method should be viewed in isolation, I apply the DCF, CAPM, ECAPM, and risk premium methods to estimate a fair and reasonable ROE for Black Hills, as well as referencing the expected earnings approach.
- As summarized on KSG Direct Exhibit AMM-2, based on the results of these analyses, and giving less weight to extremes at the high and low ends of the range, I conclude that the cost of equity for a regulated gas utility is in the 9.5% to 10.8% range.
- My ROE recommendation of 10.15% falls at the midpoint of my recommended range. Considering capital market expectations and the economic requirements necessary to maintain financial integrity and support additional capital investment even under adverse circumstances, it is my opinion that 10.15% represents a fair ROE for Black Hills.

Q. WHAT ELSE IS RELEVANT IN WEIGHING YOUR QUANTITATIVE RESULTS?

A. As noted earlier, the evaluation of a fair ROE should not be based on the mechanical application of a single methodology. Because no single approach is inherently superior, the results of alternative quantitative approaches should serve as an integral part of the decision-making underlying the determination of a just and reasonable ROE. In this light, it is important to consider alternatives to the DCF model. As shown in KSG Direct Exhibit AMM-2, alternative risk premium models (*i.e.*, the CAPM, ECAPM and utility risk premium approaches) produce ROE estimates that generally exceed the DCF results. My expected earnings approach corroborated these outcomes.[65]

[65] Nor do the results of my analyses consider issuance costs associated with the sale of common stock. While such flotation costs are legitimate business expenses that would imply an upward adjustment to the cost of equity, I did not include an adjustment to my recommended ROE to account for them. This treatment further supports the reasonableness of my ROE recommendation.

Q. WHAT DO THE DCF RESULTS FOR YOUR SELECT GROUP OF NON-UTILITY FIRMS INDICATE WITH RESPECT TO YOUR EVALUATION?

A. As shown on KSG Direct Exhibit AMM-11, page 3, average DCF estimates for a low-risk group of firms in the competitive sector of the economy range from 10.1% to 10.5%. While I do not base my recommendation directly on these results, they confirm that an ROE of 10.15% falls in a reasonable range to maintain Black Hills's financial integrity, provide a return commensurate with investments of comparable risk, and support the Company's ability to attract capital.

C. Capital Structure

Q. IS AN EVALUATION OF THE CAPITAL STRUCTURE MAINTAINED BY A UTILITY RELEVANT IN ASSESSING ITS RETURN ON EQUITY?

A. Yes. Other things equal, a higher debt ratio and lower common equity ratio, translates into increased financial risk for all investors. A greater amount of debt means more investors have a senior claim on available cash flow, thereby reducing the certainty that each will receive their contractual payments. This increases the risks to which lenders are exposed, and they require correspondingly higher rates of interest. From common shareholders' standpoint, a higher debt ratio means that there are proportionately more investors ahead of them, thereby increasing the uncertainty as to the amount of cash flow that will remain.

Q. WHAT COMMON EQUITY RATIO IS IMPLICIT IN BLACK HILLS'S CAPITAL STRUCTURE?

A. Black Hills's capital structure is presented in the direct testimony of Black Hills Witness Ms. Curran. As summarized in her direct testimony, the proposed common equity ratio used

to compute the Company's overall rate of return is 50.34% equity and 49.66% long term debt in this filing. As summarized in her direct testimony, the proposed common equity ratio used to compute the Company's overall rate of return is 50.34% equity and 49.66% long term debt in this filing.

Q. HOW DOES THIS COMPARE TO THE AVERAGE EQUITY RATIOS MAINTAINED BY THE GAS GROUP?

A. Page 1 of KSG Direct Exhibit AMM-12 presents the sources of long-term capital (long-term debt and common equity) used by the publicly traded firms in the group of natural gas utilities used to estimate the cost of equity. As shown there, over the four quarters ended December 31, 2020 the average common equity ratios for the utilities in the Gas Group ranged from 34.2% to 59.4%, with the average being 48.9%.

Q. HOW DO THESE HISTORICAL CAPITALIZATION RATIOS COMPARE WITH INVESTORS' FORWARD-LOOKING EXPECTATIONS?

A. As shown on page 2 of KSG Direct Exhibit AMM-11, Value Line expects an average common equity ratio of 54.7% for the Gas Group over its three-to-five year forecast horizon.

Q. DO ONGOING ECONOMIC AND CAPITAL MARKET UNCERTAINTIES ALSO INFLUENCE THE APPROPRIATE CAPITAL STRUCTURE FOR BLACK HILLS?

A. Yes. Financial flexibility plays a crucial role in ensuring the wherewithal to meet funding needs, and utilities with higher financial leverage may be foreclosed or have limited access to additional borrowing, especially during times of stress. As Moody's observed:

> Utilities are among the largest debt issuers in the corporate universe and typically require consistent access to capital markets to assure adequate sources of funding and to maintain financial flexibility. During times of distress and when capital markets are exceedingly volatile and tight, liquidity becomes critically important because access to capital markets may be difficult.[66]

Confirming this view, S&P noted that "availability to the equity market remains extraordinarily challenging" for utilities and concluded that "lack of access to the equity market" will also pose a risk to financial standing in the industry.[67] As a result, the Company's capital structure must maintain adequate equity to preserve the flexibility necessary to maintain continuous access to capital even during times of unfavorable energy or financial market conditions, such as those experienced in February 2021.

Q. WHAT OTHER FACTORS DO INVESTORS CONSIDER IN THEIR ASSESSMENT OF A COMPANY'S CAPITAL STRUCTURE?

A. Utilities, including Black Hills, are facing significant capital investment plans. Coupled with the potential for turmoil in capital markets, this warrants a stronger balance sheet to deal with an uncertain environment. A conservative financial profile, in the form of a reasonable common equity ratio, is consistent with the need to accommodate these uncertainties and maintain the continuous access to capital under reasonable terms that is required to fund operations and necessary system investment, even during times of adverse capital market conditions.

[66] Moody's Investors Service, *FAQ on credit implications of the coronavirus outbreak*, Sector Comment (Mar. 26, 2020).

[67] S&P Global Ratings, COVID-19: The Outlook for North American Regulated Utilities Turns Negative (Apr. 2, 2020).

Q. WHAT DOES THIS EVIDENCE SUGGEST WITH RESPECT TO BLACK HILLS' PROPOSED CAPITAL STRUCTURE?

A. Black Hills' mix of external financing and its proposed 50.34% common equity ratio are consistent with the range of industry benchmarks reflected in the most recent average capital structure ratios maintained by the Gas Group, although it falls below investors' future expectations for the industry as shown on page 2 of KSG Direct Exhibit AMM-11. Taken together, I conclude that Black Hills' proposed capital structure represents a reasonable basis on which to calculate the overall rate of return.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A, Yes, it does.

AFFIDAVIT OF ADRIEN M. MCKENZIE

State of Texas)
) ss
County of Travis)

I, ADRIEN M. MCKENZIE, being first duly sworn on oath, depose and state that I am the same Adrien M. McKenzie identified in the foregoing Direct Testimony; that I have caused the foregoing Direct Testimony to be prepared and am familiar with the contents thereof; and that the foregoing Direct Testimony is true and correct to the best of my knowledge, information, and belief as of the date of this Affidavit.

Adrien M. McKenzie

Subscribed and sworn to before me,
A Notary Public, in and for said County
and State, this 28th day of April 2021

Notary Public

BRUCE H FAIRCHILD
Notary ID #131906507
My Commission Expires
February 25, 2023

My Commission expires: 2/25/2023

KSG DIRECT EXHIBIT AMM-1

QUALIFICATIONS OF ADRIEN M. MCKENZIE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Adrien M. McKenzie. My business address is 3907 Red River St., Austin, Texas 78751.

Q. PLEASE STATE YOUR OCCUPATION.

A. I am a principal in FINCAP, Inc., a firm engaged primarily in financial, economic, and policy consulting in the field of public utility regulation.

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I received B.A. and M.B.A. degrees with a major in finance from The University of Texas at Austin, and hold the Chartered Financial Analyst (CFA®) designation. Since joining FINCAP in 1984, I have participated in consulting assignments involving a broad range of economic and financial issues, including cost of capital, cost of service, rate design, economic damages, and business valuation. I have extensive experience in economic and financial analysis for regulated industries, and in preparing and supporting expert witness testimony before courts, regulatory agencies, and legislative committees throughout the U.S. and Canada. I have personally sponsored direct and rebuttal testimony in over 140 proceedings filed with the Federal Energy Regulatory Commission ("FERC") and regulatory agencies in Alaska, Arkansas, Colorado, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Montana, Nebraska, New Mexico, Ohio, Oklahoma, Oregon, South Dakota, Texas, Virginia, Washington, West Virginia, and Wyoming. My testimony addressed the establishment of risk-comparable proxy groups, the application of alternative quantitative methods, and the consideration of regulatory standards and

policy objectives in establishing a fair rate of return on equity for regulated electric, gas, and water utility operations. In connection with these assignments, my responsibilities have included critically evaluating the positions of other parties and preparation of rebuttal testimony, representing clients in settlement negotiations and hearings, and assisting in the preparation of legal briefs.

FINCAP was formed in 1979 as an economic and financial consulting firm serving clients in both the regulated and competitive sectors. FINCAP conducts assignments ranging from broad qualitative analyses and policy consulting to technical analyses and research. The firm's experience is in the areas of public utilities, valuation of closely-held businesses, and economic evaluations (e.g., damage and cost/benefit analyses). Prior to joining FINCAP, I was employed by an oil and gas firm and was responsible for operations and accounting. I am a member of the CFA Institute, the CFA Society of Austin. A resume containing the details of my qualifications and experience is attached below.

ADRIEN M. McKENZIE

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Economic and Financial Counsel

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Summary of Qualifications

Adrien McKenzie has an MBA in finance from the University of Texas at Austin and holds the Chartered Financial Analyst (CFA®) designation. He has over 30 years of experience in economic and financial analysis for regulated industries, and in preparing and supporting expert witness testimony before courts, regulatory agencies, and legislative committees throughout the U.S. and Canada. Assignments have included a broad range of economic and financial issues, including cost of capital, cost of service, rate design, economic damages, and business valuation.

Employment

President FINCAP, Inc. (June 1984 to June 1987) (April 1988 to present)	Economic consulting firm specializing in regulated industries and valuation of closely-held businesses. Assignments have involved electric, gas, telecommunication, and water/sewer utilities, with clients including utilities, consumer groups, municipalities, regulatory agencies, and cogenerators. Areas of participation have included rate of return, revenue requirements, rate design, tariff analysis, avoided cost, forecasting, and negotiations. Develop cost of capital analyses using alternative market models for electric, gas, and telephone utilities. Prepare pre-filed direct and rebuttal testimony, participate in settlement negotiations, respond to interrogatories, evaluate opposition testimony, and assist in the areas of cross-examination and the preparations of legal briefs. Other assignments have involved preparation of technical reports, valuations, estimation of damages, industry studies, and various economic analyses in support of litigation.
Manager, McKenzie Energy Company (Jan. 1981 to May. 1984)	Responsible for operations and accounting for firm engaged in the management of working interests in oil and gas properties.

Education

M.B.A., Finance, University of Texas at Austin (Sep. 1982 to May. 1984)	Program included coursework in corporate finance, accounting, financial modeling, and statistics. Received Dean's Award for Academic Excellence and Good Neighbor Scholarship. Professional Report: *The Impact of Construction Expenditures on Investor-Owned Electric Utilities*
B.B.A., Finance, University of Texas at Austin (Jan. 1981 to May 1982)	Electives included capital market theory, portfolio management, and international economics and finance. Elected to Beta Gamma Sigma business honor society. Dean's List 1981-1982.
Simon Fraser University, Vancouver, Canada and University of Hawaii at Manoa, Honolulu, Hawaii (Jan. 1979 to Dec 1980)	Coursework in accounting, finance, economics, and liberal arts.

Professional Associations

Received Chartered Financial Analyst (CFA®) designation in 1990.

Member – CFA Institute.

Bibliography

"A Profile of State Regulatory Commissions," A Special Report by the Electricity Consumers Resource Council (ELCON), Summer 1991.

"The Impact of Regulatory Climate on Utility Capital Costs: An Alternative Test," with Bruce H. Fairchild, *Public Utilities Fortnightly* (May 25, 1989).

Presentations

"ROE at FERC: Issues and Methods," *Expert Briefing on Parallels in ROE Issues between AER, ERA, and FERC*, Jones Day (Sydney, Melbourne, and Perth, Australia) (April 15, 2014).

Cost of Capital Working Group eforum, Edison Electric Institute (April 24, 2012).

"Cost-of-Service Studies and Rate Design," General Management of Electric Utilities (A Training Program for Electric Utility Managers from Developing Countries), Austin, Texas (October 1989 and November 1990 and 1991).

Representative Assignments

Mr. McKenzie has prepared and sponsored prefiled testimony submitted in over 140 regulatory proceedings. In addition to filings before regulatory agencies in Alaska, Arkansas, Colorado, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Montana, Nebraska, New Mexico, Ohio, Oklahoma, Oregon, South Dakota, Texas, Virginia, Washington, West Virginia, and Wyoming, Mr. McKenzie has considerable expertise in preparing expert analyses and testimony before the Federal Energy Regulatory Commission ("FERC") on the issue of rate of return on equity ("ROE"), and has broad experience in applying and evaluating the results of quantitative methods to estimate a fair ROE, including discounted cash flow approaches, the Capital Asset Pricing Model, risk premium methods, and other quantitative benchmarks. Other representative assignments have included developing cost of service and cost allocation studies, the application of econometric models to analyze the impact of anti-competitive behavior and estimate lost profits; development of explanatory models for nuclear plant capital costs in connection with prudency reviews; and the analysis of avoided cost pricing for cogenerated power.

SUMMARY OF RESULTS

Method	Average	Midpoint
DCF		
Value Line	10.6%	11.3%
IBES	8.4%	8.1%
Zacks	9.1%	8.6%
Internal br + sv	10.4%	11.3%
CAPM		
Current Bond Yield	11.6%	11.8%
Projected Bond Yield	11.8%	11.9%
Empirical CAPM		
Current Bond Yield	11.9%	12.0%
Projected Bond Yield	12.0%	12.1%
Utility Risk Premium		
Current Bond Yields	9.2%	
Projected Bond Yields	9.5%	
Expected Earnings	9.8%	9.9%

ROE Recommendation			
ROE Range	**9.5%**	**--**	**10.8%**
ROE Recommendation	**10.15%**		

GAS GROUP

Company	State	Type of adjustment clause (a)								(b)
				Decoupling						
		Gas Cost	Conserv.			*Including	Environ-mental	Capital Investment		Future Test
		Adjustment	Program	Full	Partial*	WNA	Compliance	Tracker	Other†	Year
ATMOS ENERGY										
Atmos Energy	CO	✓	--	--	--	--	--	✓	--	--
Atmos Energy	KS	✓	--	--	✓	WNA	--	✓	✓	--
Atmos Energy	KY	✓	✓	--	✓	WNA	--	✓	✓	O
Atmos Energy	LA	✓	--	--	✓	WNA	--	✓	--	O
Atmos Energy	MS	✓	✓	--	✓	WNA	--	✓	--	O
Atmos Energy	TN	✓	--	--	✓	WNA	--	--	✓	C
Atmos Energy	TX	✓	--	--	✓	WNA	--	✓	✓	--
CHESAPEAKE UTILITES										
Chesapeake Utilities	DE	✓	--	--	--	--	✓	✓	✓	P
Florida Public Utilities	FL	✓	✓	--	--	--	✓	✓	✓	C
NEW JERSEY RESOURCES										
New Jersey Natural Gas	NJ	✓	✓	✓	--	--	✓	✓	✓	P
NISOURCE INC.										
Northern Indiana Public Service	IN	✓	✓	--	--	--	--	✓	✓	--
Columbia Gas of Kentucky	KY	✓	✓	--	✓	WNA	--	✓	✓	O
Columbia Gas of Maryland	MD	✓	✓	--	✓	WNA	--	✓	✓	P
Bay State Gas	MA	✓	✓	✓	--	--	✓	✓	✓	--
Columbia Gas of Ohio	OH	D	✓	--	--	--	--	✓	✓	P
Columbia Gas of Pennsylvania	PA	✓	--	--	✓	WNA	--	✓	✓	O
Columbia Gas of Virginia	VA	✓	✓	--	✓	WNA	--	✓	✓	--
NORTHWEST NATURAL										
Northwest Natural Gas	OR	✓	✓	--	✓	WNA	✓	--	--	C
Northwest Natural Gas	WA	✓	✓	--	--	--	--	--	--	--
ONE GAS, INC.										
Kansas Gas Service	KS	✓	--	--	✓	WNA	--	✓	✓	--
Oklahoma Natural Gas	OK	✓	✓	--	✓	WNA	--	--	✓	--
Texas Gas Service	TX	✓	--	--	✓	WNA	--	✓	--	--
SOUTH JERSEY INDUSTRIES										
Elizabethown Gas	NJ	✓	✓	--	✓	WNA	✓	✓	✓	P
South Jersey Gas	NJ	✓	✓	✓	--	--	✓	✓	✓	P
SOUTHWEST GAS										
Southwest Gas	AZ	✓	✓	✓	--	--	--	✓	✓	--
Southwest Gas	CA	✓	--	✓	--	--	--	--	--	C
Southwest Gas	NV	✓	--	✓	--	--	--	✓	✓	--
SPIRE INC.										
Spire Alabama	AL	✓	--	--	✓	--	--	--	✓	C
Spire Gulf	AL	✓	--	--	✓	WNA	--	--	✓	C
Spire Missouri Inc. - East	MO	✓	--	--	✓	WNA	--	✓	✓	P
Spire Missouri Inc. - West	MO	✓	--	--	--	WNA	--	✓	✓	P

(a) S&P Global Market Intelligence, *Adjustment Clauses* , RRA Regulatory Focus (Nov. 12, 2019).
(b) Edison Electric Institute, *Alternative Regulation for Emerging Utility Challenges: 2015 Update* (Nov. 11, 2015).
† Recover mechanisms for other expenses, such as taxes, franchise fees, pensions, and bad debts.

Notes:
D - Delivery-only utility.
C - Fully-forecasted test years commonly used in the state listed for this operating company.
O - Fully-forecasted test years occasionally used in the state listed for this operating company.
P - Partially-forecasted test years commonly or occasionally used in the state listed for this operating company.

DIVIDEND YIELD

	Company	(a) Price	(b) Dividends	Yield
1	Atmos Energy Corp.	$ 91.58	$ 2.55	2.8%
2	Chesapeake Utilities	$ 104.73	$ 1.83	1.7%
3	New Jersey Resources	$ 35.45	$ 1.33	3.8%
4	NiSource Inc.	$ 22.20	$ 0.84	3.8%
5	Northwest Natural	$ 45.33	$ 1.92	4.2%
6	ONE Gas, Inc.	$ 74.39	$ 2.32	3.1%
7	South Jersey Industries	$ 21.93	$ 1.24	5.7%
8	Southwest Gas	$ 59.91	$ 2.35	3.9%
9	Spire Inc.	$ 62.37	$ 2.61	4.2%
	Average			**3.7%**

(a) Average of closing prices for 30 trading days ended Jan. 29, 2021.
(b) The Value Line Investment Survey, *Summary & Index* (Jan. 29, 2021).

GROWTH RATES

		(a)	(b)	(c)	(d)
		Earnings Growth			**br+sv**
	Company	**V Line**	**IBES**	**Zacks**	**Growth**
1	Atmos Energy Corp.	7.0%	6.7%	7.1%	9.3%
2	Chesapeake Utilities	9.0%	4.7%	n/a	10.4%
3	New Jersey Resources	2.0%	6.0%	6.0%	4.6%
4	NiSource Inc.	13.0%	1.7%	5.6%	5.9%
5	Northwest Natural	24.5%	3.1%	3.1%	4.2%
6	ONE Gas, Inc.	6.5%	5.0%	6.0%	4.8%
7	South Jersey Industries	12.5%	24.5%	24.5%	9.0%
8	Southwest Gas	9.0%	4.0%	5.0%	8.2%
9	Spire Inc.	5.5%	5.4%	16.5%	3.8%

(a) The Value Line Investment Survey (Nov. 27, 2020).
(b) www.finance.yahoo.com (retrieved Feb. 2, 2021).
(c) www.zacks.com (retrieved Feb. 2, 2021).
(d) See KSG Direct Exhibit AMM-5.

DCF COST OF EQUITY ESTIMATES

		(a)	(a)	(a)	(a)
		Earnings Growth			**br+sv**
	Company	**V Line**	**IBES**	**Zacks**	**Growth**
1	Atmos Energy Corp.	9.8%	9.5%	9.9%	12.0%
2	Chesapeake Utilities	10.7%	6.5%	n/a	12.2%
3	New Jersey Resources	5.8%	9.8%	9.8%	8.4%
4	NiSource Inc.	16.8%	5.4%	9.4%	9.7%
5	Northwest Natural	28.7%	7.3%	7.4%	8.5%
6	ONE Gas, Inc.	9.6%	8.1%	9.1%	7.9%
7	South Jersey Industries	18.2%	30.2%	30.1%	14.7%
8	Southwest Gas	12.9%	7.9%	8.9%	12.2%
9	Spire Inc.	9.7%	9.6%	20.7%	8.0%
	Average (b)	**10.6%**	**8.4%**	**9.1%**	**10.4%**
	Midpoint (b,c)	**11.3%**	**8.1%**	**8.6%**	**11.3%**

(a) Sum of dividend yield (p. 1) and respective growth rate (p. 2).
(b) Excludes highlighted figures.
(c) Average of low and high values.

SUSTAINABLE GROWTH RATE

		(a)	(a)	(a)			(b)	(c)		(d)	(e)		
		2024					**Adjustment**			**"sv" Factor**			
	Company	**EPS**	**DPS**	**BVPS**	**b**	**r**	**Factor**	**Adjusted r**	**br**	**s**	**v**	**sv**	**br + sv**
1	Atmos Energy Corp.	$6.00	$3.15	$66.20	47.5%	9.1%	1.0512	9.5%	4.5%	0.0870	0.5434	4.73%	**9.3%**
2	Chesapeake Utilities	$5.50	$2.30	$60.15	58.2%	9.1%	1.0759	9.8%	5.7%	0.0875	0.5373	4.70%	**10.4%**
3	New Jersey Resources	$2.40	$1.57	$25.80	34.6%	9.3%	1.0512	9.8%	3.4%	0.0353	0.3550	1.25%	**4.6%**
4	NiSource Inc.	$2.05	$1.16	$16.20	43.4%	12.7%	1.0404	13.2%	5.7%	0.0032	0.5371	0.17%	**5.9%**
5	Northwest Natural	$3.20	$1.97	$38.40	38.4%	8.3%	1.0101	8.4%	3.2%	0.0199	0.5045	1.00%	**4.2%**
6	ONE Gas, Inc.	$4.75	$2.80	$54.10	41.1%	8.8%	1.0335	9.1%	3.7%	0.0192	0.5672	1.09%	**4.8%**
7	South Jersey Industries	$2.50	$1.40	$20.45	44.0%	12.2%	1.0458	12.8%	5.6%	0.0695	0.4888	3.39%	**9.0%**
8	Southwest Gas	$6.25	$2.65	$61.55	57.6%	10.2%	1.0467	10.6%	6.1%	0.0551	0.3845	2.12%	**8.2%**
9	Spire Inc.	$5.15	$3.00	$72.00	41.7%	7.2%	1.0442	7.5%	3.1%	0.0224	0.3143	0.70%	**3.8%**

SUSTAINABLE GROWTH RATE

		(a)	(a)	(f)	(a)	(a)	(f)	(g)	(a)	(a)		(h)	(a)	(a)	(g)
		2019			2024			Chg	2024 Price				Common Shares		
	Company	Eq Ratio	Tot Cap	Com Eq	Eq Ratio	Tot Cap	Com Eq	Equity	High	Low	Avg.	M/B	2019	2024	Growth
1	Atmos Energy Corp.	62.0%	$9,280	$5,753	60.0%	$16,000	$9,600	10.8%	$160.00	$130.00	$145.00	2.190	119.34	145.00	3.97%
2	Chesapeake Utilities	56.1%	$1,002	$562	65.0%	$1,850	$1,203	16.4%	$150.00	$110.00	$130.00	2.161	16.40	20.00	4.05%
3	New Jersey Resources	50.2%	$3,089	$1,551	56.5%	$4,580	$2,588	10.8%	$45.00	$35.00	$40.00	1.550	89.34	100.00	2.28%
4	NiSource Inc.	36.9%	$13,843	$5,108	45.0%	$17,005	$7,652	8.4%	$40.00	$30.00	$35.00	2.160	382.14	385.00	0.15%
5	Northwest Natural	51.8%	$1,672	$866	52.5%	$1,825	$958	2.0%	$85.00	$70.00	$77.50	2.018	30.47	32.00	0.98%
6	ONE Gas, Inc.	62.3%	$3,416	$2,128	62.0%	$4,800	$2,976	6.9%	$145.00	$105.00	$125.00	2.311	52.77	55.00	0.83%
7	South Jersey Industries	40.8%	$3,494	$1,426	41.0%	$5,500	$2,255	9.6%	$45.00	$35.00	$40.00	1.956	92.39	110.00	3.55%
8	Southwest Gas	52.1%	$4,806	$2,504	55.5%	$7,200	$3,996	9.8%	$120.00	$80.00	$100.00	1.625	55.01	65.00	3.39%
9	Spire Inc.	55.0%	$4,626	$2,544	55.0%	$7,200	$3,960	9.3%	$120.00	$90.00	$105.00	1.458	50.97	55.00	1.53%

(a) The Value Line Investment Survey (Nov. 27, 2020).
(b) Computed using the formula 2*(1+5-Yr. Change in Equity)/(2+5 Yr. Change in Equity).
(c) Product of average year-end "r" for 2024 and Adjustment Factor.
(d) Product of change in common shares outstanding and M/B Ratio.
(e) Computed as 1 - B/M Ratio.
(f) Product of total capital and equity ratio.
(g) Five-year rate of change.
(h) Average of High and Low expected market prices divided by 2024 BVPS.

GAS GROUP

		(a)	(b)		(c)		(d)		(d)	(e)	
		Market Return (R_m)									
	Company	**Div Yield**	**Proj. Growth**	**Cost of Equity**	**Risk-Free Rate**	**Risk Premium**	**Beta**	**Unadjusted K_e**	**Market Cap**	**Size Adjustment**	**CAPM Result**
1	Atmos Energy Corp.	2.1%	9.4%	11.5%	1.7%	9.8%	0.80	9.5%	$12,500	0.71%	10.3%
2	Chesapeake Utilities	2.1%	9.4%	11.5%	1.7%	9.8%	0.80	9.5%	$1,900	1.37%	10.9%
3	New Jersey Resources	2.1%	9.4%	11.5%	1.7%	9.8%	0.95	11.0%	$3,600	1.09%	12.1%
4	NiSource Inc.	2.1%	9.4%	11.5%	1.7%	9.8%	0.85	10.0%	$9,400	0.71%	10.7%
5	Northwest Natural	2.1%	9.4%	11.5%	1.7%	9.8%	0.80	9.5%	$1,500	1.54%	11.1%
6	ONE Gas, Inc.	2.1%	9.4%	11.5%	1.7%	9.8%	1.05	12.0%	$2,300	1.37%	13.4%
7	South Jersey Industries	2.1%	9.4%	11.5%	1.7%	9.8%	1.05	12.0%	$2,300	1.37%	13.4%
8	Southwest Gas	2.1%	9.4%	11.5%	1.7%	9.8%	0.95	11.0%	$4,000	0.75%	11.8%
9	Spire Inc.	2.1%	9.4%	11.5%	1.7%	9.8%	0.85	10.0%	$3,300	1.09%	11.1%
	Average							**10.5%**			**11.6%**
	Midpoint (f)							**10.8%**			**11.8%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Dec. 7, 2020).
(b) Average of weighted average earnings growth rates from IBES, Zacks, and Value Line for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Dec. 7, 2020), http://finance.yahoo.com (retrieved Dec. 8, 2020), and www.zacks.com (retrieved Dec. 7, 2020).
(c) Average yield on 30-year Treasury bonds for the six-months ending Feb. 2021 based on data from https://fred.stlouisfed.org/.
(d) The Value Line Investment Survey (Nov. 27, 2020).
(e) Duff & Phelps, 2021 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.
(f) Average of low and high values.

GAS GROUP

		(a)	(b)		(c)		(d)		(d)	(e)	
		Market Return (R_m)									
	Company	**Div Yield**	**Proj. Growth**	**Cost of Equity**	**Risk-Free Rate**	**Risk Premium**	**Beta**	**Unadjusted K_e**	**Market Cap**	**Size Adjustment**	**CAPM Result**
1	Atmos Energy Corp.	2.1%	9.4%	11.5%	2.9%	8.6%	0.80	9.8%	$12,500	0.71%	10.5%
2	Chesapeake Utilities	2.1%	9.4%	11.5%	2.9%	8.6%	0.80	9.8%	$1,900	1.37%	11.2%
3	New Jersey Resources	2.1%	9.4%	11.5%	2.9%	8.6%	0.95	11.1%	$3,600	1.09%	12.2%
4	NiSource Inc.	2.1%	9.4%	11.5%	2.9%	8.6%	0.85	10.2%	$9,400	0.71%	10.9%
5	Northwest Natural	2.1%	9.4%	11.5%	2.9%	8.6%	0.80	9.8%	$1,500	1.54%	11.3%
6	ONE Gas, Inc.	2.1%	9.4%	11.5%	2.9%	8.6%	1.05	11.9%	$2,300	1.37%	13.3%
7	South Jersey Industries	2.1%	9.4%	11.5%	2.9%	8.6%	1.05	11.9%	$2,300	1.37%	13.3%
8	Southwest Gas	2.1%	9.4%	11.5%	2.9%	8.6%	0.95	11.1%	$4,000	0.75%	11.8%
9	Spire Inc.	2.1%	9.4%	11.5%	2.9%	8.6%	0.85	10.2%	$3,300	1.09%	11.3%
	Average							**10.6%**			**11.8%**
	Midpoint (f)							**9.8%**			**11.9%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Dec. 7, 2020).
(b) Average of weighted average earnings growth rates from IBES, Zacks, and Value Line for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Dec. 7, 2020), http://finance.yahoo.com (retrieved Dec. 8, 2020), and www.zacks.com (retrieved Dec. 7, 2020).
(c) Average yield on 30-year Treasury bonds for 2025 based on data from the Value Line Investment Survey, Forecast for the U.S. Economy (Feb. 26, 2021); IHS Markit, Long-Term Macro Forecast - Baseline (Mar. 1, 2021); & Wolters Kluwer, Blue Chip Financial Forecasts (Dec. 1, 2020).
(d) The Value Line Investment Survey (Nov. 27, 2020).
(e) Duff & Phelps, 2021 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.
(f) Average of low and high values.

GAS GROUP

		(a)	(b)		(c)		(d)		(e)	(d)				(e)	(f)	
		Market Return (R_m)														
	Company	**Div Yield**	**Proj. Growth**	**Cost of Equity**	**Risk-Free Rate**	**Risk Premium**	**Unadjusted RP Weight**	***RP*** [1]	**Beta**	**Beta Adjusted RP Weight**	***RP*** [2]	**Total RP**	**Unadjusted K_e**	**Market Cap**	**Size Adjustment**	**ECAPM Result**
1	Atmos Energy Corp.	2.1%	9.4%	11.5%	1.7%	9.8%	25%	2.5%	0.80	75%	5.9%	8.3%	10.0%	$12,500	0.71%	10.7%
2	Chesapeake Utilities	2.1%	9.4%	11.5%	1.7%	9.8%	25%	2.5%	0.80	75%	5.9%	8.3%	10.0%	$1,900	1.37%	11.4%
3	New Jersey Resources	2.1%	9.4%	11.5%	1.7%	9.8%	25%	2.5%	0.95	75%	7.0%	9.4%	11.1%	$3,600	1.09%	12.2%
4	NiSource Inc.	2.1%	9.4%	11.5%	1.7%	9.8%	25%	2.5%	0.85	75%	6.3%	8.7%	10.4%	$9,400	0.71%	11.1%
5	Northwest Natural	2.1%	9.4%	11.5%	1.7%	9.8%	25%	2.5%	0.80	75%	5.9%	8.3%	10.0%	$1,500	1.54%	11.6%
6	ONE Gas, Inc.	2.1%	9.4%	11.5%	1.7%	9.8%	25%	2.5%	1.05	75%	7.7%	10.2%	11.9%	$2,300	1.37%	13.2%
7	South Jersey Industries	2.1%	9.4%	11.5%	1.7%	9.8%	25%	2.5%	1.05	75%	7.7%	10.2%	11.9%	$2,300	1.37%	13.2%
8	Southwest Gas	2.1%	9.4%	11.5%	1.7%	9.8%	25%	2.5%	0.95	75%	7.0%	9.4%	11.1%	$4,000	0.75%	11.9%
9	Spire Inc.	2.1%	9.4%	11.5%	1.7%	9.8%	25%	2.5%	0.85	75%	6.3%	8.7%	10.4%	$3,300	1.09%	11.5%
	Average												**10.8%**			**11.9%**
	Midpoint (g)												**11.0%**			**12.0%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Dec. 7, 2020).
(b) Average of weighted average earnings growth rates from IBES, Zacks, and Value Line for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Dec. 7, 2020), http://finance.yahoo.com (retrieved Dec. 8, 2020), and www.zacks.com (retrieved Dec. 7, 2020).
(c) Average yield on 30-year Treasury bonds for the six-months ending Feb. 2021 based on data from https://fred.stlouisfed.org/.
(d) Roger A. Morin, *New Regulatory Finance* , Public Utilities Reports, Inc. (2006) at 190.
(e) The Value Line Investment Survey (Nov. 27, 2020).
(f) Duff & Phelps, 2021 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.
(g) Average of low and high values.

GAS GROUP

		(a)	(b)		(c)		(d)		(e)	(d)				(e)	(f)	
		Market Return (R_m)														
	Company	**Div Yield**	**Proj. Growth**	**Cost of Equity**	**Risk-Free Rate**	**Risk Premium**	**Unadjusted RP Weight**	**RP^1**	**Beta**	**Beta Adjusted RP Weight**	**RP^2**	**Total RP**	**Unadjusted K_e**	**Market Cap**	**Size Adjustment**	**ECAPM Result**
1	Atmos Energy Corp.	2.1%	9.4%	11.5%	2.9%	8.6%	25%	2.2%	0.80	75%	5.2%	7.3%	10.2%	$12,500	0.71%	10.9%
2	Chesapeake Utilities	2.1%	9.4%	11.5%	2.9%	8.6%	25%	2.2%	0.80	75%	5.2%	7.3%	10.2%	$1,900	1.37%	11.6%
3	New Jersey Resources	2.1%	9.4%	11.5%	2.9%	8.6%	25%	2.2%	0.95	75%	6.1%	8.3%	11.2%	$3,600	1.09%	12.3%
4	NiSource Inc.	2.1%	9.4%	11.5%	2.9%	8.6%	25%	2.2%	0.85	75%	5.5%	7.6%	10.5%	$9,400	0.71%	11.3%
5	Northwest Natural	2.1%	9.4%	11.5%	2.9%	8.6%	25%	2.2%	0.80	75%	5.2%	7.3%	10.2%	$1,500	1.54%	11.8%
6	ONE Gas, Inc.	2.1%	9.4%	11.5%	2.9%	8.6%	25%	2.2%	1.05	75%	6.8%	8.9%	11.8%	$2,300	1.37%	13.2%
7	South Jersey Industries	2.1%	9.4%	11.5%	2.9%	8.6%	25%	2.2%	1.05	75%	6.8%	8.9%	11.8%	$2,300	1.37%	13.2%
8	Southwest Gas	2.1%	9.4%	11.5%	2.9%	8.6%	25%	2.2%	0.95	75%	6.1%	8.3%	11.2%	$4,000	0.75%	11.9%
9	Spire Inc.	2.1%	9.4%	11.5%	2.9%	8.6%	25%	2.2%	0.85	75%	5.5%	7.6%	10.5%	$3,300	1.09%	11.6%
	Average												**10.9%**			**12.0%**
	Midpoint (g)												**11.0%**			**12.1%**

(a) Weighted average for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Dec. 7, 2020).
(b) Average of weighted average earnings growth rates from IBES, Zacks, and Value Line for dividend-paying stocks in the S&P 500 based on data from www.valueline.com (retrieved Dec. 7, 2020), http://finance.yahoo.com (retrieved Dec. 8, 2020), and www.zacks.com (retrieved Dec. 7, 2020).
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(d) Roger A. Morin, *New Regulatory Finance* , Public Utilities Reports, Inc. (2006) at 190.
(e) The Value Line Investment Survey (Nov. 27, 2020).
(f) Duff & Phelps, 2021 CRSP Deciles Size Study -- Supplementary Data Exhibits, Cost of Capital Navigator.
(g) Average of low and high values.

CURRENT BOND YIELDS

Current Equity Risk Premium	
(a) Avg. Yield over Study Period	7.80%
(b) Single-A Utility Bond Yield	2.90%
Change in Bond Yield	-4.90%
(c) Risk Premium/Interest Rate Relationship	-0.4763
Adjustment to Average Risk Premium	2.34%
(a) Average Risk Premium over Study Period	3.70%
Adjusted Risk Premium	**6.04%**

Implied Cost of Equity	
(b) Baa Utility Bond Yield	3.20%
Adjusted Equity Risk Premium	6.04%
Risk Premium Cost of Equity	**9.24%**

(a) KSG Direct Exhibit AMM-8, page 4.
(b) Average bond yield for six-months ending Feb. 2021 based on data from Moody's Investors Service at www.credittrends.com.
(c) KSG Direct Exhibit AMM-8, page 5.

PROJECTED BOND YIELDS

Current Equity Risk Premium	
(a) Avg. Yield over Study Period	7.80%
(b) Single-A Utility Bond Yield 2025	3.47%
Change in Bond Yield	-4.33%
(c) Risk Premium/Interest Rate Relationship	-0.4763
Adjustment to Average Risk Premium	2.06%
(a) Average Risk Premium over Study Period	3.70%
Adjusted Risk Premium	**5.77%**
Implied Cost of Equity	
(b) Baa Utility Bond Yield 2025	3.77%
Adjusted Equity Risk Premium	5.77%
Risk Premium Cost of Equity	**9.54%**

(a) KSG Direct Exhibit AMM-8, page 3.
(b) Based on data from IHS Markit, Long-Term Macro Forecast - Baseline (Mar. 1, 2021); Energy Information Administration, Annual Energy Outlook 2021 (Feb. 3, 2021) Moody's Investors Service at www.credittrends.com.
(c) KSG Direct Exhibit AMM-8, page 4.

AUTHORIZED RETURNS

		(a)	(b)	
Year	**Qtr.**	**Allowed ROE**	**Single-A Utility Bond Yield**	**Risk Premium**
1980	1	13.45%	13.49%	-0.04%
	2	14.38%	12.87%	1.51%
	3	13.87%	12.88%	0.99%
	4	14.35%	14.11%	0.24%
1981	1	14.69%	14.77%	-0.08%
	2	14.61%	15.82%	-1.21%
	3	14.86%	16.65%	-1.79%
	4	15.70%	16.57%	-0.87%
1982	1	15.55%	16.72%	-1.17%
	2	15.62%	16.26%	-0.64%
	3	15.72%	15.88%	-0.16%
	4	15.62%	14.56%	1.06%
1983	1	15.41%	14.15%	1.26%
	2	14.84%	13.58%	1.26%
	3	15.24%	13.52%	1.72%
	4	15.41%	13.38%	2.03%
1984	1	15.39%	13.56%	1.83%
	2	15.07%	14.72%	0.35%
	3	15.37%	14.47%	0.90%
	4	15.33%	13.38%	1.95%
1985	1	15.03%	13.31%	1.72%
	2	15.44%	12.95%	2.49%
	3	14.64%	12.11%	2.53%
	4	14.44%	11.49%	2.95%
1986	1	14.05%	10.18%	3.87%
	2	13.28%	9.41%	3.87%
	3	13.09%	9.39%	3.70%
	4	13.62%	9.31%	4.31%
1987	1	12.61%	8.96%	3.65%
	2	13.13%	9.77%	3.36%
	3	12.56%	10.61%	1.95%
	4	12.73%	11.05%	1.68%
1988	1	12.94%	10.32%	2.62%
	2	12.48%	10.71%	1.77%
	3	12.79%	10.94%	1.85%
	4	12.98%	9.98%	3.00%
1989	1	12.99%	10.13%	2.86%
	2	13.25%	9.94%	3.31%
	3	12.56%	9.53%	3.03%
	4	12.94%	9.50%	3.44%
1990	1	12.60%	9.72%	2.88%
	2	12.81%	9.91%	2.90%
	3	12.34%	9.93%	2.41%
	4	12.77%	9.89%	2.88%
1991	1	12.69%	9.58%	3.11%
	2	12.53%	9.50%	3.03%
	3	12.43%	9.33%	3.10%
	4	12.38%	9.02%	3.36%
1992	1	12.42%	8.91%	3.51%
	2	11.98%	8.86%	3.12%
	3	11.87%	8.47%	3.40%
	4	11.94%	8.53%	3.41%
1993	1	11.75%	8.07%	3.68%
	2	11.71%	7.81%	3.90%
	3	11.39%	7.28%	4.11%
	4	11.15%	7.22%	3.93%
1994	1	11.12%	7.55%	3.57%
	2	10.81%	8.29%	2.52%
	3	10.95%	8.51%	2.44%
	4	11.64%	8.87%	2.77%
1995	1	(c)	--	--
	2	11.00%	7.93%	3.07%
	3	11.07%	7.72%	3.35%
	4	11.56%	7.37%	4.19%
1996	1	11.45%	7.44%	4.01%
	2	10.88%	7.98%	2.90%
	3	11.25%	7.96%	3.29%
	4	11.32%	7.62%	3.70%
1997	1	11.31%	7.76%	3.55%
	2	11.70%	7.88%	3.82%
	3	12.00%	7.49%	4.51%
	4	11.01%	7.25%	3.76%
1998	1	(c)	--	--
	2	11.37%	7.12%	4.25%
	3	11.41%	6.99%	4.42%
	4	11.69%	6.97%	4.72%
1999	1	10.82%	7.11%	3.71%
	2	10.82%	7.48%	3.34%
	3	(c)	--	--
	4	10.33%	8.05%	2.28%

AUTHORIZED RETURNS

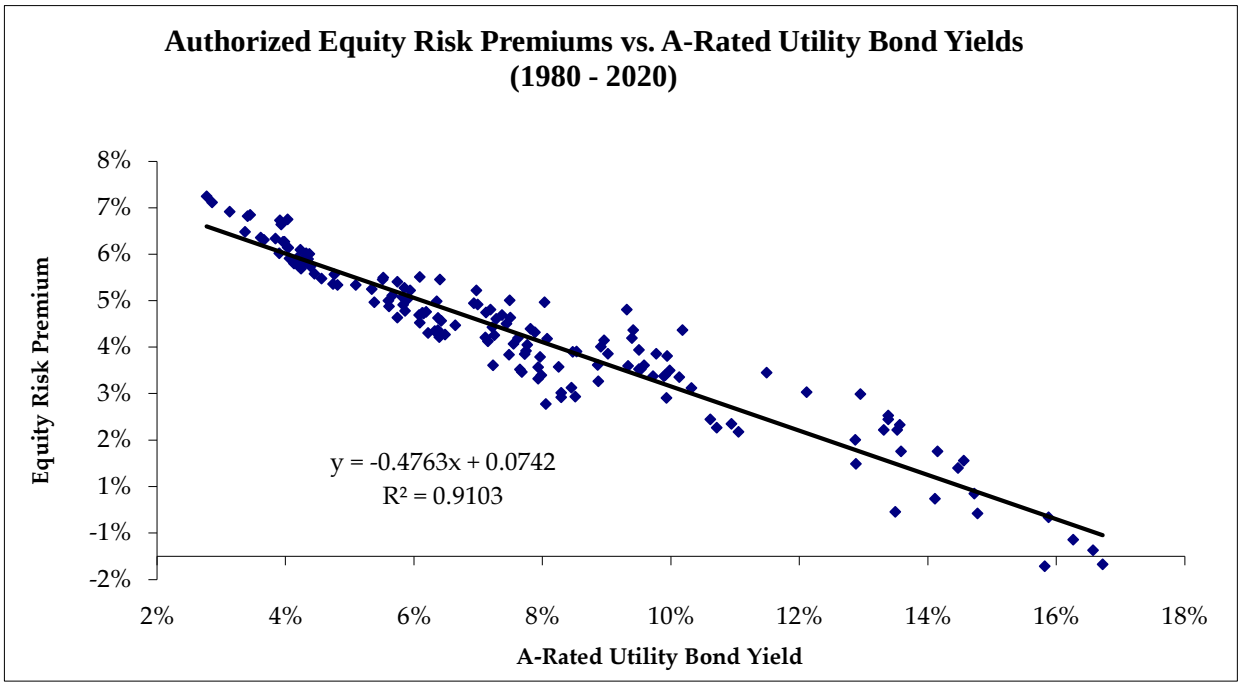
		(a)	(b)	
Year	**Qtr.**	**Allowed ROE**	**Single-A Utility Bond Yield**	**Risk Premium**
2000	1	10.71%	8.29%	2.42%
	2	11.08%	8.45%	2.63%
	3	11.33%	8.25%	3.08%
	4	12.50%	8.03%	4.47%
2001	1	11.16%	7.74%	3.42%
	2	10.75%	7.93%	2.82%
	3	(c)	--	--
	4	10.65%	7.68%	2.97%
2002	1	10.67%	7.65%	3.02%
	2	11.64%	7.50%	4.14%
	3	11.50%	7.19%	4.31%
	4	10.78%	7.15%	3.63%
2003	1	11.38%	6.93%	4.45%
	2	11.36%	6.40%	4.96%
	3	10.61%	6.64%	3.97%
	4	10.84%	6.35%	4.49%
2004	1	11.10%	6.09%	5.01%
	2	10.25%	6.48%	3.77%
	3	10.37%	6.13%	4.24%
	4	10.66%	5.94%	4.72%
2005	1	10.65%	5.74%	4.91%
	2	10.52%	5.52%	5.00%
	3	10.47%	5.51%	4.96%
	4	10.40%	5.82%	4.58%
2006	1	10.63%	5.85%	4.78%
	2	10.50%	6.37%	4.13%
	3	10.45%	6.19%	4.26%
	4	10.14%	5.86%	4.28%
2007	1	10.44%	5.90%	4.54%
	2	10.12%	6.09%	4.03%
	3	10.03%	6.22%	3.81%
	4	10.27%	6.08%	4.19%
2008	1	10.38%	6.15%	4.23%
	2	10.17%	6.32%	3.85%
	3	10.49%	6.42%	4.07%
	4	10.34%	7.23%	3.11%
2009	1	10.24%	6.37%	3.87%
	2	10.11%	6.39%	3.72%
	3	9.88%	5.74%	4.14%
	4	10.27%	5.66%	4.61%
2010	1	10.24%	5.83%	4.41%
	2	9.99%	5.61%	4.38%
	3	9.93%	5.09%	4.84%
	4	10.09%	5.34%	4.75%
2011	1	10.10%	5.60%	4.50%
	2	9.85%	5.38%	4.47%
	3	9.65%	4.81%	4.84%
	4	9.88%	4.37%	5.51%
2012	1	9.63%	4.39%	5.24%
	2	9.83%	4.23%	5.60%
	3	9.75%	3.98%	5.77%
	4	10.07%	3.93%	6.14%
2013	1	9.57%	4.18%	5.39%
	2	9.47%	4.23%	5.24%
	3	9.60%	4.74%	4.86%
	4	9.83%	4.76%	5.07%
2014	1	9.54%	4.56%	4.98%
	2	9.84%	4.32%	5.52%
	3	9.45%	4.20%	5.25%
	4	10.28%	4.03%	6.25%
2015	1	9.47%	3.66%	5.81%
	2	9.43%	4.13%	5.30%
	3	9.75%	4.35%	5.40%
	4	9.68%	4.35%	5.33%
2016	1	9.48%	4.18%	5.30%
	2	9.42%	3.90%	5.52%
	3	9.47%	3.61%	5.86%
	4	9.68%	4.04%	5.64%
2017	1	9.60%	4.18%	5.42%
	2	9.47%	4.06%	5.41%
	3	10.14%	3.91%	6.23%
	4	9.68%	3.84%	5.84%
2018	1	9.68%	4.03%	5.65%
	2	9.43%	4.24%	5.19%
	3	9.69%	4.28%	5.41%
	4	9.53%	4.45%	5.08%
2019	1	9.55%	4.25%	5.30%
	2	9.73%	3.96%	5.77%
	3	9.80%	3.45%	6.35%
	4	9.73%	3.41%	6.32%
2020	1	9.35%	3.37%	5.98%
	2	9.55%	3.13%	6.42%
	3	9.52%	2.77%	6.75%
	4	9.47%	2.86%	6.62%
Average		**11.51%**	**7.80%**	**3.70%**

(a) S&P Global Market Intelligence, *Major Rate Case Decisions*, (Feb. 2, 2021, Jan. 14, 2016, Jan. 7, 2011, Apr. 5, 2004, Jan. 21, 1998, July 12, 1991, and Jan. 16, 1990).

(b) Moody's Investors Service.

(c) No decisions reported.

REGRESSION RESULTS



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.954091152
R Square	0.910289926
Adjusted R Square	0.909722141
Standard Error	0.005072875
Observations	160

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.041257596	0.041257596	1603.229178	1.24889E-84
Residual	158	0.004065982	2.57341E-05		
Total	159	0.045323578			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.074199673	0.001011209	73.37718404	5.6373E-124	0.072202442	0.076196904	0.072202442	0.076196904
X Variable 1	-0.47631691	0.011895924	-40.04034437	1.24889E-84	-0.499812456	-0.45282136	-0.499812456	-0.452821364

GAS GROUP

	Company	(a) Expected Return on Common Equity	(b) Adjustment Factor	(c) Adjusted Return on Common Equity
1	Atmos Energy Corp.	9.0%	1.0512	9.5%
2	Chesapeake Utilities	9.0%	1.0759	9.7%
3	New Jersey Resources	9.5%	1.0512	10.0%
4	NiSource Inc.	11.0%	1.0404	11.4%
5	Northwest Natural	8.5%	1.0101	8.6%
6	ONE Gas, Inc.	8.5%	1.0335	8.8%
7	South Jersey Industries	12.0%	1.0458	12.5%
8	Southwest Gas	10.0%	1.0467	10.5%
9	Spire Inc.	7.0%	1.0442	7.3%
	Average	**9.4%**		**9.8%**
	Midpoint (d)	**9.5%**		**9.9%**

(a) The Value Line Investment Survey (Nov. 27, 2020).
(b) Adjustment to convert year-end return to an average rate of return from KSG Direct Exhibit AMM-5.
(c) (a) x (b).
(d) Average of low and high values.

DIVIDEND YIELD

	Company	Industry Group	(a) Price	(b) Dividends	Yield
1	Abbott Labs.	Med Supp Non-Invasive	$ 111.21	$ 1.80	1.6%
2	Air Products & Chem.	Chemical (Diversified)	$ 276.72	$ 5.36	1.9%
3	Amdocs Ltd.	IT Services	$ 70.13	$ 1.31	1.9%
4	Amgen	Biotechnology	$ 237.04	$ 7.04	3.0%
5	Analog Devices	Semiconductor	$ 150.84	$ 2.48	1.6%
6	Apple Inc.	Computers/Peripherals	$ 132.40	$ 0.87	0.7%
7	AT&T Inc.	Telecom. Services	$ 29.06	$ 2.12	7.3%
8	Baxter Int'l Inc.	Med Supp Invasive	$ 79.95	$ 0.98	1.2%
9	Bristol-Myers Squibb	Drug	$ 63.13	$ 1.96	3.1%
10	Brown & Brown	Financial Svcs. (Div.)	$ 46.32	$ 0.37	0.8%
11	Brown-Forman 'B'	Beverage	$ 76.24	$ 0.72	0.9%
12	Church & Dwight	Household Products	$ 86.11	$ 0.96	1.1%
13	Cisco Systems	Telecom. Equipment	$ 44.93	$ 1.47	3.3%
14	Clorox Co.	Household Products	$ 201.73	$ 4.44	2.2%
15	Coca-Cola	Beverage	$ 51.11	$ 1.68	3.3%
16	Colgate-Palmolive	Household Products	$ 82.45	$ 1.76	2.1%
17	Comcast Corp.	Cable TV	$ 50.27	$ 0.92	1.8%
18	Costco Wholesale	Retail Store	$ 365.74	$ 2.95	0.8%
19	Danaher Corp.	Diversified Co.	$ 230.89	$ 0.72	0.3%
20	Gen'l Mills	Food Processing	$ 57.85	$ 2.08	3.6%
21	Hershey Co.	Food Processing	$ 149.68	$ 3.22	2.2%
22	Hormel Foods	Food Processing	$ 46.36	$ 0.98	2.1%
23	Intel Corp.	Semiconductor	$ 52.53	$ 1.32	2.5%
24	Int'l Flavors & Frag.	Chemical (Specialty)	$ 114.74	$ 3.12	2.7%
25	Johnson & Johnson	Med Supp Non-Invasive	$ 158.91	$ 4.04	2.5%
26	Kellogg	Food Processing	$ 60.53	$ 2.30	3.8%
27	Kimberly-Clark	Household Products	$ 133.43	$ 4.28	3.2%
28	Lilly (Eli)	Drug	$ 182.26	$ 3.40	1.9%
29	Lockheed Martin	Aerospace/Defense	$ 344.68	$ 10.40	3.0%
30	Marsh & McLennan	Financial Svcs. (Div.)	$ 113.35	$ 1.86	1.6%
31	McCormick & Co.	Food Processing	$ 93.40	$ 1.36	1.5%
32	McDonald's Corp.	Restaurant	$ 212.00	$ 5.16	2.4%
33	Merck & Co.	Drug	$ 81.03	$ 2.60	3.2%
34	Microsoft Corp.	Computer Software	$ 221.94	$ 2.24	1.0%
35	NewMarket Corp.	Chemical (Specialty)	$ 410.25	$ 7.60	1.9%
36	Northrop Grumman	Aerospace/Defense	$ 297.81	$ 5.80	1.9%
37	Oracle Corp.	Computer Software	$ 62.92	$ 0.96	1.5%
38	PepsiCo, Inc.	Beverage	$ 143.05	$ 4.09	2.9%
39	Pfizer, Inc.	Drug	$ 36.97	$ 1.56	4.2%
40	Procter & Gamble	Household Products	$ 135.75	$ 3.16	2.3%
41	Progressive Corp.	Insurance (Prop/Cas.)	$ 95.15	$ 0.40	0.4%
42	Public Storage	R.E.I.T.	$ 225.12	$ 8.00	3.6%
43	Sherwin-Williams	Retail Building Supply	$ 726.98	$ 5.60	0.8%
44	Smucker (J.M.)	Food Processing	$ 115.95	$ 3.66	3.2%
45	Starbucks Corp.	Restaurant	$ 103.13	$ 1.85	1.8%
46	Texas Instruments	Semiconductor	$ 166.95	$ 4.08	2.4%
47	Thermo Fisher Sci.	Precision Instrument	$ 487.06	$ 0.88	0.2%
48	United Parcel Serv.	Air Transport	$ 164.34	$ 4.19	2.5%
49	Verizon Communic.	Telecom. Services	$ 58.00	$ 2.51	4.3%
50	Walmart Inc.	Retail Store	$ 145.39	$ 2.20	1.5%
51	Waste Management	Environmental	$ 115.81	$ 2.18	1.9%
	Average				**2.2%**

(a) Average of closing prices for 30 trading days ended Jan. 29, 2021.
(b) The Value Line Investment Survey, *Summary & Index* (Jan. 29, 2021).

GROWTH RATES

		(a)	(b)	(c)
		Earnings Growth Rates		
	Company	**V Line**	**IBES**	**Zacks**
1	Abbott Labs.	12.00%	16.34%	14.60%
2	Air Products & Chem.	12.50%	10.31%	8.53%
3	Amdocs Ltd.	9.50%	6.50%	8.50%
4	Amgen	7.00%	6.21%	7.48%
5	Analog Devices	8.50%	11.47%	12.25%
6	Apple Inc.	16.00%	14.69%	11.50%
7	AT&T Inc.	5.50%	1.45%	2.46%
8	Baxter Int'l Inc.	9.00%	8.90%	9.20%
9	Bristol-Myers Squibb	12.50%	21.35%	9.29%
10	Brown & Brown	10.50%	10.07%	n/a
11	Brown-Forman 'B'	12.00%	8.81%	n/a
12	Church & Dwight	8.50%	9.34%	8.93%
13	Cisco Systems	7.00%	7.50%	6.25%
14	Clorox Co.	5.00%	5.10%	5.90%
15	Coca-Cola	6.50%	2.18%	11.39%
16	Colgate-Palmolive	5.00%	7.27%	6.57%
17	Comcast Corp.	8.00%	14.35%	9.83%
18	Costco Wholesale	11.00%	8.59%	8.73%
19	Danaher Corp.	17.00%	12.02%	13.06%
20	Gen'l Mills	4.00%	4.91%	7.50%
21	Hershey Co.	5.00%	7.78%	7.67%
22	Hormel Foods	10.00%	4.05%	6.04%
23	Intel Corp.	7.00%	5.43%	7.50%
24	Int'l Flavors & Frag.	6.00%	1.88%	3.49%
25	Johnson & Johnson	10.00%	5.31%	5.80%
26	Kellogg	2.50%	1.99%	3.84%
27	Kimberly-Clark	6.50%	4.01%	4.45%
28	Lilly (Eli)	10.00%	12.66%	14.27%
29	Lockheed Martin	8.50%	6.22%	5.95%
30	Marsh & McLennan	9.00%	8.48%	6.77%
31	McCormick & Co.	6.50%	4.80%	6.57%
32	McDonald's Corp.	9.00%	15.50%	8.11%
33	Merck & Co.	9.00%	7.53%	7.05%
34	Microsoft Corp.	13.50%	16.70%	11.93%
35	NewMarket Corp.	2.00%	7.70%	n/a
36	Northrop Grumman	10.50%	6.04%	n/a
37	Oracle Corp.	10.50%	10.90%	11.00%
38	PepsiCo, Inc.	6.00%	6.19%	6.49%
39	Pfizer, Inc.	8.50%	-1.00%	4.88%
40	Procter & Gamble	8.00%	9.19%	8.17%
41	Progressive Corp.	9.50%	-4.79%	6.66%
42	Public Storage	n/a	17.00%	3.01%
43	Sherwin-Williams	10.00%	10.12%	10.27%
44	Smucker (J.M.)	2.50%	-0.72%	n/a
45	Starbucks Corp.	13.50%	50.81%	13.60%
46	Texas Instruments	4.00%	10.00%	9.33%
47	Thermo Fisher Sci.	17.00%	13.18%	18.00%
48	United Parcel Serv.	8.00%	9.61%	7.90%
49	Verizon Communic.	4.00%	2.72%	3.75%
50	Walmart Inc.	8.00%	6.93%	5.50%
51	Waste Management	7.50%	4.38%	7.35%

(a) The Value Line Investment Survey (various editions as of Jan. 29, 2021).
(b) www.finance.yahoo.com (retrieved Feb. 2, 2021).
(c) www.zacks.com (retrieved Feb. 2, 2021).

DCF COST OF EQUITY ESTIMATES

		(a)	(a)	(a)
		Cost of Equity Estimates		
	Company	**V Line**	**IBES**	**Zacks**
1	Abbott Labs.	13.6%	18.0%	16.2%
2	Air Products & Chem.	14.4%	12.2%	10.5%
3	Amdocs Ltd.	11.4%	8.4%	10.4%
4	Amgen	10.0%	9.2%	10.4%
5	Analog Devices	10.1%	13.1%	13.9%
6	Apple Inc.	16.7%	15.3%	12.2%
7	AT&T Inc.	12.8%	8.7%	9.8%
8	Baxter Int'l Inc.	10.2%	10.1%	10.4%
9	Bristol-Myers Squibb	15.6%	24.5%	12.4%
10	Brown & Brown	11.3%	10.9%	n/a
11	Brown-Forman 'B'	12.9%	9.8%	n/a
12	Church & Dwight	9.6%	10.5%	10.0%
13	Cisco Systems	10.3%	10.8%	9.5%
14	Clorox Co.	7.2%	7.3%	8.1%
15	Coca-Cola	9.8%	5.5%	14.7%
16	Colgate-Palmolive	7.1%	9.4%	8.7%
17	Comcast Corp.	9.8%	16.2%	11.7%
18	Costco Wholesale	11.8%	9.4%	9.5%
19	Danaher Corp.	17.3%	12.3%	13.4%
20	Gen'l Mills	7.6%	8.5%	11.1%
21	Hershey Co.	7.2%	9.9%	9.8%
22	Hormel Foods	12.1%	6.2%	8.2%
23	Intel Corp.	9.5%	7.9%	10.0%
24	McDonald's Corp.	11.4%	17.9%	10.5%
25	Merck & Co.	12.2%	10.7%	10.3%
26	Microsoft Corp.	14.5%	17.7%	12.9%
27	NewMarket Corp.	3.9%	9.6%	n/a
28	Northrop Grumman	12.4%	8.0%	n/a
29	Oracle Corp.	12.0%	12.4%	12.5%
30	PepsiCo, Inc.	8.9%	9.0%	9.3%
31	Pfizer, Inc.	12.7%	3.2%	9.1%
32	Procter & Gamble	10.3%	11.5%	10.5%
33	Progressive Corp.	9.9%	-4.4%	7.1%
34	Public Storage	n/a	20.6%	6.6%
35	Sherwin-Williams	10.8%	10.9%	11.0%
36	Smucker (J.M.)	5.7%	2.4%	n/a
37	Starbucks Corp.	15.3%	52.6%	15.4%
38	Texas Instruments	6.4%	12.4%	11.8%
39	Thermo Fisher Sci.	17.2%	13.4%	18.2%
40	United Parcel Serv.	10.5%	12.2%	10.4%
41	Verizon Communic.	8.3%	7.0%	8.1%
42	Walmart Inc.	9.5%	8.4%	7.0%
43	Waste Management	9.4%	6.3%	9.2%
	Average (b)	**10.5%**	**10.1%**	**10.3%**
	Midpoint (b,c)	**10.5%**	**10.2%**	**10.6%**

(a) Sum of dividend yield (p. 1) and respective growth rate (p. 2).
(b) Excludes highlighted figures.
(c) Average of low and high values.

GAS GROUP

		Average		12/31/2020		9/30/2020		6/30/2020		3/31/2020	
	Company	**Long-term Debt**	**Common Equity**	**Long-term Debt**	**Common Equity**	**Long-term Debt**	**Common Equity**	**Long-term Debt**	**Common Equity**	**Long-term Debt**	**Common Equity**
1	Atmos Energy Corp.	40.9%	59.1%	41.5%	58.5%	40.0%	60.0%	41.2%	58.8%	40.7%	59.3%
2	Chesapeake Utilities	44.0%	56.0%	42.8%	57.2%	46.5%	53.5%	42.9%	57.1%	43.8%	56.2%
3	New Jersey Resources	51.6%	48.4%	57.4%	42.6%	55.3%	44.7%	47.9%	52.1%	45.8%	54.2%
4	NiSource Inc.	59.8%	34.2%	61.3%	32.9%	59.4%	34.9%	60.9%	33.0%	57.7%	35.8%
5	Northwest Natural	52.0%	48.0%	51.8%	48.2%	52.8%	47.2%	51.9%	48.1%	51.4%	48.6%
6	ONE Gas, Inc.	40.6%	59.4%	41.5%	58.5%	41.8%	58.2%	41.9%	58.1%	37.0%	63.0%
7	South Jersey Industries	62.6%	37.4%	63.7%	36.3%	62.1%	37.9%	61.7%	38.3%	62.9%	37.1%
8	Southwest Gas	49.7%	50.3%	49.4%	50.6%	50.0%	50.0%	51.0%	49.0%	48.5%	51.5%
9	Spire Inc.	48.2%	47.1%	48.1%	47.5%	47.3%	48.1%	49.2%	46.0%	48.3%	47.0%
	Average	**49.9%**	**48.9%**	**50.8%**	**48.0%**	**50.6%**	**48.3%**	**49.9%**	**48.9%**	**48.5%**	**50.3%**
	Excluding High/Low	**49.5%**	**49.5%**	**50.3%**	**48.7%**	**50.5%**	**48.5%**	**49.4%**	**49.8%**	**48.0%**	**50.6%**

Source: Company Form 10-K and 10-Q Reports. The capital structures of NiSource and Spire include preferred stock not included here.

GAS GROUP

		Value Line Projected (a)	
	Company	**Debt**	**Common Equity**
1	Atmos Energy Corp.	40.0%	60.0%
2	Chesapeake Utilities	35.0%	65.0%
3	New Jersey Resources	43.5%	56.5%
4	NiSource Inc.	55.0%	45.0%
5	Northwest Natural	47.5%	52.5%
6	ONE Gas, Inc.	38.0%	62.0%
7	South Jersey Industries	59.0%	41.0%
8	Southwest Gas	44.5%	55.5%
9	Spire Inc.	45.0%	55.0%
	Average	**45.3%**	**54.7%**

(a) The Value Line Investment Survey (Nov. 27, 2020).