DEPARTMENT OF REVENUE

Date: May 1, 2024
From: Jon Klockziem, Director – Property Tax Division
Subject: Final 2024 Capitalization Rate Study

The Property Tax Division of the Minnesota Department of Revenue is responsible for estimating the market value of utility, pipeline, and railroad operating property, as of January 2 each year. We complete an annual Capitalization Rate Study and use the capitalization rates published in the study to help determine the unitary value of state assessed property.

We posted the 2024 Draft Capitalization Rate Study on March 1, 2024, and welcomed comments until April 1, 2024. We appreciate the thoughtful comments we received.

Who can I contact with questions?

If you have questions about this final study, contact the State Assessed Property Section at sa.property@state.mn.us.

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Property Tax Division

2024 Capitalization Rate Study

Assessment Year 2024

Property Tax Division
Minnesota Department of Revenue
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Introduction

The Minnesota Department of Revenue determines the estimated market value[1] for utility, pipeline, and railroad operating property as of January 2 each year. The department determines the unit value of the entire system[2] to estimate the market value of these properties.

For each market segment, this study derives:

- A yield capitalization rate (yield rate)
- A direct capitalization rate (direct rate)
- A short-term growth rate
- A long-term growth rate
- An implied inflation rate

The market segments are:

- Electric
- Gas distribution
- Gas transmission pipeline
- Fluid transportation pipeline
- Railroad

The department's Property Tax Division determines the unit value of these systems, in part, with the income capitalization approach to valuation. This approach measures the present value of the anticipated future benefits of property ownership. There are two methods of income capitalization: direct and yield capitalization.[3]

- **Direct capitalization** converts an estimate of a single year's net operating income expectancy into an indication of value for the subject property using the direct rate. This conversion is based on the market-observed relationship between an income level and market value.
- **Yield capitalization** calculates the net present value of the anticipated future income by discounting cash flows using the yield rate.

Under the income capitalization approach, yield capitalization models use yield rates and direct capitalization models use direct rates.

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1 Minnesota Statutes, section 272.03, subdivision 8 defines market value as, "the usual selling price at the place where the property to which the term is applied shall be at the time of assessment; being the price which could be obtained at a private sale or auction sale, if it is determined by the assessor that the price from the auction sale represents an arm's length transaction. The price obtained at a forced sale shall not be considered."

2 Minnesota Rules, Chapter 8100.0100, subpart 16 defines unit value as, "the value of the entire system of a utility company taken as a whole without regard to the value of its component parts." Minnesota Rules, Chapter 8106.0100, subpart 20 defines unit value as, "the value of the system of a railroad company taken as a whole without any regard to the value of its component parts."

3 Appraisal Institute (2013). The Appraisal of Real Estate, 14th Edition, Page 46

Both the yield and direct rates are calculated using the band of investment method. This method considers equity and debt financing and is a combination of the weighted rates for each, as shown in this table:

	Capital Structure	×	Market Rate	=	Weighted Rate
Debt	50%	×	6%	=	3%
Equity	50%	×	10%	=	5%
Combined Rate				=	**8%**

We estimate the market cost of capital for each market segment, under Minnesota Rules 8100 and 8106.

Summary of Rates Derived from this Study

Market Segments	Yield Rate	Direct Rate	Short-Term Growth Rate [4]	Long-Term Real Growth Rate [5]	Long-Term Implied Inflation Rate [6]
Electric	8.27%	6.04%	5.98%	1.80%	2.00%
Gas Distribution	7.92%	6.16%	6.00%	1.80%	2.00%
Gas Transmission Pipeline	8.77%	5.79%	7.50%	1.80%	2.00%
Fluid Transportation Pipeline	9.09%	7.43%	8.30%	1.80%	2.00%
Railroad	9.68%	5.33%	7.20%	1.80%	2.00%

Yield Rates for Each Market Segment Over the Past Five Years

Market Segments Yield Rates	2024 AY	2023 AY	2022 AY	2021 AY	2020 AY
Electric	8.27%	8.00%	6.34%	6.34%	6.40%
Gas Distribution	7.92%	7.83%	6.46%	6.63%	7.07%
Gas Transmission Pipeline	8.77%	9.10%	9.38%	9.82%	12.11%
Fluid Transportation Pipeline	9.09%	9.09%	9.88%	10.13%	10.87%
Railroad	9.68%	9.64%	8.81%	9.08%	11.13%

[4] See the short-term growth rate section in this narrative.

[5] This is the estimated long-term real growth rate of the United States Economy, explained in further detail in the Growth section of this narrative.

[6] See the Inflation Section in this narrative.

Updates

Changes Made Since Draft Study

We initially provided this study as a draft version on March 1, 2024, with a comment period for the public through March 31, 2024. We provide a summary of the comments we received and our responses in the Public Comments on Draft Study section.

We updated the study after further review of information and as data became available:

- We corrected TC Energy Corp's value of preferred equity found on the capital structure calculation on the gas transmission pipeline market segment. In the draft study, the value of preferred equity was $0; this was corrected to $1,855,000,000 as listed in the company's Value Line report. This made no impact to the selected capital structure for the gas transmission pipeline market segment.
- We added market-to-book ratio analysis for the guideline companies in each market segment. (Pages 28 – 29, Appendices A, B, C, D, & E).
- We completed the three-stage ex-ante equity risk premium calculation in the final study. This calculation is in Appendix F.

Market News

Electric Market Segment

As provided by Value Line Investment Survey, "Electric Utility (Central) stocks covered in The Value Line Investment Survey stayed relatively flat in price on average, versus a slight increase in the S&P 500 since our last review three months ago."

"Utilities have continued to underperform the broader market averages as of late largely due to the challenging operating backdrop, including the rise in interest rates over the past year. However, a rebound may be in play as the recent U.S. inflation data report, which was better-than-expected, raised the likelihood that the Federal Reserve will put an end to its rate hikes. Total return prospects through 2026-2028 for many of these stocks is near the high-end of the 2023 range, and a number of the electrics remain trading at double-digit discounts."[7]

Gas Distribution Market Segment

As provided by Value Line Investment Survey, "Stocks of companies in Value Line's Natural Gas Utility Industry have fallen in price since our last report in August. It appears those movements are attributable, to a certain degree, to some underwhelming recent earnings results. Jittery financial markets reflecting, among other things, rising interest rates and worries about the armed conflicts in Ukraine and the Middle East have made the situation worse. Nevertheless, the big draw here is these equities' consistent, generous levels of dividend income (which are adequately covered by corporate profits).

[7] Hodgsikson, Zachary J (2023). Electric Utility (Central Industry). Value Line Investment Survey.

Moreover, at recent quotations, 3- to 5-year capital gains potential for several of the stocks in our category seem promising, resulting in solid total return possibilities."[8]

Gas Transmission Pipeline Market Segment

As provided by Value Line Investment Survey, "Oil/Gas Distribution Industry stocks have continued to participate in the broader market rally. Traders are pricing in a higher possibility of a soft landing, or economic slowdown without a recession, in the coming quarters. Demand for natural gas and its transportation will likely hold up better than other portions of the economy, given the need for natural gas as a power source domestically and abroad. Demand for LNG in Europe should increase as Russian output is sanctioned. Cash flow has accelerated, and a larger portion is being utilized on shareholder-friendly initiatives. Dividend payouts have increased in this space, and more hikes will likely occur in the coming quarters. Dividend yields also tend to be well above the Value Line median. In the meantime, risks vary due to differing operations and capital structures. Corporate philosophies have diverged here, with some paying off debt aggressively and others generously returning more cash to shareholders through increased dividends and stock buybacks. In the meantime, risks vary due to differing operations and capital structures. This group offers equities that meet a wide variety of investment objectives."[9]

Fluid Transportation Pipeline Market Segment

As provided by Value Line Investment Survey, "The typical MLP's ownership structure is byzantine, to say the least. Indeed, these partnerships seemingly have been set up in such a complex manner for one reason: To be beneficial to the majority stakeholder. Thus, when becoming involved in MLPs, investors must realize that they are most likely already in a less favorable position than the controlling unitholder.

"Acquisitions have been ongoing in the sector for the past few years. Recently, Crestwood Equity Partners was purchased by Energy Transfer LP. As a result, it no longer trades and has been removed. In late October, Chevron agreed to take over Hess Corp. in an all-stock transaction. This could mean that Hess Midstream may be the next candidate to merge into another company.

"The main attraction of this industry is income. The average yield of the group is more than three times higher than the typical stock we follow. One of the reasons for this is because MLPs are taxed differently than regular dividend paying equities. Investors should be aware what their actual, or after-tax yield, will be from holding an MLP."[10]

Railroad Market Segment

As provided by Value Line Investment Survey, "The advance estimate for GDP for the third quarter was surprisingly strong at 4.9%. However, it seems that conditions will deteriorate somewhat in coming quarters. The Conference Board forecasts GDP growth of less than 1% for 2024. High interest rates are likely to suppress economic activity, and new student loan repayment requirements could have a negative impact on consumer spending. Nevertheless, we expect the diversity and necessity of the

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8 Harris, Frederick, III (2023). Natural Gas Utility. Value Line Investment Survey.

9 Seibert, John, III. (2023). Oil/Gas Distribution Industry. Value Line Investment Survey.

10 Flood, James A. (2023). Pipeline MLPs. Value Line Investment Survey.

products shipped by railroads will allow them to hold up relatively well in this uncertain environment. Most of the stocks in this industry carry Average or Below Average ranks for Timeliness for the year ahead."[11]

Yield Capitalization Rate (Yield Rate)

The yield capitalization model is based on the premise that the value of a property is equal to the present value of all anticipated future benefits.[12] Yield capitalization calculates the present value of the anticipated future income by discounting cash flows using the yield rate (Y_0).

The present value of future benefits as of the assessment date is what the current owner would give up by selling the property and what the new owner would receive by purchasing the property.

Discounted cash flows is the most sophisticated form of yield capitalization. We use it when explicit forecasts of anticipated net cash flows (NCF) are available and when the rate of change in the cash flows is not constant.

Net cash flows equal net operating income plus non-cash expenses minus capital expenditures minus change in working capital. Net operating income is an after-tax accounting income before any deductions for interest or dividends.

Key – Variables in Equations	
Y_0	Yield Rate for Current Assessment Period
NCF	Net Cash Flows
NCF_1	Net Cash Flows for Next Period
n	nth Period
g	Expected long-term growth rate in net cash flows
NOI	Net Operating Income

$$\text{Value} = NCF_1 / (1+Y_0)^1 + NCF_2 / (1+Y_0)^2 + NCF_3 / (1+Y_0)^3 + \ldots + NCF_n / (1+Y_0)^n$$

Because explicit forecasts of anticipated cash flows are generally not made into perpetuity, after the period of explicit forecasts, the assumption is made that the growth rate in anticipated cash flows will be stable. The next step, reversion, applies a long-term growth rate to the cash flows in perpetuity, after the period of explicitly forecasted cash flows.

This formula shows three periods of explicit forecasts of anticipated cash flows followed by the reversion.

$$\text{Value} = NCF_1 / (1+Y_0)^1 + NCF_2 / (1+Y_0)^2 + NCF_3 / (1+Y_0)^3 + ((NCF_3 * (1+g)/ (Y_0\text{-}g)) / (1+Y_0)^3)$$

We use **stable growth yield capitalization** when explicit forecasts of anticipated net cash flows are not available or when the anticipated growth in net cash flows is stable. This model is a simplified, but mathematically identical, model to the discounted cash flows model when the anticipated growth rate (g) is constant.

[11] Benway, Stuart J. (2023). Railroad Industry. Value Line Investment Survey.

[12] Western States Association of Tax Administrators, (2009). Appraisal Handbook – Unit Valuation of Centrally Assessed Properties, Page III-13

Value = $NCF_1 / (Y_0 – g)$ [1]

The **zero percent stable growth yield capitalization model** assumes that the constant growth rate is 0%. This means that the income will remain the same over time.

Value = $NCF_1 / (Y_0 – 0\%)$[1]

If the net cash flows will be equal to the net operating income (NOI), meaning depreciation will be equal to capital expenditures; the formula can be simplified to:

Value = $NOI_1 / (Y_0 – 0\%)$[1]

This model assumes 0% growth into perpetuity.

Guideline Companies

The department selects guideline companies by reviewing the Standard Industrial Classification Code and market segments listed by Value Line Investment Survey. We use the Value Line survey because it is a well-respected, widely used publication.

Value Line classifies companies into 100 unique industries and groupings based on their operations, products, customers, and competitors. Value Line constantly evaluates every company tracked in the survey to make sure they are in the proper sector.[13]

We reviewed companies in the following Value Line industries as possible guideline companies in our market segments:

Value Line's Industry	Department's Market Segment
Electric Utility (Central, East, and West)	Electric
Natural Gas Utility	Gas Distribution
Pipeline MLPs, Natural Gas Diversified, Oil/Gas Distribution	Fluid Transportation Pipeline or Gas Transmission Pipeline
Railroad	Railroad

We reviewed possible guideline companies to compare their market segments to the companies doing business in Minnesota. We exclude companies that underwent a merger or acquisition in the previous calendar year and companies that have announced an upcoming merger or acquisition during the current year, unless we determine that those companies are still reflective of the subject companies.

[13] Severo Nieves, (9 March 2016). Value Line Institutional Services, Institutional Sales & Marketing, Analyst, email

Guideline Company Updates

We updated the list of guideline companies for this study each year, depending on mergers and acquisitions, market activities, and other factors. We summarized this year's changes below. For details on the companies reviewed for each segment, see Guideline Company Selection (page G-1).

Electric Market Segment
We did not make any changes to the guideline companies in the electric market segment.

Gas Distribution Market Segment
We did not make any changes to the guideline companies in the gas distribution market segment.

Gas Transmission Pipeline Market Segment
We removed ONEOK Inc. as a guideline company due to the recent acquisition of Magellan Midstream Partners, L.P. which occurred in 2023.

Fluid Transportation Pipeline Market Segment
We removed Holly Energy Partners LP as a guideline company as it is no longer publicly traded.[14]

We removed Magellan Midstream Partners LP as a guideline company as it is no longer publicly traded.[15]

We added Enterprise Products Partners LP as a guideline company. We received feedback from one commenter of our draft 2023 study last year that Enterprise Products Partners LP be added as a guideline company. In response, we noted that the oil pipeline segment of their business operations made up less than a quarter of their overall business. This year, the oil pipeline percentage of their business is 32%. Also, the mix of business operations that Enterprise Products Partners LP is similar to other MLP guideline companies that we include in the Fluid Transportation Pipeline Market Segment.

Railroad Market Segment
We removed Canadian Pacific Kansas City as a guideline company due to the finalized and approved merger of Canadian Pacific Railway and Kansas City Southern in 2023.

Market Rate of Equity

We analyzed the capital asset pricing model (CAPM) and dividend growth model (DGM) to determine the market rate of equity for each market segment. We also considered the build-up model.

We selected the market rate of equity for each market segment after considering seven different CAPMs, seven different empirical capital asset pricing models (ECAPMs), and three different DGMs. The models allowed us to establish a range of acceptability.

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[14] HF Sinclair Corporation news release dated December 1, 2023. Retrieved from https://investor.hollyenergy.com/investors/default.aspx

[15] ONEOK news release dated September 21, 2023. Retrieved from https://ir.oneok.com/news-and-events/press-releases/2023/09-21-2023-162313370

In the past, regulated companies have asked us to consider the allowed return on equity set by regulators. While regulators establish a maximum allowed rate of return for a specific company, we estimate the cost of equity for each market segment.

Capital Asset Pricing Model (CAPM)

The CAPM is based on the theory that all investors will independently optimize their portfolios. The expected return on an asset is related to its risk. We used this model to determine the market rate of equity. For the risk-free rate in the CAPM, we use the U.S. Treasury 20-year coupon bond yield. We also use a market-specific beta calculated with data from the Value Line Investment Survey.

The CAPM is based on the following assumptions, according to Shannon Pratt and Roger Grabowski [16]:

1. Investors are risk averse.
2. Rational investors seek to hold efficient portfolios (portfolios that are fully diversified).
3. All investors have identical investment time horizons (expected holding periods).
4. All investors have identical expectations about such variables as expected rates of return and how discount rates are generated.
5. There are no transaction costs.
6. There are no investment-related taxes, but there may be corporate income taxes.
7. The rate received from lending money is the same as the cost of borrowing money.
8. The market has perfect divisibility and liquidity (investors can readily buy or sell any desired fractional interest).

Risk-Free Rate

The risk-free rate reflects the actual market conditions as of the January 2, 2024, property assessment date. We used a risk-free rate of 4.30% for this study.[17] This rate includes inflation expectations.[18, 19]

Beta

The beta[20] selected for each market segment indicates the segment's systematic risk relative to the market. The betas for each guideline company come from the Value Line Investment Survey. Value Line derives its beta coefficient from regression analysis of the weekly percentage changes in the price

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[16] Pratt, Shannon and Grabowski, Roger, (2010). *Cost of Capital Applications and Examples,* 4th Ed., Page 113

[17] The daily observations rate for 20-year U.S. Treasury coupon bonds was 4.30% as of January 3, 2024.

[18] Preparing for AICPA's Valuation Principles Examination Review (2016). Page 4-6.

[19] Pratt, Shannon and Grabowski, Roger, (2010). Cost of Capital Applications and Examples, 4th Ed., Pages 96-97

[20] "Beta is the measure of sensitivity of a stock's return to the return on the market portfolio." (p. 340) Brealey, Myers, & Marcus (2009) *Fundamentals of Corporate Finance* 6th ed. McGraw-Hill/Irwan, New York, New York. ISBN 978-0-07-338230.

of a stock and weekly percentage changes in the New York Stock Exchange Composite Index over a period of five years. Value Line adjusts betas to account for their long-term tendency to converge toward one.[21] The adjusted betas are based on the theory that, over time, there is a tendency on the part of betas of all companies to move toward one. Firms that survive in the market tend to increase in size over time, become more diversified and have more assets in place, producing cash flows. All these factors push betas toward one.[22]

We used the Hamada formula to analyze the effects of un-levering and re-levering guideline companies' betas for the selected capital structure for each market segment, with one exception. [23]

First, we unlevered the beta for each guideline company using the company-specific components:

Unlevered beta = Levered beta / [1 + (1 – Tax Rate) x (Debt / Equity)].

Next, we re-levered the beta for each guideline company using the average tax rate and the selected capital structure for the market segment:

Re-levered beta = Unlevered Beta x [1 + (1 – Tax Rate) x (Debt / Equity)].[24]

See each market segment's Beta Analysis page in the appendices for more information on how we arrived at the indicated beta.

Equity Risk Premium

The equity risk premium, as defined by Pratt and Grabowski, is the extra return over the expected yield on risk-free securities that investors expect to receive from an investment in a diversified portfolio of common stocks.[25] Bradford Cornell has a similar definition for the equity risk premium, noting it is the difference between the return on common stock and the return on government securities.[26] The equity risk premium should reflect what investors think the risk premium will be going forward.

As provided by Damodaran, "Broadly speaking, there are two ways of estimating equity risk premiums, with the first being a historical premium estimated by looking at the difference between past returns on

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[21] Value Line. (2012). Using Beta. Retrieved January 27, 2021 from https://www.valueline.com/Tools/Educational_Articles/Stocks/Using_Beta.aspx#.YBG5ZDSSmUk

[22] Damodaran, A. (n.d.). Estimating Risk Parameters. Retrieved January 27, 2021 from http://people.stern.nyu.edu/adamodar/pdfiles/papers/beta.pdf

[23] Guideline companies in the Fluid Transportation Pipeline market segment are limited partnerships and the income tax liability is "passed-through" to the shareholders. Therefore, the Hamada formula, which includes a component for income taxes is not applicable.

[24] Pratt, Shannon and Grabowski, Roger, (2010). *Cost of Capital Applications and Examples,* 4th Ed., Pages 188-189

[25] Pratt, Shannon and Grabowski, Roger, (2010). *Cost of Capital Applications and Examples,* 4th Ed., Pages 115-116

[26] Cornell, Bradford, (1999). *The Equity Risk Premium,* Page 18

stocks and the risk-free investment and the second being a forward looking estimate, where you back out from stock prices what investors are building in as an expected return on stocks in the future."[27]

As provided by Pratt and Grabowski, "There is no one universally accepted method for estimate the ERP [equity risk premium].[28] A wide variety of premiums are used in practice and recommended by academics and financial advisors." We reviewed a few different calculations of the equity risk premium:

Three-Stage Ex Ante (2.91%)
This is a forward-looking CAPM model that uses a three-stage dividend growth model of the S&P 500 to estimate the equity risk premium.[29] According to Ibbotson, "One of the advantages of a three-stage discounted cash flow model is that it fits with the life cycle theories in regard to company growth." [30] In the three-stage model:

1. The first stage uses the short-term growth estimate of the S&P 500
2. The second stage applies a linear decline in the growth rate until reaching the long-term expected growth rate of the U.S. economy
3. The third stage uses the long-term expected growth rate of the U.S. economy

We received suggestions for completing a single-stage ex ante calculation. Applying the short-term growth rate (13.51%)[31] to a single-stage model would imply that the S&P 500 will continue to grow at 13.51% in perpetuity. A single-stage ex ante calculation should not use a short-term growth rate, rather a long-term, sustainable growth rate. Financial theory suggests that the sustainable growth rate used in a single-stage model cannot exceed the long-term growth rate of the economy as a whole. Therefore, we do not complete a single-stage ex ante calculation.

Damodaran (4.60%)
This is an implied equity risk premium as calculated by Damodaran, Professor of Finance at the Stern School of Business at New York University.[32] Damodaran estimates the implied equity premium using the current level of index, the expected dividends on stock, and the expected growth rate in earnings. He estimated the expected growth rate for years 1960 to 1985 using

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27 Damodaran, Aswath, Dr. (April 2016). *The Cost of Capital: The Swiss Army Knife of Finance*, Page 11. Retrieved from http://people.stern.nyu.edu/adamodar/pdfiles/papers/costofcapital.pdf

28 Pratt, Shannon and Grabowski, Roger, (2010). *Cost of Capital Applications and Examples,* 4th Ed., Page 113

29 See Appendix F for this calculation.

30 Ibbotson, *SBBI 2013 valuation yearbook.* Page 51

31 S&P 500 Earnings and Estimate Report dated February 7, 2024, http://us.spindices.com/indices/equity/sp-500

32 Damodaran, Aswath (2024). Implied Equity Risk Premium on January 5, 2024. Retrieved on January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

historical growth rates. For 1985 onwards, he uses the Zacks Investment Research consensus estimate of growth for the stocks in the S&P 500.[33]

The CFO Survey (4.94%)
This survey is issued by Duke University's Fuqua School of Business and the Federal Reserve Banks of Richmond and Atlanta. It was fielded from November 8 to November 19, 2021. The annual survey polls CFOs of both public and private companies around the globe. According to the survey results indicate that respondents of the survey expect that the average annual S&P 500 return will be 8.9% over the next ten years.[34] This is paired with the annual yield on 10-year Treasury Bonds of 3.96%.[35] Graham & Harvey also published a paper regarding The CFO Survey. They state, "The hurdle rates are significantly higher than the cost of capital implied by the market risk premium estimates." "Given capital constraints, firms often impose a higher hurdle rate on their investment. For example, to allocate capital to an investment that promises a projected return exactly at a firm's WACC [weighted average cost of capital] is equivalent to accepting a zero net present value project."[36]

Fernandez, Garcia, and Acin (5.7%)
This is a forward-looking equity risk premium based on surveys of finance and economics professors, analysts and managers of companies and their opinion of the required market risk premium in different countries, performed annually.[37]

Business Valuation Resources, Historical, Arithmetic Mean (6.45%)
Business Valuation Resources provides a historical equity risk premium calculated using an arithmetic mean of the S&P 500 average annual less the 20-year Treasury bond average annual return for the period of 1928 to present. Sourced from the Center for Research in Security Prices.[38]

Business Valuation Resources, Historical, Geometric Mean (5.19%)
Business Valuation Resources provides a historical equity risk premium calculated using a geometric mean of the S&P 500 average annual less the 20-year Treasury bond average annual

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33 Damodaran, A. Variables used in Data Set. http://people.stern.nyu.edu/adamodar/New_Home_Page/datafile/variable.htm

34 The CFO Survey (2023). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

35 The annual yield for 10-year U.S. Treasury coupon bonds was 3.96.

36 Graham, J. R., and Harvey, C. R. (28 March 2018). *The Equity Risk Premium in 2018*. SSRN Electronic Journal. doi:10.2139/ssrn.3155709

37 Fernandez, P., Garcia T., and Acín, J. F. (April 2023). *Survey: Market Risk Premium and Risk-Free Rate Used for 80 Countries in 2023:* SSRN Electronic Journal. https://ssrn.com/ abstract=4407839

38 Business Valuation Resources. (2023). *Cost of Capital Platform.* Historical Equity Risk Premium (20-Year T-Bond) – for Period 1928-2022), Arithmetic Average. Retrieved February 2, 2023 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

return for the period of 1928 to present. Sourced from the Center for Research in Security Prices.[39]

Geometric Versus Arithmetic Averages
The arithmetic rate of return is a simple average of annual returns. The geometric rate of return considers cash flows generated during the security's holding period to be reinvested at the security's required rate of return. In general, the lower the returns, the greater is the disparity between the two averages.[40] As provided by Damodaran, "the geometric mean is more appropriate if you are using the Treasury bond rate as your risk-free rate, have a long time horizon and want to estimate the expected return over that long time horizon."[41] A study by Jacquier, Kane, and Marcus analyzed the arithmetic and geometric returns and found that, "unbiased estimates of future portfolio value require that the current value be compounded forward at a weighted average of the arithmetic and geometric rates." They continue, "As the horizon approaches the length of the estimate period, the weight on the geometric average approaches 1. For even longer horizons, both the geometric and arithmetic average forecasts will be upwardly biased."[42]

This formula calculates the market rate of equity using the capital asset pricing model (CAPM).

Key – Variables in Equations	
RP_e	Equity risk premium
R_f	Risk-free rate
β	Beta

Market Rate of Equity for Market Segment = $(RP_e \times \beta) + R_f$

Damodaran commented on the use of a historical risk premium versus an implied risk premium early in 2018:

> While it is tempting to continue to dissect last year's numbers, it is healthier to turn our attention to the future. It is why I have increasingly moved away from using historical risk premiums, like the 4.77% premium that I computed by looking at the 1928-2017 return table, and towards implied equity risk premiums, where I back out what investors are demanding as a premium for investing in stocks by looking at how much they pay for stocks and what they expect to generate as cash flows. (Think of it as an IRR for stocks, analogous to the yield to maturity on a bond).

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39 Business Valuation Resources. (2023). *Cost of Capital Platform.* Historical Equity Risk Premium (20-Year T-Bond) – for Period 1928-2022), Geometric Average. Retrieved February 2, 2023 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

40 Hirt, G., Block, S., & Basu, S. (2006). Investment Planning for Financial Professionals. McGraw-Hill, New York, New York. ISBN 0-07-132721-5

41 Damodaran, A. Discussion Issues and Derivations. Retrieved January 27, 2021 from http://people.stern.nyu.edu/adamodar/New_Home_Page/AppldCF/derivn/ch4deriv.html

42 Jacquier, E., Kane, A., & Marcus, A. (2003). Geometric or Arithmetic Mean: A Reconsideration. *Financial Analysts Journal, 59*(6), 46–53. Retrieved January 27, 2021 from https://doi.org/10.2469/faj.v59.n6.2574

> At the start of 2018, putting this approach into play, I estimated an equity risk premium of 5.08% for the S&P 500. [43]

Empirical Capital Asset Pricing Model

The empirical capital asset pricing model (ECAPM) is a modification of the CAPM. The ECAPM applies 25% weight to the equity risk premium component and 75% weight to the beta times the equity risk premium component. This reduces the sensitivity of the cost of equity estimate to changes in the beta coefficient.

According to Steven Kihm, Andrew Satchwell, and Peter Cappers, the model "mutes the sensitivity of the cost of equity estimate to changes in the beta coefficient, consistent with the adjustment suggested by the empirical research."[44]

This formula calculates the market rate of equity using the ECAPM.

$$\text{Market Rate of Equity for Market Segment} = (RP_e \times \beta \times 75\%) + (RP_e \times 25\%) + R_f$$

We completed ECAPM models for each market segment, using the equity risk premiums described in the Capital Asset Pricing Model section.

Key – Variables in Equations	
RP_e	Equity risk premium
R_f	Risk-free rate
RP_U	Market segment specific risk premium (unsystematic)

Dividend Growth Model (DGM)

We also used the DGM to determine the market rate of equity. It is based on the theory that the prices paid for a share of stock reflect the investors' discounted present value of future expected earnings.[45] The DGM is a widely used method and is also called the Discounted Cash Flows (DCF) model or Gordon growth model.

Theoretically, the growth estimate in the DGM is the estimated growth in dividends, which are cash flows to equity shareholders after reinvestment. Dividend growth estimates may track earnings growth estimates. However, companies may change dividend payment policies drastically, resulting in large differences between earnings growth estimates and dividend growth estimates.

A consensus based on substantial academic literature indicates analysts' expectations of earnings take account of all the information provided by more formulaic forecasting rules and incorporate other information as well. "Based on these findings, the most common solution is to assume that the dividend

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43 Damodaran, A. January 2018 Data Update 2: The Buoyancy of US Equities. January 9, 2018. https://aswathdamodaran.blogspot.com/2018/01/january-2017-data-update-2-buoyancy-of.html

44 Kihm, Steven; Satchwell, Andrew; and Cappers, Peter. *The Financial Impacts of Declining Investment Opportunities on Electric Utility Shareholders,* Electricity Markets & Policy Group, Technical Brief, Page 20

45 Western States Association of Tax Administrators (2009). *Appraisal Handbook – Unit Valuation of Centrally Assessed Properties*, Page III-20

payout rate remains effectively constant and to use analyst forecasts of earnings growth as a proxy for the growth rate of dividends."[46]

Another issue that leads us to question the usefulness and reliability of the dividend growth rate in this model is the trend for U.S. companies to include stock buybacks in their dividend payment policies. We discuss this in more detail in the Stock Buybacks section.

Key – Variables in Equations	
DY	Dividend Yield
DG	Dividend Growth
EG	Earnings Growth

The formula uses dividend yield (DY), which is next year's expected dividends per share divided by the current market price per share of stock, plus an estimate of growth. We reviewed both dividend and earnings growth models.

Dividend Growth (DG), analysts' estimates of dividend growth is used in the model:

Market Rate of Equity for Market Segment = DY + DG

Earnings Growth (EG), analysts' estimates of earnings growth is used in the model:

Market Rate of Equity for Market Segment = DY + EG

Another formulaic expression of the dividend growth model is:

$K_E = D_1 / P_0 + G_1$

In this expression, we estimate the cost of equity by taking the dividend yield (expected dividends in the next period divided by the recent stock price) plus expected growth. This model is the same model as the simplified discounted cash flows income model that we referred to as the stable growth yield capitalization, mentioned previously. The stable growth yield capitalization formula is:

$\text{Value} = NCF_1 / (Y_0 – g)$.

Instead of solving for value as the stable growth yield capitalization model does, the DGM solves for cost of equity.

K_E	Cost of Equity
D_1	Expected Dividends
P_0	Recent Stock Price
G_1	Projected 5-year Growth Rate
Y_0	Yield Rate for Current Assessment Period
g	Stable Growth
NCF_1	Net Cash Flows for Next Period

46 Cornell, Bradford, (1999). *The Equity Risk Premium,* Page 105

Value Line Investment Survey provides analysts' estimates of change in earnings and dividends from 2017-2019 to 2023-2025. We use these growth rates in the dividend growth model for each market segment.[47]

See each market segment's Dividend Growth Model page in the appendices for more information on how we derived the indicated rate.

The growth rate used in this single-stage DGM is a short-term growth rate, which is typically much higher than the growth rate of the U.S. economy. We use this to calculate value of a company into perpetuity. It is not possible for a company to grow at a growth rate higher than the U.S. economy in the long-term. According to Damodaran, "the amount of cash that U.S. companies are returning to stockholders is unstainable, given the earnings and expectations of growth."[48] Pratt and Grabowski also state, "Long-term growth rates exceeding the real growth in GDP (Gross Domestic Product) plus inflation are generally not sustainable."[49]

In a recent article published by Cornell and Gerger, "Long-term growth rates play a central role in all discounted cash flow models. This is true whether the goal is to estimate the value of a company or to estimate the cost of equity. It is well recognized as a matter of mathematics, although not always incorporated in practice, that the long-term expected growth cannot exceed the growth rate of the aggregate economy. What is less widely appreciated is that as an empirical matter the long-term growth rates for existing companies, that is companies that are being appraised or whose cost of equity is being estimated, are almost certain to be less than the growth rate of the aggregate economy."

Cornell and Gerger's article goes on to say, "The bottom line is that when employing a DCF model to value a company, or when using the dividend growth model to estimate the cost of equity capital, the growth rate of the economy should be thought of as a ceiling, not a floor on long-term growth in earnings and dividends. In the long run, existing companies fade and new enterprises account for much of the growth in aggregate earnings and profits. Therefore, although the short- or medium-term expected growth rates for an existing company may be relatively high, in very few instances is it reasonable to assume that the long-run growth rate for an existing company will match the long-run growth rate of GDP."[50]

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[47] In previous studies, Value Line did not provide sufficient data for earnings or dividend growth rates for guideline companies for the Gas Transmission Pipeline and Fluid Transportation Pipeline market segment. The department used other investment survey estimates. Starting with the 2020 study, Value Line has had sufficient data for these market segments, so the department is using Value Line data.

[48] Damodaran, A. January 2017 Data Update 9: Dividends and Buybacks Damodaran, February 6, 2017. http://aswathdamodaran.blogspot.com/2017/02/january-2017-data-update-9-dividends.html?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+blogspot%2FpHUuM+%28Musings+on+Markets%29

[49] Pratt, Shannon and Grabowski, Roger, (2010). *Cost of Capital Applications and Examples,* 4th Ed., Page 681

[50] Cornell, Bradford; Gerger, Richard, (2022). Long-term Growth Rates in Discounted Cash Flow Models. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4047338

Two-Stage Dividend Growth Model

We completed a two-stage dividend growth model (two-stage DGM) to account for the short-term growth estimates available. Unlike the model discussed in the previous section, the two-stage DGM assumes that growth is not constant. This allows the us to use analysts' short-term growth estimates, a transition period where the short-term growth estimates adjust to the long-term, sustainable growth estimate, and then a period of long-term sustainable growth.

David Parcell (2010) provides the following multi-stage DGM formula in The Cost of Capital – A Practitioner's Guide, published by the Society of Utility and Regulatory Financial Analysts[51]:

$$K_E = (DY \times (1+.5(G)) + 0.67(G_1) + 0.33(g)$$

Key – Variables in Equations	
K_E	Cost of Equity
DY	Dividend Yield
G_1	Projected 5-year Growth Rate
G	Average of G_1 and g
g	Stable Growth

Three-Stage Dividend Growth Model

Beginning with the 2021 Study, we completed a three-stage dividend growth model (three-stage DGM) to account for the short-term growth estimates available. This model uses the analysts' short-term growth estimates for a period of five years, a period of 10 years where the short-term growth reverts to the long-term sustainable growth, and a period of 100 years, where the dividends are grown at the long-term sustainable growth rate of the U.S. economy. We use the internal rate of return function utilizing the calculated, expected dividends and the current price of the stock.

This model is similar to the three-stage dividend growth model we use to calculate the ex ante equity risk premium used in the capital asset pricing models.

The market segment appendices include a detailed calculation of the three-stage dividend growth model for each guideline company.

Stock Buybacks

A company's net income represents income that the company can reinvest or distribute to its owners.[52] Dividends are often considered the primary approach for publicly traded firms to return cash or assets to their shareholders. However, companies can also return cash to their stockholders through stock buybacks – buying back outstanding stock in the firm and reduce the number of shares outstanding.[53]

Because a company cannot act as its own shareholder, it absorbs repurchased shares, reducing the number of outstanding shares on the market. This increases the relative ownership stake of each investor because there are fewer shares, or claims, on the company earnings.

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[51] Parcell, David C. (1997

[52] Keown, Arthur; Martin, John; and Petty, J., (2014). *Foundations of Finance: The Logic and Practice of Financial Management*, 8th Ed., Page 53

[53] Damodaran, Aswath, Dr. (2015). *Applied Corporate Finance*, 4th Ed., Page 439

The amount of cash that U.S. companies have been returning to stockholders is unsustainable, given the earnings and expectations of growth. According to Reuters, "Stock buybacks are projected to increase this year after ebbing in 2023, fueled by forecasts of stronger corporate earnings that are expected to leave companies with excess cash. The total amount of buybacks could rise to $1 trillion on an annualized basis, Deutsche Bank said."[54]

As U.S. companies continue to include stock buybacks in their dividend payment policies, we question the reliability of the expected dividends and expected dividend growth rate inputs of the DGM.

Build-Up Model

The build-up model is another model used to estimate the market rate of equity. Some view this as a version of the CAPM without specifically incorporating systematic risk.[55] The CAPM assumes that the risk premium portion of a security's expected return is a function of that security's systematic risk.[56]

An investor can diversify their portfolio to remove unsystematic risk (market segment-specific risk). Systematic risk (market risk) is the risk related to an investment return that cannot be eliminated through diversification.[57]

In the build-up model, the market rate of equity for the market segment equals the risk-free rate plus the equity risk premium plus the risk specific to the market segment for unsystematic risk.

$$\text{Market rate of equity for Market Segment} = R_f + RP_e + RP_u$$

When the inputs are not available for the CAPM, one can use the Build-Up Model. We were able to complete the CAPM for each market segment and did not need to resort to using the Build-Up Model.

Market Rate of Debt

The department used the Corporate Bond Yield Averages for Public Utility Bonds from Mergent Bond Record to estimate the market rate of debt for each company used as a guideline company for the Electric, and Gas Distribution market segments. The department used the Corporate Bond Yield Averages for Industrial Bonds from Mergent Bond Record to estimate the market rate of debt for each company used as a guideline company for the Gas Transmission Pipeline, Fluid Transportation Pipeline, and Railroad market segments.

See each market segment's Indicated Rate of Debt page for more information on how the department arrived at the indicated rate of debt.

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54 Krauskopf, Lewis. (2024). Projected buyback revival stands to bolster US stocks in 2024. (Reuters)

55 Pratt, Shannon and Grabowski, Roger, *Cost of Capital Applications and Examples,* 4th Ed., Page 102 (2010)

56 Ibid, p. 105

57 Keown, Arthur; Martin, John; and Petty, J., *Foundations of Finance: The Logic and Practice of Financial Management*, 8th Ed., (2014). Page 195

Market Rate of Preferred Stock

Preferred stock makes up a minimal percentage of the capital structure for all market segments. The amount of capital structure attributable to preferred stock was not materially significant and was not included in indicated capital structure for each market segment.

Direct Capitalization Rate (Direct Rate)

Appraisers use direct capitalization to convert an estimate of a single year's net operating income expectancy into an indication of value in one direct step.[58]

The direct rate (D_0) is an expression of the market observed relationship between price and income.

To indicate the market value (value), apply the market observed direct rate to the net operating income (NOI) of the property.

$$\text{Value} = NOI_1 / D_0$$

We used the same guideline companies in the yield rate and the direct rate. See the Guideline Companies section for more information.

Key – Variables in Equations	
D_0	Direct Rate
NOI_1	Net Operating Income for the next year
Value	Market Value

We used the same method for the debt component in the direct rate as in the Market Rate of Debt section, used for the yield rate. See the Market Rate of Debt section for more information.

Equity Component

We used an inverse of the Price to Earnings Ratio (P/E Ratio) to estimate the equity component of the direct rate. For this estimate, we used the P/E Ratio as calculated by Value Line Investment Survey; if the P/E Ratio was not calculated, we used the Trailing P/E Ratio as calculated by Value Line. We selected the P/E ratio most indicative of the market segment data. The inverse of the selected ratio is the equity component of the direct rate.

See each market segment's Direct Equity Component page in the appendices for more information on how we arrived at the indicated equity component.

Flotation Costs

Flotation costs are costs incurred when a company issues a new security, including fees to an investment banker, legal fees, accounting, and other out of pocket expenses. The market-determined opportunity

58 Western States Association of Tax Administrators (2009). Appraisal Handbook – Unit Valuation of Centrally Assessed Properties, Page III-8

cost of capital is not affected by the flotation costs of a particular firm.[59] The correct procedure for the economic analysis of flotation costs does not alter the weighted average cost of capital.[60]

The yield rates and direct rates in this study are market derived, using market data. Unlike determining allowable rates of return in rate cases, the recovery of previously incurred costs is not added to the yield rates or direct rates used for estimating market value. The yield rate and direct rate are not recovery mechanisms for the costs of doing business.

Dr. Richard Simonds stated in his paper published in the Journal of Property Tax Assessment & Administration, "When capitalizing net operating income in the income approach, a flotation-cost adjustment cannot be applied to the cost of capital. Advocates of an adjustment may be confusing the concept of the allowed rate of return on invested capital in a rate-regulated environment with the concept of the market-determined opportunity cost of capital."[61]

Thomas Copeland and Fred Weston find that adjusting for flotation costs in the rate of return is incorrect because it implicitly adjusts the opportunity cost of funds supplied to the firm. The true market-determined opportunity cost is unaffected by the flotation costs of a particular firm.[62]

We do not make flotation cost adjustments to the yield rate or direct rate in this study.

Company-Specific Risk

The department does not include adjustment for company-specific risks, such as a size premium adjustment for a specific company.

We do not include size premium adjustments based on the guideline companies' average market capitalization size; we do not find this to be generally accepted practice. Damodaran points out several reasons why a size adjustment to the CAPM is not appropriate, concluding that the empirical evidence is not as conclusive as it was initially thought to be.[63] He also finds that forward-looking risk premiums are yielding no premiums for small cap (market capitalization) stocks and much of the additional risk is either diversifiable or double counted.[64]

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[59] Western States Association of Tax Administrators, (2009). Appraisal Handbook – Unit Valuation of Centrally Assessed Properties, Page III-31

[60] Copeland, Thomas E., and Weston, Fred J. (1988). Financial Theory and Corporate Policy (3rd Ed.). Addison-Wesley Publishing Company.

[61] Simonds, Richard R., Dr. (2006). "Income Capitalization, Flotation Costs, and the Cost of Capital." Journal of Property Tax Assessment & Administration, Volume 3, Issue 4.

[62] Copeland and Weston. *Financial Theory and Corporate Policy* (3rd Ed.). Page 534

[63] Damodaran, Aswath, Dr. "Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2011 Edition." Retrieved from: http://people.stern.nyu.edu/adamodar/pdfiles/papers/ERP2011.pdf

[64] Damodaran, Aswath, Dr. (11 April 2015). "The small cap premium: Where is the beef?" Retrieved from: http://aswathdamodaran.blogspot.com/2015/04/the-small-cap-premium-fact-fiction-and.html.

Eugene Fama and Kenneth French analyzed size premiums of companies that move to different market capitalizations and found "the size premium is almost entirely a result of the extreme positive returns of small-cap (market capitalization) stocks that move to a big-cap (market capitalization) portfolio from one year to the next."[65]

Similarly, the equity risk premium surveys by Graham and Harvey find no evidence that the weighted average cost of capital is larger for smaller firms.[66]

Illiquidity

We do not adjust capitalization rates for illiquidity. As the Appraisal Institute explains:

> A discount rate reflects the relationship between income and the value that a market will attribute to that income. The financial and economic concepts implicitly in a discount rate are complex and have been the subject of significant analysis for more than a century. Although four key components can be identified within a discount rate – the safe rate plus considerations of illiquidity, management, and various risks – a discount rate that is constructed by adding allowances for these components can be misleading and inaccurate.[67]

Growth

The growth rate is important because it affects the yield model, explained in the Yield Capitalization Rate section. Minnesota Rules 8100 and 8106 imply a zero percent growth yield model. If the assumption that income streams remain equal over time is incorrect, this model may not accurately reflect the market value of the company.

For a company with a changing income streams, a discounted cash flows model or stable growth yield model may be better at estimating the value for the company under review. The discounted cash flows model uses explicit forecasts of anticipated net cash flows for each period. These inputs can be estimated by the department if they are not provided by the company.

The direct rate is the relationship between an estimate of a single year's net operating income and the value of the property, while the yield rate converts income from future periods into present value. Western States Association of Tax Administrators Appraisal Handbook states, "direct capitalization is not affected by the appraiser's view of the future income."[68]

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65 Fama, Eugene F. and French, Kenneth R. (2007). "Migration." Financial Analysts Journal, Volume 63, Number 3. CFA Institute.

66 Graham, J. R., and Harvey, C. R. (28 March 2018). The Equity Risk Premium in 2018. SSRN Electronic Journal. doi:10.2139/ssrn.3155709

67 Appraisal Institute (2013). The Appraisal of Real Estate, 14th Edition, Page 458

68 Ibid., Page III-9

Short-Term Growth Rate

We reviewed short-term growth rates from several sources to derive an estimate of a short-term growth rate for each market segment.

Zacks Investment Research provides industry growth estimates for the next five years by industry. We downloaded this data on January 12, 2024.

Electric	Gas Distribution	Gas Transmission Pipeline	Fluid Transportation Pipeline	Railroad
7.0%	5.8%	4.4%	7.6%	7.2%

We compared the median short-term growth rates for each market segment from CFRA (from S&P NetAdvantage), Value Line Investment Survey, Yahoo! Finance, and Zacks Investment Research.

Source	CFRA[69]	Value Line Earnings[70]	Value Line Dividends[71]	Yahoo! Finance[72]	Zacks[73]
Electric	7.0%	6.0%	5.25%	4.95%	6.0%
Gas Distribution	7.0%	6.5%	5.00%	5.2%	5.9%
Gas Transmission Pipeline	11.0%	11.50%	4.00%	0.3%	3.5%
Fluid Transportation Pipeline	21.0%	8.00%	8.50%	6.60%	N/A
Railroad	4.00%	8.25%	8.50%	5.25%	7.0%

The median short-term growth rate for each market segment from the above sources is:

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[69] CFRA (as downloaded from S&P NetAdvantage) three-year projected earnings per share compound annual growth rate. CFRA stock reports dated January 12, 2024.

[70] Value Line Investment Survey provides estimated growth rates for dividends and earnings 2020-2022 to 2026-2028. Value Line tear sheets are dated November 17, 2023 to January 19, 2024.

[71] Value Line Investment Survey provides estimated growth rates for dividends and earnings 2020-2022 to 2026-2028. Value Line tear sheets are dated November 17, 2023 to January 19, 2024.

[72] Yahoo! Finance growth estimates, next five years (per annum) downloaded on January 10-12, 2024.

[73] Zacks Investment Research provides expected earnings per share growth (3-5 years). Data downloaded January 12, 2024.

Electric	Gas Distribution	Gas Transmission Pipeline	Fluid Transportation Pipeline	Railroad
5.98%	6.00%	7.00%	7.65%	6.98%

This evidence indicates that there is significant short-term growth in each market segment, though the amount of short-term growth can vary widely between different analyst's forecasts.

Long-Term Growth Rate

We reviewed long-term growth rates from several sources to derive an estimate of long-term growth for the economy. "Since no firm can grow forever at a rate higher than the growth rate of the economy in which it operates, the constant growth rate cannot be greater than the overall growth rate of the economy."[74] These sources indicate varying rates of growth in the U.S. economy over the long-term:

- The Federal Reserve Bank projects their "longer run" estimate of change in U.S. real Gross Domestic Product (GDP) at 1.8%[75].
- The World Bank forecasts U.S. GDP will grow 1.6% in 2024, and 1.7% in 2025.[76]
- Trading Economics projects the U.S. GDP annual growth rate to trend around 1.9% in 2025.[77]
- The Congressional Budget Office projects that real GDP will grow by 1.5% in 2024, 2.2% in 2025 and 2.2% in 2026. The CBO projects that real GDP will grow at an annual average of 2.1% from 2027 to 2028, and 1.9% from 2029 to 2034.[78]

After considering the above sources, we find the indicated long-term real growth rate of the U.S. economy to be 1.8%.

[74] Damodaran, Aswath, Dr. (n.d.) The Stable Growth Rate, http://pages.stern.nyu.edu/~adamodar/New_Home_Page/valquestions/stablegrowthrate.htm

[75] Board of Governors of the Federal Reserve System, Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents under their individual assumptions of projected appropriate monetary policy. December 2023. Retrieved January 25, 2024 from https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20231213.pdf

[76] World Bank Group Flagship Report, Global Economic Prospects. January 2024. Page 4. Retrieved January 25, 2024 from http://www.worldbank.org/en/publication/global-economic-prospects

[77] Trading Economics, United States Full Year GDP Growth Rate Forecast. Retrieved January 25, 2024 from https://tradingeconomics.com/united-states/full-year-gdp-growth

[78] Congressional Budget Office. (February 2024). to the Overview of the Economic Outlook: 2024 to 2034. Retrieved February 8, 2024 from https://www.cbo.gov/publication/59933

Inflation

Inflation makes future income less valuable than today's income. Inflation is the percentage change in the value of the Wholesale Price Index (WPI) on a year-to-year basis. It effectively measures the change in the prices of a basket of goods and services in a year.[79]

According to Arthur Keown, John Martin, and J. William Petty, "investors require nominal (or quoted) rate of interest that exceeds the inflation rate or else their realized real return will be negative."[80]

According to Damodaran, "An inflation-indexed Treasury security does not offer a guaranteed nominal return to buyers, but instead provides a guaranteed real return."[81]

According to Cornell, "inflation is not considered explicitly when using the equity risk premium to forecast long-run future stock returns because it is already included in the interest rates that go into the calculation."[82] Cornell continues, "When investors invest, their goal is to increase future consumption. Consequently, the success of an investment is measured not in nominal dollars but real dollars… investors are concerned with real returns, defined as the percent increase in purchasing power, not nominal returns."[83]

The U.S. Treasury issues inflation-indexed securities. Comparing the inflation-indexed securities to the non-inflation indexed securities, one can calculate the inflation rate. Using the 10-year, 20-year, and 30-year securities, we calculated the inflation rates as of January 2, 2024.[84]

	10-Year	20-Year	30-Year
Calculated Inflation	2.21%	2.41%	2.17%

An Overview of the Economic Outlook: 2024 to 2034, published by the Congressional Budget Office (CBO), estimates that inflation for personal consumption expenditures will change from 4th quarter to 4th quarter by 2.1% in 2024, 2.2% in 2025, 2.1% in 2026, 2.0% from 2027 to 2028, and 1.9% from 2029 to 2034.[85]

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79 http://economictimes.indiatimes.com/definition/inflation

80 Keown, Arthur; Martin, John; and Petty, J. William, (2014). *Foundations of Finance: The Logic and Practice of Financial Management*, 8th Ed., Page 35

81 Damodaran, Aswath, Dr. (2015). Applied Corporate Finance, 4th Ed., Page 90

82 Cornell, Bradford, (1999). *The Equity Risk Premium,* Page 29

83 Ibid. Page 31

84 Difference between inflation-indexed and non-inflation indexed securities for 10-year, 20-year, and 30-year daily rates as of January 2, 2024. Retrieved January 24, 2024 from www.federalreserve.gov

85 Congressional Budget Office. (February 2024). to the Overview of the Economic Outlook: 2024 to 2034. Retrieved February 8, 2024 from https://www.cbo.gov/publication/59933

The Federal Reserve Board members and the Federal Reserve Bank presidents estimated the longer-run personal consumption expenditures inflation rate at 2%.[86]

We used the expected, longer-run personal consumption expenditures inflation rate of 2% as the estimate of inflation for this study.

Given the indicated long-term real growth rate of 1.8% and the expected inflation rate of 2%, we estimated the long-term growth rate at 3.8%.[87]

Market to Book Ratios

We analyzed market-to-book ratios of publicly traded stock and debt securities by market segment. This analysis indicates how the market perceives the value of these assets relative to the book value. A market-to-book ratio below one indicates that there may be obsolescence affecting that market segment; a ratio over one would indicate that there is no obsolescence. The analysis for each market segment indicated no obsolescence.

See each market segment's Calculation of Market to Book Ratios page for more information.

Public Comments on Draft Study

We posted the Draft 2024 Capitalization Rate Study on our website (www.revenue.state.mn.us) on March 1, 2024. We accepted comments through April 1, 2024. We appreciate the thoughtful responses we received. Your opinions and feedback are important, and we carefully considered every comment.

This section summarizes some of the comments we received on the Draft Study and our responses:

Aggregated Written Public Comments by Section

General

1. One commenter suggested that the capital structure for railroad should be 80% equity and 20% debt.
2. One commenter stated that the department's cap rate for the gas transmission segment has decreased for the fourth consecutive year, which contradicts what is actually happening in the natural gas transmission industry as well as the financial markets. The commentor states that the natural gas pipeline industry is getting riskier due to political pressures and demand to transition away from fossil fuels. The commenter also notes that the U.S. inflation rate observed in recent years is much higher than the Federal Reserve's target inflation rate of 2%.

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86 Board of Governors of the Federal Reserve System, Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents under their individual assumptions of projected appropriate monetary policy. December 2023. Retrieved January 25, 2024 from https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20231213.pdf

87 As provided by Pratt & Grabowski, "Long-term growth rates exceeding the real growth in GDP plus inflation are generally not sustainable" (p. 1195). Pratt, Shannon and Grabowski, Roger, (2014). *Cost of Capital Applications and Examples,* 5th Ed.

3. Multiple commenters challenged the use of the ERP estimate provided by Business Valuation Resources.
4. One commenter questioned how the common equity market value is determined for TC Energy Corp on page C-2. As it appeared to them, it should be higher.

Response

1. We kept the capital structure for the railroad market segment at 21% debt and 79% equity. This is supported by the mean and median capital structure for the guideline companies.
2. The final reconciled cap rate for the gas transmission market segment was 9.82% in 2021, 9.38% in 2022, 9.10% in 2023, and now 8.77% in 2024. The decrease in the rate over this four-year period does not contradict what is actually happening in the market. The cap rate is developed using actual market data of the guideline companies included in the study. It is useful to look at a year-over-year comparison to analyze cap rate trends, but doing so must come with the caveat of understanding how methodology changes may have impacted the cap rate as well. These methodology changes must be isolated from actual market observations to have a true "apple to apples" comparison from one year's cap rate to the next.

   We believe that if there is an increased risk experienced in any of the market segments involved with fossil fuels, then the market data we collect and use in our study will capture that risk. We trust that the market data inherently includes the risks of investment.

   Lastly, the commenter's mention of the high inflation rate of recent years represents the short-term inflation rate. The inflationary component used in our study is a long-term inflation rate estimation as required by the models in our study.

3. Business Valuation Resources is a respected, widely accepted source for a published, historical equity risk premium calculation. One advantage to using BVR's ERP is that it compares total return on both stocks and bonds, rather than total return on stocks with *income* return on bonds.
4. The common equity value used for TC Energy Corp on page C-2 was determined by multiplying the company's share price of $35.88 by the company's common shares outstanding, 1,037,000,000, as found in the company's Value Line tear sheet dated November 24, 2023. In reviewing this calculation, however, we noticed that the preferred equity value was missed in the capital structure calculation. The preferred equity value has been added to the capital structure calculation for the gas transmission market segment in the Final Study. This addition did not impact the capital structure for the gas transmission pipeline market segment.

Guideline Companies

1. One commenter asked the department to consider adding Cheniere Energy Partners, Energy Transfer L.P., National Fuel Gas, and ONEOK Inc. as guideline companies for the gas transmission market segment.
2. One commenter pointed out that on January 22, 2024, Sunoco L.P. announced they will acquire NuStar Energy L.P. for $7.3 billion. The commenter suggests that the department review this announcement of acquisition to analyze its potential impact to NuStar Pipeline L.P.'s common equity.

Response

1. We reviewed each of these companies as potential guideline companies in our initial draft study, and again for our final study. However, we decided and confirmed they should not be included for reasons stated in Appendix G.
2. Given that the acquisition announcement came after the assessment date of January 2, 2024, NuStar Energy L.P. will remain as a guideline company in the fluid pipeline market segment. If we were to remove NuStar Energy L.P. as a guideline company, the capital structure would shift toward more common equity and less toward debt. However, the indexed rate debt rate would decrease considerably because the long-term debt rate used for NuStar Energy L.P. is 7.29%, whereas the other three guideline companies are at 5.6% or less. We did not analyze what the removal of NuStar Energy L.P. would do to the cost of equity calculations.

Debt Rate

1. One commenter noted that excluding Canadian Pacific Kansas City Railway as a guideline company artificially pushes the debt yields lower than it should be, as their debt rating is BBB+.
2. Multiple commenters suggest that the department use a 12-month average for 2023 for the debt rate component, as opposed to using the 2023 December bond average in the study.
3. One commenter recommends that the department use a debt rate derived from corporate bond yields as opposed to industrial bond yields for the gas transmission market segment. The commenter noted that the rate would be 6.28% if corporate bond yields from Mergent are used.

Response

1. Canadian Pacific Kansas City Railway (CPKC) is excluded from the study as the merger between Canadian Pacific Railway and Kansas City Southern was approved in 2023, as mentioned in Appendix G. We are unable to add back one market data input from CPKC, while not adding their market data elsewhere throughout the study. Also, it is unclear how the merger will impact the company over the next year, including potential impacts to the company's future credit rating.
2. We use the December 2023 bond average as this reflects the bond market nearest to the assessment date.
3. It is unclear to us where the commenter's 6.28% corporate bond yield average reference is found. In the 2024 January issue of the Mergent Bond Record, the December 2023 corporate bond yield average is 5.64% for a Baa rating. For industrial, the bond yield average is 5.60% for December 2023 on a Baa rating. We are under the assumption that Mergent Bond Record's industrial bond averages are derived from bond issuances of companies that are industrial in nature, including companies in the gas transmission pipeline, fluid pipeline, and railroad market segments. We will continue to research and inquire with Mergent if this assumption is true and will apply any changes, if necessary, to the 2025 capitalization rate study.

Cost of Equity

1. One commenter noted that the two-stage DGM can be manipulated by simply changing the weighting between the two growth rates. The commenter also pointed to the lack of reversion calculated in the three-stage DGM and made note that the reversion price is necessary in order to capture the final price of the stock. Also, on the three-stage DGM, the commenter states that the

model does not account for the increase in payout that must occur as the company enters the period of stable growth.

2. One commenter suggests that the cost of equity for railroad should be much higher than 10.88%. The commenter mentioned that 9 of the 14 cost of equity models the department completed increased from the prior year, which suggests that the selected cost of equity for railroads should be higher.
3. One commenter stated that a multi-stage DGM model is better suited for high growth companies, as public utility companies are in a steady-state or constant-growth stage of a two or multi-stage DGM model. The public utility industry has fewer growth opportunities and are in a period of stable, low growth, and high dividend payout, where a single-stage DGM is more appropriate.
4. One commenter suggests that most of the cost of equity weight be applied to the two-stage DGM model. The commenter states that this is similar to the model used by FERC in their cost of equity calculation for rate making purposes. Similarly, another commenter stated that the department should consider the rationale underlying FERC's use of DGM models. The same commenter states that the department's refusal to place any reliance at all on the DGM when determining a cap rate is burdensome for gas transmission pipeline companies because their profitability margins are governed by FERC's ratemaking decisions.
5. One commenter mentioned that the department's criticism of the DGM models due to stock buybacks ignores the fact that stock buybacks were generally down in 2023 as compared to previous years.
6. One commenter, specific to the gas transmission pipeline market segment, expressed concern that the department is arbitrarily selecting equity rates. The commenter stated that this is demonstrated by the department's equity rate going down from 11.06% in 2023 to 10.88% in 2024, even though the risk-free rate went up from 4.06% in 2023 to 4.30% in 2024. The commenter states that this strongly suggests that the department's equity rate must be too low.

Response

1. It is true that the two-stage DGM can be manipulated by changing weights between the growth rates used (short-term growth and stable growth rates). The manipulation is an attempt to arrive at reasonable growth assumptions for a longer period. We used the weightings that David Parcell (2010) provides in the two-stage DGM formula in The Cost of Capital – A Practitioner's Guide, published by the Society of Utility and Regulatory Financial Analysts.

   Short-term growth rates are generally not sustainable in the long-term, and therefore, a blend between the short-term growth rate and a more sustainable or realistic long-term growth rate is required. Our primary concern with the DGM models is unrealistic growth assumptions. This is why we favor the use of a three-stage DGM over the single and two-stage DGM, which tapers growth in the long term to something more realistic.

   Lastly, this year, we extended the time horizon out to 115 years in the three-stage DGM, where stage three includes 100 years in its calculation. Including a discount rate after this many years results in an insignificant change in the reconciled rate. Because of the ability to include 100+ years in the Excel spreadsheet calculation, a reversion calculation is not needed.

2. The cost of equity used for the railroad market segment was 10.62% in the 2023 study and 10.88% in the 2024 study. This represents an increase of 2.45%. It is worth noting that while 9 of the 14 cost of equity models showed an increase in the estimated cost of equity, 6 of the results

are duplicative in that each CAPM model has an empirical CAPM version of the model that will reflect a very similar year-over-year percent change due to how it is calculated. To avoid this duplication, a better comparison would be to include the non-repeated CAPMs, which would mean 5 of 9 cost of equity models increased in the estimate rate year-over-year.

Furthermore, the calculation method for the three-stage DGM changed from one year to the next (no longer has a reversion calculation), which means comparing a change from one year to the next on this model is not helpful.

3. While we complete a single- and two-stage DGM, our reliance on these models is less than others as the growth assumptions within these models are often unsustainable long-term, which we comment on in page 17 of the study. The three-stage DGM has a ceiling of the long-term growth rate of the U.S. economy. We believe this is more appropriate as no company can sustain long-term growth that exceeds the long-term growth of the U.S. economy.

   The commenter mentions that public utility companies are in the stage of a steady-state or constant-growth, and therefore, the single-stage DGM is most applicable. However, there is an additional stage in the company or industry life cycle, the relative decline stage, which we attempt to capture in a three-stage DGM. In the relative decline stage, as provided by Bodie, Kane, Marcus & Mohanty (2015)[88], "the industry might grow at less than the rate of the overall economy, or it might even shrink" (pg. 599). A reasonable argument could be made that the relative decline stage does not apply to utilities in the same way it applies to some more competitive industries. The maturity stage of some companies may see growth higher than the overall economy, but that is only possible if the company eventually moves to a relative decline phase, in which, growth declines below the overall economy growth rate, or even has a negative growth rate. If the company does not move into a relative decline stage, then their constant growth rate must not be greater than the growth rate of the overall economy. Assuming a growth rate equal to the growth rate of the overall economy is conservative.

4. FERC is a regulatory agency that can set allowable rates of return for certain companies. The Department is estimating a cost of capital for each market segment. As provided by LeBel, Shiley, and Kihm (2023), "Corporate finance makes a sharp distinction between the ROE [return on equity] and the cost of equity. For any firms, regulated or unregulated, the ROE represents the returns that companies are expected to earn on their *books*, while the cost of equity represents the returns investors expect to earn on those same companies' *stocks*" (p. 15)[89]. LeBel et. al. also note that if all else is held constant, an increase in ROE causes the stock price to rise, while an increase in the cost of equity causes it to decline.

5. We use analysts' forecasts of earnings growth in addition to forecasts of dividend growth. We prefer the use of an earnings-growth DGM in part due to stock buyback policies. According to Goldman Sachs strategists, stock buybacks in 2022 were at $950 billion and decreased to $815 billion in 2023. However, Goldman Sachs expects that stock buybacks will increase by 13% in

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[88] Bodie, Kane, Marcus, and Mohanty (2015). "Essentials of Investments: Global Edition"

[89] LeBel, Shipley, & Kihm (2023), "Improving Utility Performance Incentives in the United States", www.raponline.org/knowledge-center/improving-utility-performance-incentives-in-the-united-states-a-policy-legal-and-financial-framework-for-utility-business-model-reform/

2024 to $924 billion[90], indicating that stock buybacks remain a prevalent strategy among companies to return cash to its shareholders.

6. The risk-free rate is one component of the CAPM. While it is true that the risk-free rate increased from last year's study, 4.06% to 4.30%, this is only one part of the CAPM equation. The selected industry beta decreased from 1.12 to 1.05 year-over-year. The equity risk premium (ERP) that we relied on was Damodaran's ERP estimate, which decreased last year from 5.94% to 4.60%, and the Business Valuation Resources historical ERP (arithmetic) increased from 6.28% to 6.45%.

Other Cost of Equity Models

One commenter stated that the department should consider a Plowback model (Retention Growth model). The commenter stated that it is a similar model to the department's DGMs but calculates a market growth factor based on a company's long-term outlook for return on equity and retention ratio, which is added to the Dividend Yield to develop a cost of equity.

Response

We decided not to complete this model. The growth rate used in the recommended model reflects growth rates higher than the analysts' estimates of short-term growth for earnings and dividends for the applicable market segment. This high growth rate does not match the assumptions of the zero percent stable growth model we use in the valuations.

Flotation Costs

Multiple commenters opined that the department should include an adjustment to the yield rate for flotation costs.

Response

We do not include an adjustment for flotation costs. See the Flotation Costs section for a detailed discussion.

Illiquidity

Some commenters opined that the department should make adjustments for illiquidity to the cost of equity.

Response

We do not adjust capitalization rates for illiquidity. See the Illiquidity section for a detailed discussion.

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90 Ed Carson (March 2024), "Stock Buybacks To Top $1 Trillion In 2025, Goldman Says", Investor's Business Daily, https://www.investors.com/news/sp500-stock-buybacks-top-1-trillion-in-2025-goldman-says/#:~:text=Stock%20buybacks%20will%20exceed%20%241,)%2C%20Goldman%20Sachs%20strategists%20said.

Questions?

If you have questions about the 2024 Capitalization Rate Study, contact us at sa.property@state.mn.us.

Appendix A - Electric

Yield Rate

	Capital Structure	Rate	Composite
Long-Term Debt	42.00%	5.68%	2.39%
Common Equity	58.00%	10.13%	5.88%
Yield Rate			**8.27%**

Electric Yield Rate	**8.27%**

Capital Structure

Company	Value of Long-Term Debt	Value of Preferred Equity	Value of Common Equity	Total Market Value	% Long-Term Debt	% Preferred Equity	% Common Equity
ALLETE Inc.	1,686,100,000	-	3,185,972,559	4,872,072,559	34.61%	0.00%	65.39%
Alliant Energy Corp	8,429,000,000	-	12,625,845,587	21,054,845,587	40.03%	0.00%	59.97%
Ameren Corp	13,829,000,000	129,000,000	20,367,723,418	34,325,723,418	40.29%	0.38%	59.34%
American Electric Power Co Inc.	36,716,000,000	-	41,302,272,216	78,018,272,216	47.06%	0.00%	52.94%
Black Hills Corp	3,799,500,000	-	3,810,251,674	7,609,751,674	49.93%	0.00%	50.07%
CenterPoint Energy Inc.	16,838,000,000	-	17,642,698,502	34,480,698,502	48.83%	0.00%	51.17%
CMS Energy Corp	14,177,000,000	224,000,000	16,726,805,296	31,127,805,296	45.54%	0.72%	53.74%
DTE Energy Company	18,542,000,000	-	21,628,290,113	40,170,290,113	46.16%	0.00%	53.84%
Evergy Inc	9,298,000,000	-	11,651,436,795	20,949,436,795	44.38%	0.00%	55.62%
Northwestern Corp	2,550,800,000	-	3,146,013,766	5,696,813,766	44.78%	0.00%	55.22%
OGE Energy Corp	4,339,700,000	-	6,996,037,625	11,335,737,625	38.28%	0.00%	61.72%
Otter Tail Corp	824,000,000	-	3,145,807,494	3,969,807,494	20.76%	0.00%	79.24%
WEC Energy Group	15,956,500,000	30,400,000	25,935,027,139	41,921,927,139	38.06%	0.07%	61.87%
Xcel Energy Inc.	24,910,000,000	-	35,084,481,562	59,994,481,562	41.52%	0.00%	58.48%

Mean	41.45%	0.08%	58.47%
Median	42.95%	0.00%	57.05%

Indicated Industry Capital Structure	**42.00%**		**58.00%**

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Indexed Rate of Debt

Company	Debt Rating	Long-Term Debt Rate
ALLETE Inc.	Baa1	5.68%
Alliant Energy Corp	Baa2	5.68%
Ameren Corp	Baa1	5.68%
American Electric Power Co Inc.	Baa2	5.68%
Black Hills Corp	Baa2	5.68%
CenterPoint Energy Inc.	Baa2	5.68%
CMS Energy Corp	Baa2	5.68%
DTE Energy Company	Baa2	5.68%
Northwestern Corp	Baa2	5.68%
OGE Energy Corp	Baa1	5.68%
Otter Tail Corp	Baa2	5.68%
WEC Energy Group	Baa1	5.68%
Xcel Energy Inc.	Baa1	5.68%

Mean	5.68%
Median	5.68%
Mode	5.68%

Indicated Rate of Debt	**5.68%**

Public Utility Bond Yield Averages from Mergent Bond Record, January 2024 Edition

Public Utility Bond Averages, December 2023

Mergent	S&P	Dec. Yield Avg.
Aaa, Aa1, Aa2 Aa3	AAA, AA+, AA, AA-	5.27%
A1, A2, A3	A+, A, A-	5.42%
Baa1, Baa2, Baa3	BBB+, BBB, BBB-	5.68%

Indicated Rate of Equity

Model	Rate
CAPM - Ex Ante, Three Stage	7.01%
CAPM - Damodaran	8.58%
CAPM - The CFO Survey	8.89%
CAPM - Fernandez, Banuls, and Acin	9.60%
CAPM - Ex Post (BVR Historical, Arithmetic)	10.30%
CAPM - Ex Post (BVR Historical, Geometric)	9.13%
Empirical CAPM - Ex Ante, Three Stage	7.06%
Empirical CAPM - Damodaran	8.66%
Empirical CAPM - The CFO Survey	8.98%
Empirical CAPM - Fernandez, Banuls, and Acin	9.70%
Empirical CAPM - Ex Post (BVR Historical, Arithmetic)	10.41%
Empirical CAPM - Ex Post (BVR Historical, Geometric)	9.22%
DGM - Dividend Growth	9.20%
DGM - Earnings Growth	9.80%
DGM - Two-Stage	9.13%
DGM - Three-Stage	8.39%
Indicated Rate of Equity	**10.13%**

We established a range of acceptability for the cost of equity with all available models. We considered all of the data and placed more reliance on the CAPM using the Business Valuation Resources Historical (arithmetic) equity risk premium, and the Damodaran CAPM.

Direct Rate and Growth

	Capital Structure	Rate	Composite
Debt Component	42.00%	5.68%	2.39%
Equity Component	58.00%	6.29%	3.65%
Direct Rate			**6.04%**

Direct Rate	**6.04%**

Capital Asset Pricing Model (CAPM)

(ERP x β) + RFR = Indicated Equity Rate

	Equity Risk Premium (ERP)	x Industry Beta (β)	= Industry Risk Premium	+ Risk-Free Rate[1] (RFR)	Indicated Equity Rate
Three Stage Ex Ante[2]	2.91%	0.93	2.71%	4.30%	7.01%
Dr. Damodaran ERP[3]	4.60%	0.93	4.28%	4.30%	8.58%
The CFO Survey[4]	4.94%	0.93	4.59%	4.30%	8.89%
Fernandez, Banuls and Acin[5]	5.70%	0.93	5.30%	4.30%	9.60%
BVR - Historical, Arithmetic Mean[6]	6.45%	0.93	6.00%	4.30%	10.30%
BVR - Historical, Geometric Mean[7]	5.19%	0.93	4.83%	4.30%	9.13%

Notes:

1 U.S. Treasury on January 2, 2024 - 20-year Coupon Bond Yield, Daily Observations, Retrieved January 24, 2024 from www.federalreserve.gov

2 Three Stage Dividend Growth Model, S&P 500. See Appendix F, Three Stage Ex Ante Calculation

3 Implied Equity Risk Premium on January 5, 2024 as determined by Dr. Aswath Damodaran; Retrieved January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

4 The CFO Survey (2023). Data & Results December 20, 2023. Mean average annual S&P return over next ten years (8.9%) less annual yield on 10-year Treasury Bonds (3.96%). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

5 Fernandez, P., Garcia D., & Acin, J. F. (2023). Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023. SSRN Electronic Journal. Retrieved January 22, 2024 from https://ssrn.com/abstract=4407839

6 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using arithmetic mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

7 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using geometric mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

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Empirical Capital Asset Pricing Model (ECAPM)

(ERP x β x .75) + (ERP x .25) + RFR = Indicated Equity Rate

Model	Equity Risk Premium (ERP)	Industry Beta (β)	Weighted Industry Risk Premium (weighted at 75%)	Weighted Equity Risk Premium (weighted at 25%)	Risk-Free Rate (RFR)[1]	Indicated Equity Rate
Three Stage Ex Ante[2]	2.91%	0.93	2.03%	0.73%	4.30%	**7.06%**
Dr. Damodaran ERP[3]	4.60%	0.93	3.21%	1.15%	4.30%	**8.66%**
The CFO Survey[4]	4.94%	0.93	3.45%	1.24%	4.30%	**8.98%**
Fernandez, Banuls and Acin[5]	5.70%	0.93	3.98%	1.43%	4.30%	**9.70%**
BVR - Historical, Arithmetic Mean[6]	6.45%	0.93	4.50%	1.61%	4.30%	**10.41%**
BVR - Historical, Geometric Mean[7]	5.19%	0.93	3.62%	1.30%	4.30%	**9.22%**

Notes:

1 U.S. Treasury on January 2, 2024 - 20-year Coupon Bond Yield, Daily Observations, Retrieved January 24, 2024 from www.federalreserve.gov

2 Three Stage Dividend Growth Model, S&P 500. See Appendix F, Three Stage Ex Ante Calculation

3 Implied Equity Risk Premium on January 5, 2024 as determined by Dr. Aswath Damodaran; Retrieved January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

4 The CFO Survey (2023). Data & Results December 20, 2023. Mean average annual S&P return over next ten years (8.9%) less annual yield on 10-year Treasury Bonds (3.96%). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

5 Fernandez, P., Garcia D., & Acin, J. F. (2023). Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023. SSRN Electronic Journal. Retrieved January 22, 2024 from https://ssrn.com/abstract=4407839

6 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using arithmetic mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

7 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using geometric mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

Single-Stage Dividend Growth Model

Company	Current Dividend Yield (DY)	Projected Short-term EPS Growth Rate (EG)	Projected Short-term Dividend Growth Rate (DG)	Cost of Equity Earnings Growth DY + EG	Cost of Equity Dividend Growth DY + DG
ALLETE Inc.	4.90%	6.00%	3.50%	10.90%	8.40%
Alliant Energy Corp	3.60%	6.50%	6.00%	10.10%	9.60%
Ameren Corp	3.30%	6.50%	6.50%	9.80%	9.80%
American Electric Power Co Inc.	4.50%	6.50%	5.50%	11.00%	10.00%
Black Hills Corp	4.60%	3.00%	4.50%	7.60%	9.10%
CenterPoint Energy	2.90%	8.50%	4.00%	11.40%	6.90%
CMS Energy Corp	3.40%	5.50%	5.00%	8.90%	8.40%
DTE Energy Company	3.60%	4.50%	3.00%	8.10%	6.60%
Evergy Inc.	5.10%	7.50%	7.00%	12.60%	12.10%
Northwestern Corp	5.10%	3.50%	2.00%	8.60%	7.10%
OGE Energy Corp	4.80%	6.50%	3.00%	11.30%	7.80%
Otter Tail Corp	2.30%	4.50%	7.00%	6.80%	9.30%
WEC Energy Group	3.80%	6.00%	7.00%	9.80%	10.80%
Xcel Energy Inc.	3.50%	6.00%	6.00%	9.50%	9.50%
Mean	3.96%	5.79%	5.00%	9.74%	8.96%
Median	3.70%	6.00%	5.25%	9.80%	9.20%

DGM - Dividend Growth, Indicated Rate	**9.20%**
DGM - Earnings Growth, Indicated Rate	**9.80%**

We placed more reliance on the median to arrive at the indicated rates for DGM - Earnings Growth and DGM - Dividend Growth.

Notes:

Dividend Yield and growth rates provided by Value Line

Two-Stage Dividend Growth Model

K_E = (DY x (1+ 0.5(G))) + 0.67(G1) +0.33(g)

K_E Cost of Equity
DY Dividend Yield
G_1 Short-term Growth Estimate
g Stable Growth
G Average Growth Rate

Company	**DY** Dividend Yield	**G1** Short-term Growth Estimate	**g** Stable Growth	**G** Average Growth Rate	**K_E** Cost of Equity
ALLETE Inc.	4.90%	6.00%	3.80%	4.90%	10.29%
Alliant Energy Corp	3.60%	6.50%	3.80%	5.15%	9.30%
Ameren Corp	3.30%	6.50%	3.80%	5.15%	8.99%
American Electric Power Co Inc.	4.50%	6.50%	3.80%	5.15%	10.22%
Black Hills Corp	4.60%	3.00%	3.80%	3.40%	7.94%
CenterPoint Energy Inc.	2.90%	8.50%	3.80%	6.15%	9.94%
CMS Energy Corp	3.40%	5.50%	3.80%	4.65%	8.42%
DTE Energy Company	3.60%	4.50%	3.80%	4.15%	7.94%
Evergy Inc.	5.10%	7.50%	3.80%	5.65%	11.52%
Northwestern Corp	5.10%	3.50%	3.80%	3.65%	8.79%
OGE Energy Corp	4.80%	6.50%	3.80%	5.15%	10.53%
Otter Tail Corp	2.30%	4.50%	3.80%	4.15%	6.62%
WEC Energy Group	3.80%	6.00%	3.80%	4.90%	9.17%
Xcel Energy Inc.	3.50%	6.00%	3.80%	4.90%	8.86%

Mean	9.18%
Median	9.08%
Two-Stage DGM, Indicated Rate	**9.13%**

We placed equal reliance on the mean and median when selecting the indicated rate.

Notes:

Dividend Yield provided by Value Line

Growth Estimates, Next 5 Years for Earnings provided Value Line

Stable growth rate is the nominal growth rate determined in the Capitalization Rate Study Narrative (indicated long-term growth rate of the U.S. economy of 1.8% plus the expected inflation rate of 2.0%).

Three-Stage Dividend Growth Model

Start Price - recent price from Value Line
Expected dividends - estimated dividends from Value Line
Stage one growth - projected earnings growth rate from Value Line
Stage two growth - reversion to long-term growth rate
Stage three growth - long-term growth rate developed in Study 3.80%

Company	Year	ALLETE Inc.		Alliant Energy Corp		Ameren Corp		American Electric Power Co Inc.		Black Hills Corp		CenterPoint Energy Inc.		CMS Energy Corp		DTE Energy Company		Evergy Inc.		Northwestern Corp		OGE Energy Corp		Otter Tail Corp		WEC Energy Group		Xcel Energy Inc.	
Start Price	2023		-55.43		-49.96		-77.46		-78.54		-56.04		-27.95		-57.33		-104.86		-50.72		-51.37		-34.93		-75.42		-82.22		-63.58
Expected Dividends	2024		2.79		1.92		2.65		3.52		2.58		0.83		2.04		4.05		2.61		2.60		1.78		1.81		3.33		2.22
Stage One Growth	2025	6.00%	2.96	6.50%	2.04	6.50%	2.82	6.50%	3.75	3.00%	2.66	8.50%	0.90	5.50%	2.15	4.50%	4.23	7.50%	2.81	3.50%	2.69	6.50%	1.90	4.50%	1.89	6.00%	3.53	6.00%	2.35
Stage One Growth	2026	6.00%	3.13	6.50%	2.18	6.50%	3.01	6.50%	3.99	3.00%	2.74	8.50%	0.98	5.50%	2.27	4.50%	4.42	7.50%	3.02	3.50%	2.79	6.50%	2.02	4.50%	1.98	6.00%	3.74	6.00%	2.49
Stage One Growth	2027	6.00%	3.32	6.50%	2.32	6.50%	3.20	6.50%	4.25	3.00%	2.82	8.50%	1.06	5.50%	2.40	4.50%	4.62	7.50%	3.24	3.50%	2.88	6.50%	2.15	4.50%	2.07	6.00%	3.97	6.00%	2.64
Stage One Growth	2028	6.00%	3.52	6.50%	2.47	6.50%	3.41	6.50%	4.53	3.00%	2.90	8.50%	1.15	5.50%	2.53	4.50%	4.83	7.50%	3.49	3.50%	2.98	6.50%	2.29	4.50%	2.16	6.00%	4.20	6.00%	2.80
Stage One Growth	2029	6.00%	3.73	6.50%	2.63	6.50%	3.63	6.50%	4.82	3.00%	2.99	8.50%	1.25	5.50%	2.67	4.50%	5.05	7.50%	3.75	3.50%	3.09	6.50%	2.44	4.50%	2.26	6.00%	4.46	6.00%	2.97
Stage Two Growth	2030	5.80%	3.95	6.25%	2.80	6.25%	3.86	6.25%	5.12	3.07%	3.08	8.07%	1.35	5.35%	2.81	4.44%	5.27	7.16%	4.02	3.53%	3.20	6.25%	2.59	4.44%	2.36	5.80%	4.71	5.80%	3.14
Stage Two Growth	2031	5.60%	4.17	6.01%	2.96	6.01%	4.09	6.01%	5.43	3.15%	3.18	7.65%	1.45	5.19%	2.95	4.37%	5.50	6.83%	4.29	3.55%	3.31	6.01%	2.75	4.37%	2.46	5.60%	4.98	5.60%	3.32
Stage Two Growth	2032	5.40%	4.40	5.76%	3.13	5.76%	4.33	5.76%	5.75	3.22%	3.28	7.22%	1.56	5.04%	3.10	4.31%	5.74	6.49%	4.57	3.58%	3.43	5.76%	2.91	4.31%	2.56	5.40%	5.25	5.40%	3.50
Stage Two Growth	2033	5.20%	4.63	5.52%	3.31	5.52%	4.56	5.52%	6.06	3.29%	3.39	6.79%	1.66	4.88%	3.25	4.25%	5.98	6.15%	4.85	3.61%	3.55	5.52%	3.07	4.25%	2.67	5.20%	5.52	5.20%	3.68
Stage Two Growth	2034	5.00%	4.86	5.27%	3.48	5.27%	4.80	5.27%	6.38	3.36%	3.50	6.36%	1.77	4.73%	3.41	4.18%	6.23	5.82%	5.13	3.64%	3.68	5.27%	3.23	4.18%	2.79	5.00%	5.80	5.00%	3.86
Stage Two Growth	2035	4.80%	5.09	5.03%	3.66	5.03%	5.05	5.03%	6.70	3.44%	3.62	5.94%	1.87	4.57%	3.56	4.12%	6.49	5.48%	5.41	3.66%	3.82	5.03%	3.39	4.12%	2.90	4.80%	6.07	4.80%	4.05
Stage Two Growth	2036	4.60%	5.32	4.78%	3.83	4.78%	5.29	4.78%	7.02	3.51%	3.75	5.51%	1.98	4.42%	3.72	4.05%	6.75	5.15%	5.69	3.69%	3.96	4.78%	3.55	4.05%	3.02	4.60%	6.35	4.60%	4.24
Stage Two Growth	2037	4.40%	5.56	4.54%	4.00	4.54%	5.53	4.54%	7.34	3.58%	3.89	5.08%	2.08	4.26%	3.88	3.99%	7.02	4.81%	5.96	3.72%	4.11	4.54%	3.71	3.99%	3.14	4.40%	6.63	4.40%	4.42
Stage Two Growth	2038	4.20%	5.79	4.29%	4.18	4.29%	5.76	4.29%	7.66	3.65%	4.03	4.65%	2.17	4.11%	4.04	3.93%	7.30	4.47%	6.23	3.75%	4.26	4.29%	3.87	3.93%	3.26	4.20%	6.91	4.20%	4.61
Stage Two Growth	2039	4.00%	6.02	4.05%	4.35	4.05%	6.00	4.05%	7.97	3.73%	4.18	4.23%	2.27	3.95%	4.20	3.86%	7.58	4.14%	6.49	3.77%	4.42	4.05%	4.03	3.86%	3.39	4.00%	7.19	4.00%	4.79
Stage Three Growth	2040	3.80%	6.25	3.80%	4.51	3.80%	6.23	3.80%	8.27	3.80%	4.34	3.80%	2.35	3.80%	4.36	3.80%	7.87	3.80%	6.74	3.80%	4.59	3.80%	4.18	3.80%	3.52	3.80%	7.46	3.80%	4.97
Stage Three Growth	2041	3.80%	6.49	3.80%	4.68	3.80%	6.46	3.80%	8.58	3.80%	4.50	3.80%	2.44	3.80%	4.53	3.80%	8.17	3.80%	6.99	3.80%	4.76	3.80%	4.34	3.80%	3.65	3.80%	7.75	3.80%	5.16
Stage Three Growth	2042	3.80%	6.74	3.80%	4.86	3.80%	6.71	3.80%	8.91	3.80%	4.67	3.80%	2.53	3.80%	4.70	3.80%	8.48	3.80%	7.26	3.80%	4.94	3.80%	4.51	3.80%	3.79	3.80%	8.04	3.80%	5.36
Stage Three Growth	2043	3.80%	6.99	3.80%	5.04	3.80%	6.96	3.80%	9.25	3.80%	4.85	3.80%	2.63	3.80%	4.88	3.80%	8.80	3.80%	7.53	3.80%	5.13	3.80%	4.68	3.80%	3.93	3.80%	8.35	3.80%	5.56
Stage Three Growth	2044	3.80%	7.26	3.80%	5.24	3.80%	7.23	3.80%	9.60	3.80%	5.03	3.80%	2.73	3.80%	5.06	3.80%	9.13	3.80%	7.82	3.80%	5.33	3.80%	4.85	3.80%	4.08	3.80%	8.66	3.80%	5.77
Stage Three Growth	2045	3.80%	7.53	3.80%	5.44	3.80%	7.50	3.80%	9.96	3.80%	5.23	3.80%	2.83	3.80%	5.25	3.80%	9.48	3.80%	8.12	3.80%	5.53	3.80%	5.04	3.80%	4.24	3.80%	8.99	3.80%	5.99
Stage Three Growth	2046	3.80%	7.82	3.80%	5.64	3.80%	7.79	3.80%	10.34	3.80%	5.42	3.80%	2.94	3.80%	5.45	3.80%	9.84	3.80%	8.43	3.80%	5.74	3.80%	5.23	3.80%	4.40	3.80%	9.33	3.80%	6.22
Stage Three Growth	2047	3.80%	8.12	3.80%	5.86	3.80%	8.08	3.80%	10.74	3.80%	5.63	3.80%	3.05	3.80%	5.66	3.80%	10.21	3.80%	8.75	3.80%	5.96	3.80%	5.43	3.80%	4.56	3.80%	9.69	3.80%	6.46
Stage Three Growth	2048	3.80%	8.43	3.80%	6.08	3.80%	8.39	3.80%	11.14	3.80%	5.84	3.80%	3.17	3.80%	5.88	3.80%	10.60	3.80%	9.08	3.80%	6.18	3.80%	5.64	3.80%	4.74	3.80%	10.06	3.80%	6.70
Stage Three Growth	2049	3.80%	8.75	3.80%	6.31	3.80%	8.71	3.80%	11.57	3.80%	6.07	3.80%	3.29	3.80%	6.10	3.80%	11.01	3.80%	9.42	3.80%	6.42	3.80%	5.85	3.80%	4.92	3.80%	10.44	3.80%	6.96
Stage Three Growth	2050	3.80%	9.08	3.80%	6.55	3.80%	9.04	3.80%	12.01	3.80%	6.30	3.80%	3.41	3.80%	6.33	3.80%	11.42	3.80%	9.78	3.80%	6.66	3.80%	6.07	3.80%	5.11	3.80%	10.84	3.80%	7.22
Stage Three Growth	2051	3.80%	9.42	3.80%	6.80	3.80%	9.38	3.80%	12.46	3.80%	6.54	3.80%	3.54	3.80%	6.57	3.80%	11.86	3.80%	10.15	3.80%	6.91	3.80%	6.30	3.80%	5.30	3.80%	11.25	3.80%	7.50
Stage Three Growth	2052	3.80%	9.78	3.80%	7.06	3.80%	9.74	3.80%	12.94	3.80%	6.79	3.80%	3.68	3.80%	6.82	3.80%	12.31	3.80%	10.54	3.80%	7.18	3.80%	6.54	3.80%	5.50	3.80%	11.67	3.80%	7.78
Stage Three Growth	2053	3.80%	10.15	3.80%	7.33	3.80%	10.11	3.80%	13.43	3.80%	7.04	3.80%	3.82	3.80%	7.08	3.80%	12.78	3.80%	10.94	3.80%	7.45	3.80%	6.79	3.80%	5.71	3.80%	12.12	3.80%	8.08
Stage Three Growth	2054	3.80%	10.54	3.80%	7.60	3.80%	10.49	3.80%	13.94	3.80%	7.31	3.80%	3.96	3.80%	7.35	3.80%	13.26	3.80%	11.35	3.80%	7.73	3.80%	7.05	3.80%	5.93	3.80%	12.58	3.80%	8.39
Stage Three Growth	2055	3.80%	10.94	3.80%	7.89	3.80%	10.89	3.80%	14.47	3.80%	7.59	3.80%	4.11	3.80%	7.63	3.80%	13.77	3.80%	11.79	3.80%	8.03	3.80%	7.32	3.80%	6.15	3.80%	13.06	3.80%	8.70
Stage Three Growth	2056	3.80%	11.35	3.80%	8.19	3.80%	11.31	3.80%	15.02	3.80%	7.88	3.80%	4.27	3.80%	7.92	3.80%	14.29	3.80%	12.23	3.80%	8.33	3.80%	7.59	3.80%	6.39	3.80%	13.55	3.80%	9.03
Stage Three Growth	2057	3.80%	11.79	3.80%	8.50	3.80%	11.74	3.80%	15.59	3.80%	8.18	3.80%	4.43	3.80%	8.22	3.80%	14.83	3.80%	12.70	3.80%	8.65	3.80%	7.88	3.80%	6.63	3.80%	14.07	3.80%	9.38
Stage Three Growth	2058	3.80%	12.23	3.80%	8.83	3.80%	12.18	3.80%	16.18	3.80%	8.49	3.80%	4.60	3.80%	8.53	3.80%	15.40	3.80%	13.18	3.80%	8.98	3.80%	8.18	3.80%	6.88	3.80%	14.60	3.80%	9.73
Stage Three Growth	2059	3.80%	12.70	3.80%	9.16	3.80%	12.65	3.80%	16.80	3.80%	8.81	3.80%	4.78	3.80%	8.86	3.80%	15.98	3.80%	13.68	3.80%	9.32	3.80%	8.49	3.80%	7.14	3.80%	15.16	3.80%	10.10
Stage Three Growth	2060	3.80%	13.18	3.80%	9.51	3.80%	13.13	3.80%	17.43	3.80%	9.14	3.80%	4.96	3.80%	9.19	3.80%	16.59	3.80%	14.20	3.80%	9.67	3.80%	8.82	3.80%	7.41	3.80%	15.73	3.80%	10.49
Stage Three Growth	2061	3.80%	13.68	3.80%	9.87	3.80%	13.63	3.80%	18.10	3.80%	9.49	3.80%	5.15	3.80%	9.54	3.80%	17.22	3.80%	14.74	3.80%	10.04	3.80%	9.15	3.80%	7.69	3.80%	16.33	3.80%	10.89
Stage Three Growth	2062	3.80%	14.20	3.80%	10.25	3.80%	14.14	3.80%	18.79	3.80%	9.85	3.80%	5.34	3.80%	9.90	3.80%	17.87	3.80%	15.30	3.80%	10.42	3.80%	9.50	3.80%	7.99	3.80%	16.95	3.80%	11.30
Stage Three Growth	2063	3.80%	14.74	3.80%	10.64	3.80%	14.68	3.80%	19.50	3.80%	10.23	3.80%	5.55	3.80%	10.28	3.80%	18.55	3.80%	15.88	3.80%	10.82	3.80%	9.86	3.80%	8.29	3.80%	17.60	3.80%	11.73
Stage Three Growth	2064	3.80%	15.30	3.80%	11.04	3.80%	15.24	3.80%	20.24	3.80%	10.62	3.80%	5.76	3.80%	10.67	3.80%	19.26	3.80%	16.49	3.80%	11.23	3.80%	10.23	3.80%	8.61	3.80%	18.26	3.80%	12.18
Stage Three Growth	2065	3.80%	15.88	3.80%	11.46	3.80%	15.82	3.80%	21.01	3.80%	11.02	3.80%	5.97	3.80%	11.08	3.80%	19.99	3.80%	17.11	3.80%	11.65	3.80%	10.62	3.80%	8.93	3.80%	18.96	3.80%	12.64
Stage Three Growth	2066	3.80%	16.49	3.80%	11.90	3.80%	16.42	3.80%	21.81	3.80%	11.44	3.80%	6.20	3.80%	11.50	3.80%	20.75	3.80%	17.76	3.80%	12.10	3.80%	11.03	3.80%	9.27	3.80%	19.68	3.80%	13.12
Stage Three Growth	2067	3.80%	17.11	3.80%	12.35	3.80%	17.04	3.80%	22.64	3.80%	11.87	3.80%	6.44	3.80%	11.93	3.80%	21.54	3.80%	18.44	3.80%	12.56	3.80%	11.45	3.80%	9.62	3.80%	20.43	3.80%	13.62
Stage Three Growth	2068	3.80%	17.76	3.80%	12.82	3.80%	17.69	3.80%	23.50	3.80%	12.32	3.80%	6.68	3.80%	12.39	3.80%	22.35	3.80%	19.14	3.80%	13.03	3.80%	11.88	3.80%	9.99	3.80%	21.20	3.80%	14.13
Stage Three Growth	2069	3.80%	18.44	3.80%	13.30	3.80%	18.36	3.80%	24.39	3.80%	12.79	3.80%	6.94	3.80%	12.86	3.80%	23.20	3.80%	19.87	3.80%	13.53	3.80%	12.33	3.80%	10.37	3.80%	22.01	3.80%	14.67
Stage Three Growth	2070	3.80%	19.14	3.80%	13.81	3.80%	19.06	3.80%	25.32	3.80%	13.28	3.80%	7.20	3.80%	13.35	3.80%	24.09	3.80%	20.62	3.80%	14.04	3.80%	12.80	3.80%	10.76	3.80%	22.84	3.80%	15.23
Stage Three Growth	2071	3.80%	19.87	3.80%	14.33	3.80%	19.78	3.80%	26.28	3.80%	13.78	3.80%	7.47	3.80%	13.85	3.80%	25.00	3.80%	21.41	3.80%	14.58	3.80%	13.29	3.80%	11.17	3.80%	23.71	3.80%	15.81
Stage Three Growth	2072	3.80%	20.62	3.80%	14.88	3.80%	20.54	3.80%	27.28	3.80%	14.31	3.80%	7.76	3.80%	14.38	3.80%	25.95	3.80%	22.22	3.80%	15.13	3.80%	13.79	3.80%	11.60	3.80%	24.61	3.80%	16.41
Stage Three Growth	2073	3.80%	21.41	3.80%	15.44	3.80%	21.32	3.80%	28.31	3.80%	14.85	3.80%	8.05	3.80%	14.93	3.80%	26.94	3.80%	23.06	3.80%	15.71	3.80%	14.32	3.80%	12.04	3.80%	25.55	3.80%	17.03

Stage Three Growth	2074	3.80%	22.22	3.80%	16.03	3.80%	22.13	3.80%	29.39	3.80%	15.41	3.80%	8.36	3.80%	15.49	3.80%	27.96	3.80%	23.94	3.80%	16.30	3.80%	14.86	3.80%	12.49	3.80%	26.52	3.80%	17.68
Stage Three Growth	2075	3.80%	23.06	3.80%	16.64	3.80%	22.97	3.80%	30.51	3.80%	16.00	3.80%	8.68	3.80%	16.08	3.80%	29.02	3.80%	24.85	3.80%	16.92	3.80%	15.42	3.80%	12.97	3.80%	27.53	3.80%	18.35
Stage Three Growth	2076	3.80%	23.94	3.80%	17.27	3.80%	23.84	3.80%	31.66	3.80%	16.61	3.80%	9.01	3.80%	16.69	3.80%	30.13	3.80%	25.79	3.80%	17.57	3.80%	16.01	3.80%	13.46	3.80%	28.57	3.80%	19.05
Stage Three Growth	2077	3.80%	24.85	3.80%	17.93	3.80%	24.75	3.80%	32.87	3.80%	17.24	3.80%	9.35	3.80%	17.33	3.80%	31.27	3.80%	26.77	3.80%	18.23	3.80%	16.62	3.80%	13.97	3.80%	29.66	3.80%	19.77
Stage Three Growth	2078	3.80%	25.79	3.80%	18.61	3.80%	25.69	3.80%	34.12	3.80%	17.89	3.80%	9.70	3.80%	17.99	3.80%	32.46	3.80%	27.79	3.80%	18.93	3.80%	17.25	3.80%	14.51	3.80%	30.79	3.80%	20.52
Stage Three Growth	2079	3.80%	26.77	3.80%	19.32	3.80%	26.66	3.80%	35.41	3.80%	18.57	3.80%	10.07	3.80%	18.67	3.80%	33.69	3.80%	28.85	3.80%	19.65	3.80%	17.91	3.80%	15.06	3.80%	31.96	3.80%	21.30
Stage Three Growth	2080	3.80%	27.79	3.80%	20.05	3.80%	27.68	3.80%	36.76	3.80%	19.28	3.80%	10.45	3.80%	19.38	3.80%	34.97	3.80%	29.94	3.80%	20.39	3.80%	18.59	3.80%	15.63	3.80%	33.17	3.80%	22.11
Stage Three Growth	2081	3.80%	28.85	3.80%	20.81	3.80%	28.73	3.80%	38.16	3.80%	20.01	3.80%	10.85	3.80%	20.12	3.80%	36.30	3.80%	31.08	3.80%	21.17	3.80%	19.29	3.80%	16.22	3.80%	34.43	3.80%	22.95
Stage Three Growth	2082	3.80%	29.94	3.80%	21.60	3.80%	29.82	3.80%	39.61	3.80%	20.77	3.80%	11.26	3.80%	20.88	3.80%	37.68	3.80%	32.26	3.80%	21.97	3.80%	20.03	3.80%	16.84	3.80%	35.74	3.80%	23.82
Stage Three Growth	2083	3.80%	31.08	3.80%	22.42	3.80%	30.95	3.80%	41.11	3.80%	21.56	3.80%	11.69	3.80%	21.68	3.80%	39.11	3.80%	33.49	3.80%	22.81	3.80%	20.79	3.80%	17.48	3.80%	37.10	3.80%	24.73
Stage Three Growth	2084	3.80%	32.26	3.80%	23.28	3.80%	32.13	3.80%	42.67	3.80%	22.38	3.80%	12.14	3.80%	22.50	3.80%	40.60	3.80%	34.76	3.80%	23.67	3.80%	21.58	3.80%	18.14	3.80%	38.51	3.80%	25.67
Stage Three Growth	2085	3.80%	33.49	3.80%	24.16	3.80%	33.35	3.80%	44.30	3.80%	23.23	3.80%	12.60	3.80%	23.35	3.80%	42.14	3.80%	36.08	3.80%	24.57	3.80%	22.40	3.80%	18.83	3.80%	39.97	3.80%	26.65
Stage Three Growth	2086	3.80%	34.76	3.80%	25.08	3.80%	34.62	3.80%	45.98	3.80%	24.11	3.80%	13.08	3.80%	24.24	3.80%	43.74	3.80%	37.45	3.80%	25.51	3.80%	23.25	3.80%	19.55	3.80%	41.49	3.80%	27.66
Stage Three Growth	2087	3.80%	36.08	3.80%	26.03	3.80%	35.93	3.80%	47.73	3.80%	25.03	3.80%	13.57	3.80%	25.16	3.80%	45.41	3.80%	38.88	3.80%	26.48	3.80%	24.13	3.80%	20.29	3.80%	43.07	3.80%	28.71
Stage Three Growth	2088	3.80%	37.45	3.80%	27.02	3.80%	37.30	3.80%	49.54	3.80%	25.98	3.80%	14.09	3.80%	26.12	3.80%	47.13	3.80%	40.35	3.80%	27.48	3.80%	25.05	3.80%	21.06	3.80%	44.70	3.80%	29.80
Stage Three Growth	2089	3.80%	38.88	3.80%	28.05	3.80%	38.71	3.80%	51.42	3.80%	26.97	3.80%	14.62	3.80%	27.11	3.80%	48.92	3.80%	41.89	3.80%	28.53	3.80%	26.00	3.80%	21.86	3.80%	46.40	3.80%	30.93
Stage Three Growth	2090	3.80%	40.35	3.80%	29.11	3.80%	40.19	3.80%	53.38	3.80%	27.99	3.80%	15.18	3.80%	28.14	3.80%	50.78	3.80%	43.48	3.80%	29.61	3.80%	26.99	3.80%	22.69	3.80%	48.17	3.80%	32.11
Stage Three Growth	2091	3.80%	41.89	3.80%	30.22	3.80%	41.71	3.80%	55.40	3.80%	29.06	3.80%	15.76	3.80%	29.21	3.80%	52.71	3.80%	45.13	3.80%	30.73	3.80%	28.01	3.80%	23.56	3.80%	50.00	3.80%	33.33
Stage Three Growth	2092	3.80%	43.48	3.80%	31.37	3.80%	43.30	3.80%	57.51	3.80%	30.16	3.80%	16.36	3.80%	30.32	3.80%	54.71	3.80%	46.84	3.80%	31.90	3.80%	29.08	3.80%	24.45	3.80%	51.90	3.80%	34.59
Stage Three Growth	2093	3.80%	45.13	3.80%	32.56	3.80%	44.94	3.80%	59.69	3.80%	31.31	3.80%	16.98	3.80%	31.47	3.80%	56.79	3.80%	48.63	3.80%	33.11	3.80%	30.18	3.80%	25.38	3.80%	53.87	3.80%	35.91
Stage Three Growth	2094	3.80%	46.85	3.80%	33.80	3.80%	46.65	3.80%	61.96	3.80%	32.50	3.80%	17.62	3.80%	32.67	3.80%	58.95	3.80%	50.47	3.80%	34.37	3.80%	31.33	3.80%	26.34	3.80%	55.91	3.80%	37.27
Stage Three Growth	2095	3.80%	48.63	3.80%	35.08	3.80%	48.42	3.80%	64.32	3.80%	33.73	3.80%	18.29	3.80%	33.91	3.80%	61.19	3.80%	52.39	3.80%	35.68	3.80%	32.52	3.80%	27.34	3.80%	58.04	3.80%	38.69
Stage Three Growth	2096	3.80%	50.47	3.80%	36.42	3.80%	50.26	3.80%	66.76	3.80%	35.01	3.80%	18.99	3.80%	35.20	3.80%	63.52	3.80%	54.38	3.80%	37.04	3.80%	33.76	3.80%	28.38	3.80%	60.24	3.80%	40.16
Stage Three Growth	2097	3.80%	52.39	3.80%	37.80	3.80%	52.17	3.80%	69.30	3.80%	36.34	3.80%	19.71	3.80%	36.54	3.80%	65.93	3.80%	56.45	3.80%	38.44	3.80%	35.04	3.80%	29.46	3.80%	62.53	3.80%	41.69
Stage Three Growth	2098	3.80%	54.38	3.80%	39.24	3.80%	54.16	3.80%	71.93	3.80%	37.73	3.80%	20.46	3.80%	37.92	3.80%	68.44	3.80%	58.59	3.80%	39.90	3.80%	36.37	3.80%	30.58	3.80%	64.91	3.80%	43.27
Stage Three Growth	2099	3.80%	56.45	3.80%	40.73	3.80%	56.21	3.80%	74.67	3.80%	39.16	3.80%	21.23	3.80%	39.37	3.80%	71.04	3.80%	60.82	3.80%	41.42	3.80%	37.75	3.80%	31.74	3.80%	67.38	3.80%	44.91
Stage Three Growth	2100	3.80%	58.60	3.80%	42.27	3.80%	58.35	3.80%	77.50	3.80%	40.65	3.80%	22.04	3.80%	40.86	3.80%	73.74	3.80%	63.13	3.80%	42.99	3.80%	39.19	3.80%	32.95	3.80%	69.94	3.80%	46.62
Stage Three Growth	2101	3.80%	60.82	3.80%	43.88	3.80%	60.57	3.80%	80.45	3.80%	42.19	3.80%	22.88	3.80%	42.41	3.80%	76.54	3.80%	65.53	3.80%	44.63	3.80%	40.68	3.80%	34.20	3.80%	72.59	3.80%	48.39
Stage Three Growth	2102	3.80%	63.13	3.80%	45.55	3.80%	62.87	3.80%	83.50	3.80%	43.79	3.80%	23.75	3.80%	44.03	3.80%	79.45	3.80%	68.02	3.80%	46.32	3.80%	42.22	3.80%	35.50	3.80%	75.35	3.80%	50.23
Stage Three Growth	2103	3.80%	65.53	3.80%	47.28	3.80%	65.26	3.80%	86.68	3.80%	45.46	3.80%	24.65	3.80%	45.70	3.80%	82.46	3.80%	70.60	3.80%	48.08	3.80%	43.83	3.80%	36.85	3.80%	78.22	3.80%	52.14
Stage Three Growth	2104	3.80%	68.02	3.80%	49.08	3.80%	67.74	3.80%	89.97	3.80%	47.19	3.80%	25.59	3.80%	47.44	3.80%	85.60	3.80%	73.29	3.80%	49.91	3.80%	45.49	3.80%	38.25	3.80%	81.19	3.80%	54.12
Stage Three Growth	2105	3.80%	70.61	3.80%	50.94	3.80%	70.31	3.80%	93.39	3.80%	48.98	3.80%	26.56	3.80%	49.24	3.80%	88.85	3.80%	76.07	3.80%	51.81	3.80%	47.22	3.80%	39.71	3.80%	84.27	3.80%	56.18
Stage Three Growth	2106	3.80%	73.29	3.80%	52.88	3.80%	72.98	3.80%	96.94	3.80%	50.84	3.80%	27.57	3.80%	51.11	3.80%	92.23	3.80%	78.96	3.80%	53.78	3.80%	49.02	3.80%	41.21	3.80%	87.48	3.80%	58.31
Stage Three Growth	2107	3.80%	76.07	3.80%	54.89	3.80%	75.76	3.80%	100.62	3.80%	52.77	3.80%	28.62	3.80%	53.05	3.80%	95.73	3.80%	81.96	3.80%	55.82	3.80%	50.88	3.80%	42.78	3.80%	90.80	3.80%	60.53
Stage Three Growth	2108	3.80%	78.97	3.80%	56.97	3.80%	78.64	3.80%	104.45	3.80%	54.78	3.80%	29.70	3.80%	55.07	3.80%	99.37	3.80%	85.08	3.80%	57.94	3.80%	52.81	3.80%	44.41	3.80%	94.25	3.80%	62.83
Stage Three Growth	2109	3.80%	81.97	3.80%	59.14	3.80%	81.62	3.80%	108.42	3.80%	56.86	3.80%	30.83	3.80%	57.16	3.80%	103.15	3.80%	88.31	3.80%	60.14	3.80%	54.82	3.80%	46.09	3.80%	97.83	3.80%	65.22
Stage Three Growth	2110	3.80%	85.08	3.80%	61.38	3.80%	84.73	3.80%	112.54	3.80%	59.02	3.80%	32.00	3.80%	59.33	3.80%	107.06	3.80%	91.67	3.80%	62.43	3.80%	56.90	3.80%	47.84	3.80%	101.55	3.80%	67.69
Stage Three Growth	2111	3.80%	88.31	3.80%	63.72	3.80%	87.95	3.80%	116.81	3.80%	61.26	3.80%	33.22	3.80%	61.59	3.80%	111.13	3.80%	95.15	3.80%	64.80	3.80%	59.06	3.80%	49.66	3.80%	105.41	3.80%	70.27
Stage Three Growth	2112	3.80%	91.67	3.80%	66.14	3.80%	91.29	3.80%	121.25	3.80%	63.59	3.80%	34.48	3.80%	63.93	3.80%	115.36	3.80%	98.77	3.80%	67.26	3.80%	61.31	3.80%	51.55	3.80%	109.41	3.80%	72.94
Stage Three Growth	2113	3.80%	95.15	3.80%	68.65	3.80%	94.76	3.80%	125.86	3.80%	66.01	3.80%	35.79	3.80%	66.36	3.80%	119.74	3.80%	102.52	3.80%	69.82	3.80%	63.64	3.80%	53.51	3.80%	113.57	3.80%	75.71
Stage Three Growth	2114	3.80%	98.77	3.80%	71.26	3.80%	98.36	3.80%	130.64	3.80%	68.52	3.80%	37.15	3.80%	68.88	3.80%	124.29	3.80%	106.42	3.80%	72.47	3.80%	66.06	3.80%	55.54	3.80%	117.89	3.80%	78.59
Stage Three Growth	2115	3.80%	102.52	3.80%	73.97	3.80%	102.09	3.80%	135.60	3.80%	71.12	3.80%	38.56	3.80%	71.50	3.80%	129.01	3.80%	110.46	3.80%	75.23	3.80%	68.57	3.80%	57.65	3.80%	122.37	3.80%	81.57
Stage Three Growth	2116	3.80%	106.42	3.80%	76.78	3.80%	105.97	3.80%	140.76	3.80%	73.82	3.80%	40.03	3.80%	74.21	3.80%	133.92	3.80%	114.66	3.80%	78.08	3.80%	71.17	3.80%	59.84	3.80%	127.02	3.80%	84.67
Stage Three Growth	2117	3.80%	110.46	3.80%	79.70	3.80%	110.00	3.80%	146.11	3.80%	76.63	3.80%	41.55	3.80%	77.03	3.80%	139.00	3.80%	119.01	3.80%	81.05	3.80%	73.88	3.80%	62.12	3.80%	131.84	3.80%	87.89
Stage Three Growth	2118	3.80%	114.66	3.80%	82.72	3.80%	114.18	3.80%	151.66	3.80%	79.54	3.80%	43.13	3.80%	79.96	3.80%	144.29	3.80%	123.54	3.80%	84.13	3.80%	76.68	3.80%	64.48	3.80%	136.85	3.80%	91.23
Stage Three Growth	2119	3.80%	119.02	3.80%	85.87	3.80%	118.52	3.80%	157.42	3.80%	82.56	3.80%	44.77	3.80%	83.00	3.80%	149.77	3.80%	128.23	3.80%	87.33	3.80%	79.60	3.80%	66.93	3.80%	142.05	3.80%	94.70
Stage Three Growth	2120	3.80%	123.54	3.80%	89.13	3.80%	123.02	3.80%	163.40	3.80%	85.70	3.80%	46.47	3.80%	86.15	3.80%	155.46	3.80%	133.10	3.80%	90.65	3.80%	82.62	3.80%	69.47	3.80%	147.45	3.80%	98.29
Stage Three Growth	2121	3.80%	128.23	3.80%	92.52	3.80%	127.70	3.80%	169.61	3.80%	88.96	3.80%	48.24	3.80%	89.43	3.80%	161.37	3.80%	138.16	3.80%	94.09	3.80%	85.76	3.80%	72.11	3.80%	153.06	3.80%	102.03
Stage Three Growth	2122	3.80%	133.11	3.80%	96.03	3.80%	132.55	3.80%	176.06	3.80%	92.34	3.80%	50.07	3.80%	92.82	3.80%	167.50	3.80%	143.41	3.80%	97.67	3.80%	89.02	3.80%	74.85	3.80%	158.87	3.80%	105.91
Stage Three Growth	2123	3.80%	138.17	3.80%	99.68	3.80%	137.59	3.80%	182.75	3.80%	95.84	3.80%	51.97	3.80%	96.35	3.80%	173.87	3.80%	148.86	3.80%	101.38	3.80%	92.40	3.80%	77.70	3.80%	164.91	3.80%	109.93
Stage Three Growth	2124	3.80%	143.42	3.80%	103.47	3.80%	142.82	3.80%	189.69	3.80%	99.49	3.80%	53.95	3.80%	100.01	3.80%	180.47	3.80%	154.52	3.80%	105.23	3.80%	95.91	3.80%	80.65	3.80%	171.18	3.80%	114.11
Stage Three Growth	2125	3.80%	148.87	3.80%	107.40	3.80%	148.24	3.80%	196.90	3.80%	103.27	3.80%	56.00	3.80%	103.81	3.80%	187.33	3.80%	160.39	3.80%	109.23	3.80%	99.56	3.80%	83.71	3.80%	177.68	3.80%	118.44
Stage Three Growth	2126	3.80%	154.52	3.80%	111.48	3.80%	153.88	3.80%	204.38	3.80%	107.19	3.80%	58.13	3.80%	107.76	3.80%	194.45	3.80%	166.48	3.80%	113.38	3.80%	103.34	3.80%	86.89	3.80%	184.43	3.80%	122.95
Stage Three Growth	2127	3.80%	160.39	3.80%	115.72	3.80%	159.72	3.80%	212.15	3.80%	111.26	3.80%	60.33	3.80%	111.85	3.80%	201.84	3.80%	172.81	3.80%	117.69	3.80%	107.27	3.80%	90.20	3.80%	191.44	3.80%	127.62
Stage Three Growth	2128	3.80%	166.49	3.80%	120.12	3.80%	165.79	3.80%	220.21	3.80%	115.49	3.80%	62.63	3.80%	116.10	3.80%	209.51	3.80%	179.38	3.80%	122.16	3.80%	111.35	3.80%	93.62	3.80%	198.72	3.80%	132.47
Stage Three Growth	2129	3.80%	172.82	3.80%	124.68	3.80%	172.09	3.80%	228.58	3.80%	119.88	3.80%	65.01	3.80%	120.52	3.80%	217.47	3.80%	186.19	3.80%	126.80	3.80%	115.58	3.80%	97.18	3.80%	206.27	3.80%	137.50
Stage Three Growth	2130	3.80%	179.38	3.80%	129.42	3.80%	178.63	3.80%	237.27	3.80%	124.44	3.80%	67.48	3.80%	125.09	3.80%	225.73	3.80%	193.27	3.80%	131.62	3.80%	119.97	3.80%	100.87	3.80%	214.11	3.80%	142.73
Stage Three Growth	2131	3.80%	186.20	3.80%	134.34	3.80%	185.42	3.80%	246.28	3.80%	129.17	3.80%	70.04	3.80%	129.85	3.80%	234.31	3.80%	200.61	3.80%	136.62	3.80%	124.53	3.80%	104.71	3.80%	222.24	3.80%	148.15
Stage Three Growth	2132	3.80%	193.27	3.80%	139.44	3.80%	192.47	3.80%	255.64	3.80%	134.07	3.80%	72.70	3.80%	134.78	3.80%	243.21	3.80%	208.24	3.80%	141.81	3.80%	129.26	3.80%	108.69	3.80%	230.69	3.80%	153.78
Stage Three Growth	2133	3.80%	200.62	3.80%	144.74	3.80%	199.78	3.80%	265.35	3.80%	139.17	3.80%	75.46	3.80%	139.90	3.80%	252.46	3.80%	216.15	3.80%	147.20	3.80%	134.17	3.80%	112.82	3.80%	239.45	3.80%	159.62
Stage Three Growth	2134	3.80%	208.24	3.80%	150.24	3.80%	207.37	3.80%	275.44	3.80%	144.46	3.80%	78.33	3.80%	145.22	3.80%	262.05	3.80%	224.36	3.80%	152.80	3.80%	139.27	3.80%	117.10	3.80%	248.55	3.80%	165.69

Stage Three Growth	2135	3.80%	216.16	3.80%	155.95	3.80%	215.25	3.80%	285.91	3.80%	149.95	3.80%	81.31	3.80%	150.74	3.80%	272.01	3.80%	232.89	3.80%	158.60	3.80%	144.56	3.80%	121.55	3.80%	258.00	3.80%	171.98
Stage Three Growth	2136	3.80%	224.37	3.80%	161.88	3.80%	223.43	3.80%	296.77	3.80%	155.64	3.80%	84.40	3.80%	156.47	3.80%	282.34	3.80%	241.74	3.80%	164.63	3.80%	150.06	3.80%	126.17	3.80%	267.80	3.80%	178.52
Stage Three Growth	2137	3.80%	232.90	3.80%	168.03	3.80%	231.92	3.80%	308.05	3.80%	161.56	3.80%	87.61	3.80%	162.41	3.80%	293.07	3.80%	250.92	3.80%	170.89	3.80%	155.76	3.80%	130.97	3.80%	277.98	3.80%	185.30
Stage Three Growth	2138	3.80%	241.75	3.80%	174.41	3.80%	240.74	3.80%	319.75	3.80%	167.70	3.80%	90.94	3.80%	168.58	3.80%	304.21	3.80%	260.46	3.80%	177.38	3.80%	161.68	3.80%	135.94	3.80%	288.54	3.80%	192.35
Stage Three Growth	2139	3.80%	250.93	3.80%	181.04	3.80%	249.89	3.80%	331.90	3.80%	174.07	3.80%	94.39	3.80%	174.99	3.80%	315.77	3.80%	270.36	3.80%	184.12	3.80%	167.82	3.80%	141.11	3.80%	299.50	3.80%	199.65
Implied Cost of Equity			**9.67%**		**8.48%**		**7.97%**		**9.24%**		**8.09%**		**8.02%**		**7.81%**		**7.83%**		**10.44%**		**8.73%**		**9.95%**		**6.16%**		**8.55%**		**7.89%**

Mean	8.49%
Median	8.29%
Selected Three-Stage DGM Cost of Equity	**8.39%**

Equity Component of the Direct Rate

Company	Value Line P/E Ratio
ALLETE Inc.	14.4
Alliant Energy Corp	16.8
Ameren Corp	17.0
American Electric Power Co Inc.	13.8
Black Hills Corp	14.5
CenterPoint Energy Inc.	15.8
CMS Energy Corp	18.3
DTE Energy Company	14.2
Evergy Inc	12.3
Northwestern Corp	15.4
OGE Energy Corp	16.5
Otter Tail Corp	18.5
WEC Energy Group	16.1
Xcel Energy Inc.	18.3
Mean	15.9
Median	16.0
Selected Price to Earnings (P/E) Ratio	15.9
Indicated Equity Component of the Direct Rate	**6.29%**

We placed the most reliance on the mean price to earnings ratio.

Notes:

The Price/Earnings Ratio was downloaded from Value Line.

Beta Analysis

Company	Beta
ALLETE Inc.	0.95
Alliant Energy Corp	0.90
Ameren Corp	0.90
American Electric Power Co Inc.	0.80
Black Hills Corp	1.00
CenterPoint Energy Inc.	1.15
CMS Energy Corp	0.85
DTE Energy Company	1.00
Evergy Inc	0.95
Northwestern Corp	0.95
OGE Energy Corp	1.05
Otter Tail Corp	0.90
WEC Energy Group	0.85
Xcel Energy Inc.	0.85
Beta Mean	0.94
Beta Median	0.93
Unlevered and Relevered Mean*	0.94
Indicated Beta	**0.93**

We considered the mean, median, and unlevered/relevered mean. We placed more reliance on the median when selecting the indicated beta.

Notes:

*See the Unlevering Relevering Beta page for the calculation

Unlevering/Relevering Betas

Unlevering of Betas					
Company	*Value Line* **Actual Income Tax Rate**	*From Capital Structure Page* **Actual Debt in Capital Structure**	*Structure Page* **Actual Equity in Capital Structure**	*Value Line* **Levered Beta (Published)**	*Formula* **Unlevered Beta**
ALLETE Inc.	NMF	34.61%	65.39%	0.95	N/A
Alliant Energy Corp	1.00%	40.03%	59.97%	0.90	0.54
Ameren Corp	12.00%	40.29%	59.34%	0.90	0.56
American Electric Power Co Inc.	21.00%	47.06%	52.94%	0.80	0.47
Black Hills Corp	8.50%	49.93%	50.07%	1.00	0.52
CenterPoint Energy Inc.	25.00%	48.83%	51.17%	1.15	0.67
CMS Energy Corp	15.00%	45.54%	53.74%	0.85	0.49
DTE Energy Company	5.00%	46.16%	53.84%	1.00	0.55
Evergy Inc	9.00%	44.38%	55.62%	0.95	0.55
Northwestern Corp	3.00%	44.78%	55.22%	0.95	0.53
OGE Energy Corp	12.00%	38.28%	61.72%	1.05	0.68
Otter Tail Corp	20.00%	20.76%	79.24%	0.90	0.74
WEC Energy Group	19.00%	38.06%	61.87%	0.85	0.57
Xcel Energy Inc.	NMF	41.52%	58.48%	0.85	N/A
			Average	**0.94**	

Relevering of Betas				
Company	*Formula* **Composite Income Tax Rate**	*From Capital Structure Page* **Industry Debt in Capital Structure**	*From Capital Structure* **Industry Equity in Capital**	*Formula* **Levered Beta**
ALLETE Inc.	12.54%	42.00%	58.00%	N/A
Alliant Energy Corp	12.54%	42.00%	58.00%	0.88
Ameren Corp	12.54%	42.00%	58.00%	0.91
American Electric Power Co Inc.	12.54%	42.00%	58.00%	0.77
Black Hills Corp	12.54%	42.00%	58.00%	0.85
CenterPoint Energy Inc.	12.54%	42.00%	58.00%	1.09
CMS Energy Corp	12.54%	42.00%	58.00%	0.80
DTE Energy Company	12.54%	42.00%	58.00%	0.90
Evergy Inc	12.54%	42.00%	58.00%	0.90
Northwestern Corp	12.54%	42.00%	58.00%	0.87
OGE Energy Corp	12.54%	42.00%	58.00%	1.11
Otter Tail Corp	12.54%	42.00%	58.00%	1.21
WEC Energy Group	12.54%	42.00%	58.00%	0.93
Xcel Energy Inc.	12.54%	42.00%	58.00%	N/A
			Average	**0.94**

Notes:

Uses the Hamada Formula

Unlevered Beta = Levered Beta / [1 + (1 - Tax Rate) x (Debt/Equity))], using company-specific components

Relevered Beta = Unlevered Beta [1 + (1 - Tax Rate) x (Debt/Equity)], Using industry components for Tax Rate, Debt, and Equity

Calculation of Market to Book Ratios for the Electric Market Segment

- December 31, 2023 calendar year information for the January 2, 2024 Assessment
- A market to book ratio over one would be an indication of no obsolescence.
- Market Value estimates for Common Equity are from Value Line. Market Value Estimates for Long-Term Debt are from the company's 10-K.
- Book Value amounts are from the company's 10-K.

Market to Book Ratio for Equity

Company	Market Value of Common Equity from Value Line	Book Value of Common Equity from 10-K	Market to Book Ratio	Source
ALLETE Inc.	3,185,972,559	2,809,600,000	1.13	ALLETE, Inc. 2023 10-K p. 109 & 143
Alliant Energy Corp	12,625,845,587	6,777,000,000	1.86	Alliant Energy Corp. 2023 10-K, p. 48
Ameren Corp	20,367,723,418	11,478,000,000	1.77	Ameren Corp. 2023 10-K, p. 89
American Electric Power Co Inc.	41,302,272,216	25,246,700,000	1.64	American Electric Power Co. 2022 10-K, p. S-4
Black Hills Corp	3,810,251,674	3,215,300,000	1.19	Black Hills Corp. 2023 10-K, p. 63
CenterPoint Energy Inc.	17,642,698,502	9,667,000,000	1.83	CenterPoint Energy Inc. 2023 10-K, p. 89
CMS Energy Corp	16,726,805,296	7,544,000,000	2.22	CMS Energy Corp. 2023 10-K, p. 99
DTE Energy Company	21,628,290,113	11,050,000,000	1.96	DTE Energy Co. 2023 10-K, p. 60
Evergy Inc.	11,651,436,795	9,663,100,000	1.21	Evergy Inc. 2023 10-K, p. 77
Northwestern Corp	3,146,013,766	2,785,314,000	1.13	NorthWestern Corp. 2023 10-K, p. 9
OGE Energy Corp	6,996,037,625	4,511,600,000	1.55	OGE Energy Corp. 2023 10-K, p. 52
Otter Tail Corp	3,145,807,494	1,443,006,000	2.18	Otter Tail Corp. 2023 10-K, p. 42
WEC Energy Group	25,935,027,139	11,724,200,000	2.21	WEC Energy Group. 2023 10-K, p. 71
Xcel Energy Inc.	35,084,481,562	17,616,000,000	1.99	Xcel Energy Inc. 2023 10-K, p. 50
		Average	**1.71**	

Market to Book Ratio for Debt

Company	Market Value of Long-Term Debt from 10-K	Book Value of Long-Term Debt from 10-K	Market to Book Ratio	Source
ALLETE Inc.	1,670,600,000	1,799,400,000	0.93	ALLETE, Inc. 2023 10-K, p. 198
Alliant Energy Corp	8,677,000,000	9,034,000,000	0.96	Alliant Energy Corp. 2023 10-K, p. 93
Ameren Corp	14,833,000,000	15,970,000,000	0.93	Ameren Corp. 2023 10-K, p. 133
American Electric Power Co Inc.	37,325,700,000	40,143,200,000	0.93	American Elec Power Co. 2023 10-K, p. 257
Black Hills Corp	4,215,600,000	4,401,200,000	0.96	Black Hills Corp. 2023 10-K, p. 89
CenterPoint Energy Inc.	17,804,000,000	18,609,000,000	0.96	CenterPoint Energy Inc. 2023 10-K, p. 141
CMS Energy Corp	14,305,000,000	15,483,000,000	0.92	CMS Energy Corp. 2023 10-K, p. 134
DTE Energy Company	16,178,000,000	19,546,000,000	0.83	DTE Energy Co. 2023 10-K, p. 109
Evergy Inc.	17,960,300,000	19,358,100,000	0.93	Evergy Inc. 2023 10-K, p. 138
Northwestern Corp	2,521,030,000	2,784,585,000	0.91	NorthWestern Corp. 2023 10-K, p. F-21
OGE Energy Corp	4,114,800,000	4,340,500,000	0.95	OGE Energy Corp. 2023 10-K, p. 74
Otter Tail Corp	792,261,000	905,481,000	0.87	Otter Tail Corp. 2023 10-K, p. 72
WEC Energy Group	15,564,300,000	16,631,100,000	0.94	WEC Energy Group. 2023 10-K, p. 132
Xcel Energy Inc.	22,927,000,000	25,465,000,000	0.90	Xcel Energy Inc. 2023 10-K, p. 70
		Average	**0.92**	

Application of Capital Structure as determined in the Capitalization Rate Study

	Capital Structure	Market to Book	Composite
Common Equity	58.00%	1.71	0.99
Long-term Debt	42.00%	0.92	0.39
			1.38

Appendix B - Gas Distribution

Yield Rate

	Capital Structure	Rate	Composite
Long-Term Debt	47.00%	5.64%	2.65%
Common Equity	53.00%	9.94%	5.27%
Yield Rate			**7.92%**

Gas Distribution Yield Rate	**7.92%**

Capital Structure

Company	Value of Long-Term Debt	Value of Preferred Equity	Value of Common Equity	Total Market Value	% Long-Term Debt	% Preferred Equity	% Common Equity
Atmos Energy Corp	6,642,600,000	-	16,497,150,889	23,139,750,889	28.71%	0.00%	71.29%
Black Hills Corp	3,799,500,000	-	3,810,251,674	7,609,751,674	49.93%	0.00%	50.07%
CenterPoint Energy Inc.	16,838,000,000	-	17,642,698,502	34,480,698,502	48.83%	0.00%	51.17%
CMS Energy Corp	14,177,000,000	224,000,000	16,726,805,296	31,127,805,296	45.54%	0.72%	53.74%
New Jersey Resources Corp	2,728,700,000	-	4,017,600,113	6,746,300,113	40.45%	0.00%	59.55%
NiSource Inc.	11,011,300,000	1,547,000,000	10,256,837,091	22,815,137,091	48.26%	6.78%	44.96%
Northwest Natural Gas	1,424,600,000	-	1,314,823,188	2,739,423,188	52.00%	0.00%	48.00%
ONE Gas Inc	1,862,600,000	-	3,308,943,164	5,171,543,164	36.02%	0.00%	63.98%
Southwest Gas Holdings Inc.	5,235,500,000	-	4,201,742,719	9,437,242,719	55.48%	0.00%	44.52%
Spire Inc / Laclede Group Inc.	3,553,300,000	242,000,000	3,010,477,588	6,805,777,588	52.21%	3.56%	44.23%
WEC Energy Group	15,956,500,000	30,400,000	25,935,027,139	41,921,927,139	38.06%	0.07%	61.87%
				Mean	45.04%	1.01%	53.94%
				Median	48.26%	0.00%	51.17%

Indicated Industry Capital Structure	**47.00%**		**53.00%**

Indexed Rate of Debt

Company	Debt Rating	Long-Term Debt Rate
Atmos Energy Corp	A1	5.42%
Black Hills Corp	Baa2	5.68%
CenterPoint Energy Inc.	Baa2	5.68%
CMS Energy Corp	Baa2	5.68%
New Jersey Resources Corp	A1	5.42%
NiSource Inc.	Baa2	5.68%
Northwest Natural Gas	Baa1	5.68%
ONE Gas Inc	A3	5.42%
Southwest Gas Holdings Inc.	Baa2	5.68%
Spire Inc / Laclede Group Inc.	Baa2	5.68%
WEC Energy Group	Baa1	5.68%

Mean	5.61%
Median	5.68%
Mode	5.68%

Indicated Rate of Debt	**5.64%**

We placed equal reliance on the mean and median when selecting the indicated rate of debt.

Public Utility Bond Yield Averages from Mergent Bond Record, January 2024 Edition

Public Utility Bond Averages, December 2023

Mergent	S&P	Dec. Yield Avg.
Aaa, Aa1, Aa2 Aa3	AAA, AA+, AA, AA-	5.27%
A1, A2, A3	A+, A, A-	5.42%
Baa1, Baa2, Baa3	BBB+, BBB, BBB-	5.68%

Indicated Rate of Equity

Model	Rate
CAPM - Ex Ante, Three Stage	6.92%
CAPM - Damodaran	8.44%
CAPM - The CFO Survey	8.75%
CAPM - Fernandez, Banuls, and Acin	9.43%
CAPM - Ex Post (BVR Historical, Arithmetic)	10.11%
CAPM - Ex Post (BVR Historical, Geometric)	8.97%
Empirical CAPM - Ex Ante, Three Stage	6.99%
Empirical CAPM - Damodaran	8.56%
Empirical CAPM - Graham and Harvey	8.87%
Empirical CAPM - Fernandez, Banuls, and Acin	9.57%
Empirical CAPM - Ex Post (BVR Historical, Arithmetic)	10.27%
Empirical CAPM - Ex Post (BVR Historical, Geometric)	9.10%
DGM - Dividend Growth	9.07%
DGM - Earnings Growth	11.05%
DGM - Two-Stage	10.01%
DGM - Three-Stage	8.77%
Indicated Rate of Equity	**9.94%**

We established a range of acceptability for the cost of equity with all available models. We considered all of the data and placed more reliance on the CAPM using the Business Valuation Resources Historical (arithmetic) equity risk premium, and the Damodaran CAPM.

Direct Rate and Growth

	Capital Structure	Rate	Composite
Debt Component	47.00%	5.64%	2.65%
Equity Component	53.00%	6.62%	3.51%
Direct Rate			**6.16%**

Direct Rate	**6.16%**

Capital Asset Pricing Model (CAPM)

(ERP x β) + RFR = Indicated Equity Rate

	Equity Risk Premium (ERP)	x Industry Beta (β)	= Industry Risk Premium	+ Risk-Free Rate[1] (RFR)	Indicated Equity Rate
Three Stage Ex Ante[2]	2.91%	0.90	2.62%	4.30%	6.92%
Dr. Damodaran ERP[3]	4.60%	0.90	4.14%	4.30%	8.44%
The CFO Survey[4]	4.94%	0.90	4.45%	4.30%	8.75%
Fernandez, Banuls and Acin[5]	5.70%	0.90	5.13%	4.30%	9.43%
BVR - Historical, Arithmetic Mean[6]	6.45%	0.90	5.81%	4.30%	10.11%
BVR - Historical, Geometric Mean[7]	5.19%	0.90	4.67%	4.30%	8.97%

Notes:

1 U.S. Treasury on January 2, 2024 - 20-year Coupon Bond Yield, Daily Observations, Retrieved January 24, 2024 from www.federalreserve.gov

2 Three Stage Dividend Growth Model, S&P 500. See Appendix F, Three Stage Ex Ante Calculation

3 Implied Equity Risk Premium on January 5, 2024 as determined by Dr. Aswath Damodaran; Retrieved January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

4 The CFO Survey (2023). Data & Results December 20, 2023. Mean average annual S&P return over next ten years (8.9%) less annual yield on 10-year Treasury Bonds (3.96%). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

5 Fernandez, P., Garcia D., & Acin, J. F. (2023). Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023. SSRN Electronic Journal. Retrieved January 22, 2024 from https://ssrn.com/abstract=4407839

6 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using arithmetic mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

7 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using geometric mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

Empirical Capital Asset Pricing Model (ECAPM)

(ERP x β x .75) + (ERP x .25) + RFR = Indicated Equity Rate

Model	Equity Risk Premium (ERP)	Industry Beta (β)	Weighted Industry Risk Premium (weighted at 75%)	Weighted Equity Risk Premium (weighted at 25%)	Risk-Free Rate (RFR)[1]	Indicated Equity Rate
Three Stage Ex Ante[4]	2.91%	0.90	1.96%	0.73%	4.30%	**6.99%**
Dr. Damodaran ERP[5]	4.60%	0.90	3.11%	1.15%	4.30%	**8.56%**
The CFO Survey[7]	4.94%	0.90	3.33%	1.24%	4.30%	**8.87%**
Fernandez, Banuls and Acin[8]	5.70%	0.90	3.85%	1.43%	4.30%	**9.57%**
BVR - Historical, Arithmetic Mean[9]	6.45%	0.90	4.35%	1.61%	4.30%	**10.27%**
BVR - Historical, Geometric Mean[10]	5.19%	0.90	3.50%	1.30%	4.30%	**9.10%**

Notes:

1 U.S. Treasury on January 2, 2024 - 20-year Coupon Bond Yield, Daily Observations, Retrieved January 24, 2024 from www.federalreserve.gov

2 Three Stage Dividend Growth Model, S&P 500. See Appendix F, Three Stage Ex Ante Calculation

3 Implied Equity Risk Premium on January 5, 2024 as determined by Dr. Aswath Damodaran; Retrieved January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

4 The CFO Survey (2023). Data & Results December 20, 2023. Mean average annual S&P return over next ten years (8.9%) less annual yield on 10-year Treasury Bonds (3.96%). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

5 Fernandez, P., Garcia D., & Acin, J. F. (2023). Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023. SSRN Electronic Journal. Retrieved January 22, 2024 from https://ssrn.com/abstract=4407839

6 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using arithmetic mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

7 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using geometric mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

Single-Stage Dividend Growth Model

Company	Current Dividend Yield (DY)	Projected Short-term EPS Growth Rate (EG)	Projected Short-term Dividend Growth Rate (DG)	Cost of Equity Earnings Growth DY + EG	Cost of Equity Dividend Growth DY + DG
Atmos Energy Corp	3.00%	7.00%	7.50%	10.00%	10.50%
Black Hills Corp	4.60%	3.00%	4.50%	7.60%	9.10%
CenterPoint Energy	2.90%	8.50%	4.00%	11.40%	6.90%
CMS Energy Corp	3.40%	5.50%	5.00%	8.90%	8.40%
New Jersey Resources Corp	4.00%	5.00%	5.00%	9.00%	9.00%
NiSource Inc.	4.20%	9.50%	4.50%	13.70%	8.70%
Northwest Natural Gas	5.50%	6.50%	0.50%	12.00%	6.00%
ONE Gas Inc	4.60%	6.50%	5.50%	11.10%	10.10%
Southwest Gas Holdings Inc.	4.20%	10.00%	5.50%	14.20%	9.70%
Spire Inc / Laclede Group Inc.	5.20%	8.00%	5.00%	13.20%	10.20%
WEC Energy Group	3.80%	6.00%	7.00%	9.80%	10.80%
Mean	4.13%	6.86%	4.91%	10.99%	9.04%
Median	4.20%	6.50%	5.00%	11.10%	9.10%

DGM - Dividend Growth, Indicated Rate	**9.07%**
DGM - Earnings Growth, Indicated Rate	**11.05%**

We placed equal reliance on the mean and median to arrive at the indicated rates for DGM - Earnings Growth and DGM - Dividend Growth.

Notes:

Dividend Yield and growth rates provided by Value Line

MGE Energy Inc. is excluded from the DGM calculation as the company does not have short-term growth estimates published in their Value Line tearsheet.

Two-Stage Dividend Growth Model

K_E = (DY x (1+ 0.5(G))) + 0.67(G1) +0.33(g)

K_E Cost of Equity
DY Dividend Yield
G_1 Short-term Growth Estimate
g Stable Growth
G Average Growth Rate

Company	**DY** Dividend Yield	**G1** Short-term Growth Estimate	**g** Stable Growth	**G** Average Growth Rate	**K_E** Cost of Equity
Atmos Energy Corp	3.00%	7.00%	3.80%	5.40%	9.03%
Black Hills Corp	4.60%	3.00%	3.80%	3.40%	7.94%
CenterPoint Energy Inc.	2.90%	8.50%	3.80%	6.15%	9.94%
CMS Energy Corp	3.40%	5.50%	3.80%	4.65%	8.42%
New Jersey Resources Corp	4.00%	5.00%	3.80%	4.40%	8.69%
NiSource Inc.	4.20%	9.50%	3.80%	6.65%	11.96%
Northwest Natural Gas	5.50%	6.50%	3.80%	5.15%	11.25%
ONE Gas Inc	4.60%	6.50%	3.80%	5.15%	10.33%
Southwest Gas Holdings Inc.	4.20%	10.00%	3.80%	6.90%	12.30%
Spire Inc / Laclede Group Inc.	5.20%	8.00%	3.80%	5.90%	11.97%
WEC Energy Group	3.80%	6.00%	3.80%	4.90%	9.17%

Mean	10.09%
Median	9.94%
Two-Stage DGM, Indicated Rate	**10.01%**

We placed equal reliance on the mean and median when selecting the indicated rate.

Notes:

Dividend Yield provided by Value Line

Growth Estimates, Next 5 Years for Earnings provided Value Line

Stable growth rate is the nominal growth rate determined in the Capitalization Rate Study Narrative (indicated long-term growth rate of the U.S. economy of 1.8% plus the expected inflation rate of 2.0%).

Three-Stage Dividend Growth Model

Start Price - recent price from Value Line
Expected dividends - estimated dividends from Value Line
Stage one growth - projected earnings growth rate from Value Line
Stage two growth - reversion to long-term growth rate
Stage three growth - long-term growth rate developed in Study 3.80%

Company	Year	Atmos Energy Corp		Black Hills Corp		CenterPoint Energy Inc.		CMS Energy Corp		New Jersey Resources Corp		NiSource Inc.		Northwest Natural Gas Co		ONE Gas Inc		Southwest Gas Holdings Inc.		Spire Inc / Laclede Group Inc.		WEC Energy Group	
Start Price	2023		-111.12		-56.04		-27.95		-57.33		-41.18		-24.81		-35.75		-59.67		-58.75		-57.23		-82.22
Expected Dividends	2024		3.22		2.58		0.83		2.04		1.68		1.04		1.95		2.72		2.48		3.00		3.33
Stage One Growth	2025	7.00%	3.45	3.00%	2.66	8.50%	0.90	5.50%	2.15	5.00%	1.76	9.50%	1.14	6.50%	2.08	6.50%	2.90	10.00%	2.73	8.00%	3.24	6.00%	3.53
Stage One Growth	2026	7.00%	3.69	3.00%	2.74	8.50%	0.98	5.50%	2.27	5.00%	1.85	9.50%	1.25	6.50%	2.21	6.50%	3.09	10.00%	3.00	8.00%	3.50	6.00%	3.74
Stage One Growth	2027	7.00%	3.94	3.00%	2.82	8.50%	1.06	5.50%	2.40	5.00%	1.94	9.50%	1.37	6.50%	2.36	6.50%	3.29	10.00%	3.30	8.00%	3.78	6.00%	3.97
Stage One Growth	2028	7.00%	4.22	3.00%	2.90	8.50%	1.15	5.50%	2.53	5.00%	2.04	9.50%	1.50	6.50%	2.51	6.50%	3.50	10.00%	3.63	8.00%	4.08	6.00%	4.20
Stage One Growth	2029	7.00%	4.52	3.00%	2.99	8.50%	1.25	5.50%	2.67	5.00%	2.14	9.50%	1.64	6.50%	2.67	6.50%	3.73	10.00%	3.99	8.00%	4.41	6.00%	4.46
Stage Two Growth	2030	6.71%	4.82	3.07%	3.08	8.07%	1.35	5.35%	2.81	4.89%	2.25	8.98%	1.78	6.25%	2.84	6.25%	3.96	9.44%	4.37	7.62%	4.74	5.80%	4.71
Stage Two Growth	2031	6.42%	5.13	3.15%	3.18	7.65%	1.45	5.19%	2.95	4.78%	2.36	8.46%	1.94	6.01%	3.01	6.01%	4.20	8.87%	4.76	7.24%	5.09	5.60%	4.98
Stage Two Growth	2032	6.13%	5.44	3.22%	3.28	7.22%	1.56	5.04%	3.10	4.67%	2.47	7.95%	2.09	5.76%	3.18	5.76%	4.44	8.31%	5.15	6.85%	5.44	5.40%	5.25
Stage Two Growth	2033	5.84%	5.76	3.29%	3.39	6.79%	1.66	4.88%	3.25	4.56%	2.58	7.43%	2.24	5.52%	3.36	5.52%	4.68	7.75%	5.55	6.47%	5.79	5.20%	5.52
Stage Two Growth	2034	5.55%	6.08	3.36%	3.50	6.36%	1.77	4.73%	3.41	4.45%	2.69	6.91%	2.40	5.27%	3.54	5.27%	4.93	7.18%	5.95	6.09%	6.14	5.00%	5.80
Stage Two Growth	2035	5.25%	6.40	3.44%	3.62	5.94%	1.87	4.57%	3.56	4.35%	2.81	6.39%	2.55	5.03%	3.71	5.03%	5.18	6.62%	6.35	5.71%	6.49	4.80%	6.07
Stage Two Growth	2036	4.96%	6.72	3.51%	3.75	5.51%	1.98	4.42%	3.72	4.24%	2.93	5.87%	2.70	4.78%	3.89	4.78%	5.43	6.05%	6.73	5.33%	6.84	4.60%	6.35
Stage Two Growth	2037	4.67%	7.03	3.58%	3.89	5.08%	2.08	4.26%	3.88	4.13%	3.05	5.35%	2.85	4.54%	4.07	4.54%	5.67	5.49%	7.10	4.95%	7.17	4.40%	6.63
Stage Two Growth	2038	4.38%	7.34	3.65%	4.03	4.65%	2.17	4.11%	4.04	4.02%	3.17	4.84%	2.99	4.29%	4.24	4.29%	5.92	4.93%	7.45	4.56%	7.50	4.20%	6.91
Stage Two Growth	2039	4.09%	7.64	3.73%	4.18	4.23%	2.27	3.95%	4.20	3.91%	3.30	4.32%	3.11	4.05%	4.41	4.05%	6.16	4.36%	7.77	4.18%	7.82	4.00%	7.19
Stage Three Growth	2040	3.80%	7.93	3.80%	4.34	3.80%	2.35	3.80%	4.36	3.80%	3.42	3.80%	3.23	3.80%	4.58	3.80%	6.39	3.80%	8.07	3.80%	8.11	3.80%	7.46
Stage Three Growth	2041	3.80%	8.23	3.80%	4.50	3.80%	2.44	3.80%	4.53	3.80%	3.55	3.80%	3.36	3.80%	4.76	3.80%	6.63	3.80%	8.38	3.80%	8.42	3.80%	7.75
Stage Three Growth	2042	3.80%	8.54	3.80%	4.67	3.80%	2.53	3.80%	4.70	3.80%	3.69	3.80%	3.48	3.80%	4.94	3.80%	6.88	3.80%	8.70	3.80%	8.74	3.80%	8.04
Stage Three Growth	2043	3.80%	8.87	3.80%	4.85	3.80%	2.63	3.80%	4.88	3.80%	3.83	3.80%	3.61	3.80%	5.12	3.80%	7.15	3.80%	9.03	3.80%	9.07	3.80%	8.35
Stage Three Growth	2044	3.80%	9.21	3.80%	5.03	3.80%	2.73	3.80%	5.06	3.80%	3.97	3.80%	3.75	3.80%	5.32	3.80%	7.42	3.80%	9.37	3.80%	9.42	3.80%	8.66
Stage Three Growth	2045	3.80%	9.56	3.80%	5.23	3.80%	2.83	3.80%	5.25	3.80%	4.13	3.80%	3.89	3.80%	5.52	3.80%	7.70	3.80%	9.72	3.80%	9.78	3.80%	8.99
Stage Three Growth	2046	3.80%	9.92	3.80%	5.42	3.80%	2.94	3.80%	5.45	3.80%	4.28	3.80%	4.04	3.80%	5.73	3.80%	7.99	3.80%	10.09	3.80%	10.15	3.80%	9.33
Stage Three Growth	2047	3.80%	10.30	3.80%	5.63	3.80%	3.05	3.80%	5.66	3.80%	4.44	3.80%	4.20	3.80%	5.95	3.80%	8.30	3.80%	10.48	3.80%	10.53	3.80%	9.69
Stage Three Growth	2048	3.80%	10.69	3.80%	5.84	3.80%	3.17	3.80%	5.88	3.80%	4.61	3.80%	4.36	3.80%	6.17	3.80%	8.61	3.80%	10.88	3.80%	10.93	3.80%	10.06
Stage Three Growth	2049	3.80%	11.09	3.80%	6.07	3.80%	3.29	3.80%	6.10	3.80%	4.79	3.80%	4.52	3.80%	6.41	3.80%	8.94	3.80%	11.29	3.80%	11.35	3.80%	10.44

Stage Three Growth	2050	3.80%	11.51	3.80%	6.30	3.80%	3.41	3.80%	6.33	3.80%	4.97	3.80%	4.69	3.80%	6.65	3.80%	9.28	3.80%	11.72	3.80%	11.78	3.80%	10.84
Stage Three Growth	2051	3.80%	11.95	3.80%	6.54	3.80%	3.54	3.80%	6.57	3.80%	5.16	3.80%	4.87	3.80%	6.91	3.80%	9.63	3.80%	12.16	3.80%	12.23	3.80%	11.25
Stage Three Growth	2052	3.80%	12.41	3.80%	6.79	3.80%	3.68	3.80%	6.82	3.80%	5.36	3.80%	5.06	3.80%	7.17	3.80%	10.00	3.80%	12.63	3.80%	12.69	3.80%	11.67
Stage Three Growth	2053	3.80%	12.88	3.80%	7.04	3.80%	3.82	3.80%	7.08	3.80%	5.56	3.80%	5.25	3.80%	7.44	3.80%	10.38	3.80%	13.11	3.80%	13.17	3.80%	12.12
Stage Three Growth	2054	3.80%	13.37	3.80%	7.31	3.80%	3.96	3.80%	7.35	3.80%	5.77	3.80%	5.45	3.80%	7.72	3.80%	10.77	3.80%	13.60	3.80%	13.67	3.80%	12.58
Stage Three Growth	2055	3.80%	13.87	3.80%	7.59	3.80%	4.11	3.80%	7.63	3.80%	5.99	3.80%	5.66	3.80%	8.02	3.80%	11.18	3.80%	14.12	3.80%	14.19	3.80%	13.06
Stage Three Growth	2056	3.80%	14.40	3.80%	7.88	3.80%	4.27	3.80%	7.92	3.80%	6.22	3.80%	5.87	3.80%	8.32	3.80%	11.61	3.80%	14.66	3.80%	14.73	3.80%	13.55
Stage Three Growth	2057	3.80%	14.95	3.80%	8.18	3.80%	4.43	3.80%	8.22	3.80%	6.45	3.80%	6.09	3.80%	8.64	3.80%	12.05	3.80%	15.21	3.80%	15.29	3.80%	14.07
Stage Three Growth	2058	3.80%	15.52	3.80%	8.49	3.80%	4.60	3.80%	8.53	3.80%	6.70	3.80%	6.32	3.80%	8.97	3.80%	12.50	3.80%	15.79	3.80%	15.87	3.80%	14.60
Stage Three Growth	2059	3.80%	16.11	3.80%	8.81	3.80%	4.78	3.80%	8.86	3.80%	6.95	3.80%	6.57	3.80%	9.31	3.80%	12.98	3.80%	16.39	3.80%	16.48	3.80%	15.16
Stage Three Growth	2060	3.80%	16.72	3.80%	9.14	3.80%	4.96	3.80%	9.19	3.80%	7.22	3.80%	6.81	3.80%	9.66	3.80%	13.47	3.80%	17.02	3.80%	17.10	3.80%	15.73
Stage Three Growth	2061	3.80%	17.35	3.80%	9.49	3.80%	5.15	3.80%	9.54	3.80%	7.49	3.80%	7.07	3.80%	10.03	3.80%	13.98	3.80%	17.66	3.80%	17.75	3.80%	16.33
Stage Three Growth	2062	3.80%	18.01	3.80%	9.85	3.80%	5.34	3.80%	9.90	3.80%	7.78	3.80%	7.34	3.80%	10.41	3.80%	14.52	3.80%	18.33	3.80%	18.43	3.80%	16.95
Stage Three Growth	2063	3.80%	18.70	3.80%	10.23	3.80%	5.55	3.80%	10.28	3.80%	8.07	3.80%	7.62	3.80%	10.80	3.80%	15.07	3.80%	19.03	3.80%	19.13	3.80%	17.60
Stage Three Growth	2064	3.80%	19.41	3.80%	10.62	3.80%	5.76	3.80%	10.67	3.80%	8.38	3.80%	7.91	3.80%	11.21	3.80%	15.64	3.80%	19.75	3.80%	19.86	3.80%	18.26
Stage Three Growth	2065	3.80%	20.15	3.80%	11.02	3.80%	5.97	3.80%	11.08	3.80%	8.70	3.80%	8.21	3.80%	11.64	3.80%	16.23	3.80%	20.50	3.80%	20.61	3.80%	18.96
Stage Three Growth	2066	3.80%	20.91	3.80%	11.44	3.80%	6.20	3.80%	11.50	3.80%	9.03	3.80%	8.52	3.80%	12.08	3.80%	16.85	3.80%	21.28	3.80%	21.39	3.80%	19.68
Stage Three Growth	2067	3.80%	21.71	3.80%	11.87	3.80%	6.44	3.80%	11.93	3.80%	9.37	3.80%	8.85	3.80%	12.54	3.80%	17.49	3.80%	22.09	3.80%	22.21	3.80%	20.43
Stage Three Growth	2068	3.80%	22.53	3.80%	12.32	3.80%	6.68	3.80%	12.39	3.80%	9.73	3.80%	9.18	3.80%	13.02	3.80%	18.16	3.80%	22.93	3.80%	23.05	3.80%	21.20
Stage Three Growth	2069	3.80%	23.39	3.80%	12.79	3.80%	6.94	3.80%	12.86	3.80%	10.10	3.80%	9.53	3.80%	13.51	3.80%	18.85	3.80%	23.80	3.80%	23.93	3.80%	22.01
Stage Three Growth	2070	3.80%	24.28	3.80%	13.28	3.80%	7.20	3.80%	13.35	3.80%	10.48	3.80%	9.89	3.80%	14.03	3.80%	19.56	3.80%	24.71	3.80%	24.84	3.80%	22.84
Stage Three Growth	2071	3.80%	25.20	3.80%	13.78	3.80%	7.47	3.80%	13.85	3.80%	10.88	3.80%	10.27	3.80%	14.56	3.80%	20.31	3.80%	25.65	3.80%	25.78	3.80%	23.71
Stage Three Growth	2072	3.80%	26.16	3.80%	14.31	3.80%	7.76	3.80%	14.38	3.80%	11.29	3.80%	10.66	3.80%	15.11	3.80%	21.08	3.80%	26.62	3.80%	26.76	3.80%	24.61
Stage Three Growth	2073	3.80%	27.15	3.80%	14.85	3.80%	8.05	3.80%	14.93	3.80%	11.72	3.80%	11.07	3.80%	15.69	3.80%	21.88	3.80%	27.63	3.80%	27.78	3.80%	25.55
Stage Three Growth	2074	3.80%	28.18	3.80%	15.41	3.80%	8.36	3.80%	15.49	3.80%	12.17	3.80%	11.49	3.80%	16.28	3.80%	22.71	3.80%	28.68	3.80%	28.83	3.80%	26.52
Stage Three Growth	2075	3.80%	29.25	3.80%	16.00	3.80%	8.68	3.80%	16.08	3.80%	12.63	3.80%	11.92	3.80%	16.90	3.80%	23.57	3.80%	29.77	3.80%	29.93	3.80%	27.53
Stage Three Growth	2076	3.80%	30.36	3.80%	16.61	3.80%	9.01	3.80%	16.69	3.80%	13.11	3.80%	12.38	3.80%	17.54	3.80%	24.47	3.80%	30.90	3.80%	31.06	3.80%	28.57
Stage Three Growth	2077	3.80%	31.52	3.80%	17.24	3.80%	9.35	3.80%	17.33	3.80%	13.61	3.80%	12.85	3.80%	18.21	3.80%	25.40	3.80%	32.08	3.80%	32.25	3.80%	29.66
Stage Three Growth	2078	3.80%	32.72	3.80%	17.89	3.80%	9.70	3.80%	17.99	3.80%	14.12	3.80%	13.33	3.80%	18.90	3.80%	26.36	3.80%	33.30	3.80%	33.47	3.80%	30.79
Stage Three Growth	2079	3.80%	33.96	3.80%	18.57	3.80%	10.07	3.80%	18.67	3.80%	14.66	3.80%	13.84	3.80%	19.62	3.80%	27.37	3.80%	34.56	3.80%	34.74	3.80%	31.96
Stage Three Growth	2080	3.80%	35.25	3.80%	19.28	3.80%	10.45	3.80%	19.38	3.80%	15.22	3.80%	14.37	3.80%	20.37	3.80%	28.41	3.80%	35.87	3.80%	36.06	3.80%	33.17
Stage Three Growth	2081	3.80%	36.59	3.80%	20.01	3.80%	10.85	3.80%	20.12	3.80%	15.80	3.80%	14.91	3.80%	21.14	3.80%	29.48	3.80%	37.24	3.80%	37.43	3.80%	34.43
Stage Three Growth	2082	3.80%	37.98	3.80%	20.77	3.80%	11.26	3.80%	20.88	3.80%	16.40	3.80%	15.48	3.80%	21.94	3.80%	30.61	3.80%	38.65	3.80%	38.86	3.80%	35.74
Stage Three Growth	2083	3.80%	39.42	3.80%	21.56	3.80%	11.69	3.80%	21.68	3.80%	17.02	3.80%	16.07	3.80%	22.78	3.80%	31.77	3.80%	40.12	3.80%	40.33	3.80%	37.10
Stage Three Growth	2084	3.80%	40.92	3.80%	22.38	3.80%	12.14	3.80%	22.50	3.80%	17.67	3.80%	16.68	3.80%	23.64	3.80%	32.98	3.80%	41.65	3.80%	41.86	3.80%	38.51
Stage Three Growth	2085	3.80%	42.47	3.80%	23.23	3.80%	12.60	3.80%	23.35	3.80%	18.34	3.80%	17.31	3.80%	24.54	3.80%	34.23	3.80%	43.23	3.80%	43.46	3.80%	39.97
Stage Three Growth	2086	3.80%	44.09	3.80%	24.11	3.80%	13.08	3.80%	24.24	3.80%	19.03	3.80%	17.97	3.80%	25.47	3.80%	35.53	3.80%	44.87	3.80%	45.11	3.80%	41.49
Stage Three Growth	2087	3.80%	45.76	3.80%	25.03	3.80%	13.57	3.80%	25.16	3.80%	19.76	3.80%	18.65	3.80%	26.44	3.80%	36.88	3.80%	46.58	3.80%	46.82	3.80%	43.07
Stage Three Growth	2088	3.80%	47.50	3.80%	25.98	3.80%	14.09	3.80%	26.12	3.80%	20.51	3.80%	19.36	3.80%	27.45	3.80%	38.28	3.80%	48.35	3.80%	48.60	3.80%	44.70

Stage Three Growth	2089	3.80%	49.31	3.80%	26.97	3.80%	14.62	3.80%	27.11	3.80%	21.29	3.80%	20.10	3.80%	28.49	3.80%	39.74	3.80%	50.18	3.80%	50.45	3.80%	46.40
Stage Three Growth	2090	3.80%	51.18	3.80%	27.99	3.80%	15.18	3.80%	28.14	3.80%	22.10	3.80%	20.86	3.80%	29.57	3.80%	41.25	3.80%	52.09	3.80%	52.36	3.80%	48.17
Stage Three Growth	2091	3.80%	53.13	3.80%	29.06	3.80%	15.76	3.80%	29.21	3.80%	22.94	3.80%	21.65	3.80%	30.70	3.80%	42.81	3.80%	54.07	3.80%	54.35	3.80%	50.00
Stage Three Growth	2092	3.80%	55.15	3.80%	30.16	3.80%	16.36	3.80%	30.32	3.80%	23.81	3.80%	22.48	3.80%	31.86	3.80%	44.44	3.80%	56.12	3.80%	56.42	3.80%	51.90
Stage Three Growth	2093	3.80%	57.24	3.80%	31.31	3.80%	16.98	3.80%	31.47	3.80%	24.71	3.80%	23.33	3.80%	33.07	3.80%	46.13	3.80%	58.26	3.80%	58.56	3.80%	53.87
Stage Three Growth	2094	3.80%	59.42	3.80%	32.50	3.80%	17.62	3.80%	32.67	3.80%	25.65	3.80%	24.22	3.80%	34.33	3.80%	47.88	3.80%	60.47	3.80%	60.79	3.80%	55.91
Stage Three Growth	2095	3.80%	61.67	3.80%	33.73	3.80%	18.29	3.80%	33.91	3.80%	26.63	3.80%	25.14	3.80%	35.63	3.80%	49.70	3.80%	62.77	3.80%	63.10	3.80%	58.04
Stage Three Growth	2096	3.80%	64.02	3.80%	35.01	3.80%	18.99	3.80%	35.20	3.80%	27.64	3.80%	26.09	3.80%	36.99	3.80%	51.59	3.80%	65.15	3.80%	65.50	3.80%	60.24
Stage Three Growth	2097	3.80%	66.45	3.80%	36.34	3.80%	19.71	3.80%	36.54	3.80%	28.69	3.80%	27.09	3.80%	38.39	3.80%	53.55	3.80%	67.63	3.80%	67.98	3.80%	62.53
Stage Three Growth	2098	3.80%	68.98	3.80%	37.73	3.80%	20.46	3.80%	37.92	3.80%	29.78	3.80%	28.12	3.80%	39.85	3.80%	55.58	3.80%	70.20	3.80%	70.57	3.80%	64.91
Stage Three Growth	2099	3.80%	71.60	3.80%	39.16	3.80%	21.23	3.80%	39.37	3.80%	30.91	3.80%	29.18	3.80%	41.37	3.80%	57.70	3.80%	72.87	3.80%	73.25	3.80%	67.38
Stage Three Growth	2100	3.80%	74.32	3.80%	40.65	3.80%	22.04	3.80%	40.86	3.80%	32.08	3.80%	30.29	3.80%	42.94	3.80%	59.89	3.80%	75.64	3.80%	76.03	3.80%	69.94
Stage Three Growth	2101	3.80%	77.14	3.80%	42.19	3.80%	22.88	3.80%	42.41	3.80%	33.30	3.80%	31.44	3.80%	44.57	3.80%	62.16	3.80%	78.51	3.80%	78.92	3.80%	72.59
Stage Three Growth	2102	3.80%	80.07	3.80%	43.79	3.80%	23.75	3.80%	44.03	3.80%	34.57	3.80%	32.64	3.80%	46.26	3.80%	64.53	3.80%	81.49	3.80%	81.92	3.80%	75.35
Stage Three Growth	2103	3.80%	83.12	3.80%	45.46	3.80%	24.65	3.80%	45.70	3.80%	35.88	3.80%	33.88	3.80%	48.02	3.80%	66.98	3.80%	84.59	3.80%	85.03	3.80%	78.22
Stage Three Growth	2104	3.80%	86.27	3.80%	47.19	3.80%	25.59	3.80%	47.44	3.80%	37.25	3.80%	35.17	3.80%	49.85	3.80%	69.52	3.80%	87.80	3.80%	88.27	3.80%	81.19
Stage Three Growth	2105	3.80%	89.55	3.80%	48.98	3.80%	26.56	3.80%	49.24	3.80%	38.66	3.80%	36.50	3.80%	51.74	3.80%	72.17	3.80%	91.14	3.80%	91.62	3.80%	84.27
Stage Three Growth	2106	3.80%	92.96	3.80%	50.84	3.80%	27.57	3.80%	51.11	3.80%	40.13	3.80%	37.89	3.80%	53.71	3.80%	74.91	3.80%	94.60	3.80%	95.10	3.80%	87.48
Stage Three Growth	2107	3.80%	96.49	3.80%	52.77	3.80%	28.62	3.80%	53.05	3.80%	41.66	3.80%	39.33	3.80%	55.75	3.80%	77.76	3.80%	98.20	3.80%	98.71	3.80%	90.80
Stage Three Growth	2108	3.80%	100.15	3.80%	54.78	3.80%	29.70	3.80%	55.07	3.80%	43.24	3.80%	40.82	3.80%	57.87	3.80%	80.71	3.80%	101.93	3.80%	102.47	3.80%	94.25
Stage Three Growth	2109	3.80%	103.96	3.80%	56.86	3.80%	30.83	3.80%	57.16	3.80%	44.88	3.80%	42.38	3.80%	60.06	3.80%	83.78	3.80%	105.80	3.80%	106.36	3.80%	97.83
Stage Three Growth	2110	3.80%	107.91	3.80%	59.02	3.80%	32.00	3.80%	59.33	3.80%	46.59	3.80%	43.99	3.80%	62.35	3.80%	86.96	3.80%	109.83	3.80%	110.40	3.80%	101.55
Stage Three Growth	2111	3.80%	112.01	3.80%	61.26	3.80%	33.22	3.80%	61.59	3.80%	48.36	3.80%	45.66	3.80%	64.72	3.80%	90.26	3.80%	114.00	3.80%	114.60	3.80%	105.41
Stage Three Growth	2112	3.80%	116.27	3.80%	63.59	3.80%	34.48	3.80%	63.93	3.80%	50.19	3.80%	47.39	3.80%	67.18	3.80%	93.69	3.80%	118.33	3.80%	118.95	3.80%	109.41
Stage Three Growth	2113	3.80%	120.69	3.80%	66.01	3.80%	35.79	3.80%	66.36	3.80%	52.10	3.80%	49.19	3.80%	69.73	3.80%	97.26	3.80%	122.83	3.80%	123.47	3.80%	113.57
Stage Three Growth	2114	3.80%	125.27	3.80%	68.52	3.80%	37.15	3.80%	68.88	3.80%	54.08	3.80%	51.06	3.80%	72.38	3.80%	100.95	3.80%	127.49	3.80%	128.16	3.80%	117.89
Stage Three Growth	2115	3.80%	130.03	3.80%	71.12	3.80%	38.56	3.80%	71.50	3.80%	56.14	3.80%	53.00	3.80%	75.13	3.80%	104.79	3.80%	132.34	3.80%	133.03	3.80%	122.37
Stage Three Growth	2116	3.80%	134.97	3.80%	73.82	3.80%	40.03	3.80%	74.21	3.80%	58.27	3.80%	55.02	3.80%	77.98	3.80%	108.77	3.80%	137.37	3.80%	138.09	3.80%	127.02
Stage Three Growth	2117	3.80%	140.10	3.80%	76.63	3.80%	41.55	3.80%	77.03	3.80%	60.48	3.80%	57.11	3.80%	80.95	3.80%	112.90	3.80%	142.59	3.80%	143.34	3.80%	131.84
Stage Three Growth	2118	3.80%	145.43	3.80%	79.54	3.80%	43.13	3.80%	79.96	3.80%	62.78	3.80%	59.28	3.80%	84.02	3.80%	117.19	3.80%	148.01	3.80%	148.78	3.80%	136.85
Stage Three Growth	2119	3.80%	150.95	3.80%	82.56	3.80%	44.77	3.80%	83.00	3.80%	65.17	3.80%	61.53	3.80%	87.22	3.80%	121.65	3.80%	153.63	3.80%	154.44	3.80%	142.05
Stage Three Growth	2120	3.80%	156.69	3.80%	85.70	3.80%	46.47	3.80%	86.15	3.80%	67.65	3.80%	63.87	3.80%	90.53	3.80%	126.27	3.80%	159.47	3.80%	160.31	3.80%	147.45
Stage Three Growth	2121	3.80%	162.64	3.80%	88.96	3.80%	48.24	3.80%	89.43	3.80%	70.22	3.80%	66.29	3.80%	93.97	3.80%	131.07	3.80%	165.53	3.80%	166.40	3.80%	153.06
Stage Three Growth	2122	3.80%	168.82	3.80%	92.34	3.80%	50.07	3.80%	92.82	3.80%	72.88	3.80%	68.81	3.80%	97.54	3.80%	136.05	3.80%	171.82	3.80%	172.72	3.80%	158.87
Stage Three Growth	2123	3.80%	175.24	3.80%	95.84	3.80%	51.97	3.80%	96.35	3.80%	75.65	3.80%	71.43	3.80%	101.25	3.80%	141.22	3.80%	178.35	3.80%	179.28	3.80%	164.91
Stage Three Growth	2124	3.80%	181.90	3.80%	99.49	3.80%	53.95	3.80%	100.01	3.80%	78.53	3.80%	74.14	3.80%	105.10	3.80%	146.58	3.80%	185.12	3.80%	186.10	3.80%	171.18
Stage Three Growth	2125	3.80%	188.81	3.80%	103.27	3.80%	56.00	3.80%	103.81	3.80%	81.51	3.80%	76.96	3.80%	109.09	3.80%	152.15	3.80%	192.16	3.80%	193.17	3.80%	177.68
Stage Three Growth	2126	3.80%	195.98	3.80%	107.19	3.80%	58.13	3.80%	107.76	3.80%	84.61	3.80%	79.89	3.80%	113.23	3.80%	157.94	3.80%	199.46	3.80%	200.51	3.80%	184.43
Stage Three Growth	2127	3.80%	203.43	3.80%	111.26	3.80%	60.33	3.80%	111.85	3.80%	87.83	3.80%	82.92	3.80%	117.54	3.80%	163.94	3.80%	207.04	3.80%	208.13	3.80%	191.44

Stage Three Growth	2128	3.80%	211.16	3.80%	115.49	3.80%	62.63	3.80%	116.10	3.80%	91.16	3.80%	86.07	3.80%	122.00	3.80%	170.17	3.80%	214.91	3.80%	216.04	3.80%	198.72
Stage Three Growth	2129	3.80%	219.19	3.80%	119.88	3.80%	65.01	3.80%	120.52	3.80%	94.63	3.80%	89.34	3.80%	126.64	3.80%	176.63	3.80%	223.08	3.80%	224.25	3.80%	206.27
Stage Three Growth	2130	3.80%	227.51	3.80%	124.44	3.80%	67.48	3.80%	125.09	3.80%	98.22	3.80%	92.74	3.80%	131.45	3.80%	183.34	3.80%	231.55	3.80%	232.77	3.80%	214.11
Stage Three Growth	2131	3.80%	236.16	3.80%	129.17	3.80%	70.04	3.80%	129.85	3.80%	101.96	3.80%	96.26	3.80%	136.45	3.80%	190.31	3.80%	240.35	3.80%	241.61	3.80%	222.24
Stage Three Growth	2132	3.80%	245.13	3.80%	134.07	3.80%	72.70	3.80%	134.78	3.80%	105.83	3.80%	99.92	3.80%	141.63	3.80%	197.54	3.80%	249.48	3.80%	250.79	3.80%	230.69
Stage Three Growth	2133	3.80%	254.45	3.80%	139.17	3.80%	75.46	3.80%	139.90	3.80%	109.85	3.80%	103.72	3.80%	147.01	3.80%	205.05	3.80%	258.96	3.80%	260.32	3.80%	239.45
Stage Three Growth	2134	3.80%	264.12	3.80%	144.46	3.80%	78.33	3.80%	145.22	3.80%	114.03	3.80%	107.66	3.80%	152.60	3.80%	212.84	3.80%	268.81	3.80%	270.22	3.80%	248.55
Stage Three Growth	2135	3.80%	274.15	3.80%	149.95	3.80%	81.31	3.80%	150.74	3.80%	118.36	3.80%	111.75	3.80%	158.40	3.80%	220.93	3.80%	279.02	3.80%	280.48	3.80%	258.00
Stage Three Growth	2136	3.80%	284.57	3.80%	155.64	3.80%	84.40	3.80%	156.47	3.80%	122.86	3.80%	115.99	3.80%	164.42	3.80%	229.33	3.80%	289.62	3.80%	291.14	3.80%	267.80
Stage Three Growth	2137	3.80%	295.39	3.80%	161.56	3.80%	87.61	3.80%	162.41	3.80%	127.52	3.80%	120.40	3.80%	170.67	3.80%	238.04	3.80%	300.63	3.80%	302.21	3.80%	277.98
Stage Three Growth	2138	3.80%	306.61	3.80%	167.70	3.80%	90.94	3.80%	168.58	3.80%	132.37	3.80%	124.98	3.80%	177.15	3.80%	247.09	3.80%	312.05	3.80%	313.69	3.80%	288.54
Stage Three Growth	2139	3.80%	318.26	3.80%	174.07	3.80%	94.39	3.80%	174.99	3.80%	137.40	3.80%	129.73	3.80%	183.88	3.80%	256.47	3.80%	323.91	3.80%	325.61	3.80%	299.50
Implied Cost of Equity			**7.46%**		**8.09%**		**8.02%**		**7.81%**		**8.23%**		**10.06%**		**10.37%**		**9.33%**		**10.30%**		**10.77%**		**8.55%**

Mean	9.00%
Median	8.55%
Selected Three-Stage DGM Cost of Equity	**8.77%**

Equity Component of the Direct Rate

Company	Value Line P/E Ratio
Atmos Energy Corp	17.1
Black Hills Corp	14.5
CenterPoint Energy Inc.	15.8
CMS Energy Corp	18.3
New Jersey Resources Corp	15.3
NiSource Inc.	14.4
Northwest Natural Gas	12.5
ONE Gas Inc	14.2
Southwest Gas Holdings Inc.	15.5
Spire Inc / Laclede Group Inc.	12.6
WEC Energy Group	16.1
Mean	15.1
Median	15.3
Selected Price to Earnings (P/E) Ratio	15.1
Indicated Equity Component of the Direct Rate	**6.62%**

We placed the most reliance on the mean price to earnings ratio.

Notes:

The Price/Earnings Ratio was downloaded from Value Line.

Beta Analysis

Company	Beta
Atmos Energy Corp	0.85
Black Hills Corp	1.00
CenterPoint Energy Inc.	1.15
CMS Energy Corp	0.85
New Jersey Resources Corp	0.95
NiSource Inc.	0.90
Northwest Natural Gas	0.85
ONE Gas Inc	0.85
Southwest Gas Holdings Inc.	0.90
Spire Inc / Laclede Group Inc.	0.85
WEC Energy Group	0.85
Beta Mean	0.91
Beta Median	0.85
Unlevered and Relevered Mean*	0.93
Indicated Beta	**0.90**

We considered the mean, median, and unlevered/relevered mean. We placed more reliance on the mean when selecting the indicated beta.

Notes:

*See the Unlevering Relevering Beta page for the calculation

Unlevering/Relevering Betas

Unlevering of Betas					
Company	*Value Line* **Actual Income Tax Rate**	*From Capital Structure Page* **Actual Debt in Capital Structure**	*From Capital Structure Page* **Actual Equity in Capital Structure**	*Value Line* **Levered Beta (Published)**	*Formula* **Unlevered Beta**
Atmos Energy Corp	11.40%	28.71%	71.29%	0.85	0.63
Black Hills Corp	8.50%	49.93%	50.07%	1.00	0.52
CenterPoint Energy Inc.	25.00%	48.83%	51.17%	1.15	0.67
CMS Energy Corp	15.00%	45.54%	53.74%	0.85	0.49
New Jersey Resources Corp	22.00%	40.45%	59.55%	0.95	0.62
NiSource Inc.	19.00%	48.26%	44.96%	0.90	0.48
Northwest Natural Gas	25.00%	52.00%	48.00%	0.85	0.47
ONE Gas Inc	15.50%	36.02%	63.98%	0.85	0.58
Southwest Gas Holdings Inc.	21.00%	55.48%	44.52%	0.90	0.45
Spire Inc / Laclede Group Inc.	18.50%	52.21%	44.23%	0.85	0.43
WEC Energy Group	19.00%	38.06%	61.87%	0.85	0.57
			Average	**0.91**	

Relevering of Betas				
Company	*Formula* **Composite Income Tax Rate**	*From Capital Structure Page* **Industry Debt in Capital Structure**	*From Capital Structure Page* **Industry Equity in Capital Structure**	*Formula* **Levered Beta**
Atmos Energy Corp	18.17%	47.00%	53.00%	1.09
Black Hills Corp	18.17%	47.00%	53.00%	0.90
CenterPoint Energy Inc.	18.17%	47.00%	53.00%	1.16
CMS Energy Corp	18.17%	47.00%	53.00%	0.85
New Jersey Resources Corp	18.17%	47.00%	53.00%	1.07
NiSource Inc.	18.17%	47.00%	53.00%	0.83
Northwest Natural Gas	18.17%	47.00%	53.00%	0.81
ONE Gas Inc	18.17%	47.00%	53.00%	1.00
Southwest Gas Holdings Inc.	18.17%	47.00%	53.00%	0.78
Spire Inc / Laclede Group Inc.	18.17%	47.00%	53.00%	0.74
WEC Energy Group	18.17%	47.00%	53.00%	0.98
			Average	**0.93**

Notes:

Uses the Hamada Formula

Unlevered Beta = Levered Beta / [1 + (1 - Tax Rate) x (Debt/Equity))], using company-specific components

Relevered Beta = Unlevered Beta [1 + (1 - Tax Rate) x (Debt/Equity)], Using industry components for Tax Rate, Debt, and Equity

Calculation of Market to Book Ratios for the Gas Distribution Market Segment

- December 31, 2023 calendar year information for the January 2, 2024 Assessment
- A market to book ratio over one would be an indication of no obsolescence.
- Market Value estimates for Common Equity are from Value Line. Market Value Estimates for Long-Term Debt are from the company's 10-K.
- Book Value amounts are from the company's 10-K.

Market to Book Ratio for Equity

Company	Market Value of Common Equity from Value Line	Book Value of Common Equity from 10-K	Market to Book Ratio	Source	Fiscal Year End
Atmos Energy Corp	16,497,150,889	10,870,064,000	1.52	Atmos Energy Corp. 2023 10-K, p. 29	9/30/2023
Black Hills Corp	3,810,251,674	3,215,313,000	1.19	Black Hills Corp. 2023 10-K, p. 63	
CenterPoint Energy Inc.	17,642,698,502	9,667,000,000	1.83	CenterPoint Energy Inc. 2023 10-K, p. 89	
CMS Energy Corp	16,726,805,296	7,544,000,000	2.22	CMS Energy Corp. 2023 10-K, p. 99	
New Jersey Resources Corp	4,017,600,113	1,990,735,000	2.02	New Jersey Resources. 2023 10-K, p. 72	9/30/2023
NiSource Inc.	10,256,837,091	8,269,600,000	1.24	NiSource Inc. 2023 10-K, p. 63	
Northwest Natural Gas	1,314,823,188	1,232,620,000	1.07	Northwest Natural Gas 2023 10-K, p. 87	
ONE Gas Inc	3,308,943,164	2,765,877,000	1.20	One Gas Inc. 2023 10-K, p. 45	
Southwest Gas Holdings Inc.	4,201,742,719	3,310,036,000	1.27	Southwest Gas Holdings 2023 10-K, p. 55	
Spire Inc / Laclede Group Inc.	3,010,477,588	2,917,300,000	1.03	Spire Inc. 2022 10-K, p. 59	9/30/2023
WEC Energy Group	25,935,027,139	11,724,200,000	2.21	WEC Energy Group. 2023 10-K, p. 71	
		Average	1.53		

Market to Book Ratio for Debt

Company	Market Value of Long-Term Debt from 10-K	Book Value of Long-Term Debt from 10-K	Market to Book Ratio	Source	Fiscal Year End
Atmos Energy Corp	5,402,591,000	6,560,000,000	0.82	Atmos Energy Corp. 2023 10-K, p. 84	9/30/2023
Black Hills Corp	4,215,600,000	4,401,200,000	0.96	Black Hills Corp. 2023 10-K, p. 89	
CenterPoint Energy Inc.	17,804,000,000	18,609,000,000	0.96	CenterPoint Energy Inc. 2023 10-K, p. 141	
CMS Energy Corp	14,305,000,000	15,483,000,000	0.92	CMS Energy Corp. 2023 10-K, p. 134	

New Jersey Resources Corp	1,009,448,000	1,120,000,000	0.9	New Jersey Resources. 2023 10-K, p. 99	9/30/2023
NiSource Inc.	10,370,900,000	11,079,300,000	0.94	NiSource Inc. 2023 10-K, p. 93	
Northwest Natural Gas	1,236,559,000	1,364,723,000	0.91	Northwest Natural Gas 2023 10-K, p. 114	
ONE Gas Inc	2,800,000,000	2,960,815,000	0.95	One Gas Inc. 2023 10-K, p. 80 FV & 59 BV	
Southwest Gas Holdings Inc.	3,162,068,000	4,609,838,000	0.69	Southwest Gas Holdings 2023 10-K, p. 81-82	
Spire Inc / Laclede Group Inc.	3,270,200,000	3,710,600,000	0.88	Spire Inc. 2023 10-K, p. 86	9/30/2023
WEC Energy Group	15,564,300,000	16,631,100,000	0.94	WEC Energy Group. 2023 10-K, p. 132	
		Average	**0.90**		

Application of Capital Structure as determined in the Capitalization Rate Study

	Capital Structure	Market to Book	Composite
Common Equity	53.00%	1.53	0.81
Long-term Debt	47.00%	0.90	0.42
			1.23

Calculation of Market to Book Ratios for the Gas Distribution Market Segment

- December 31, 2023 calendar year information for the January 2, 2024 Assessment
- A market to book ratio over one would be an indication of no obsolescence.
- Market Value estimates for Common Equity are from Value Line. Market Value Estimates for Long-Term Debt are from the company's 10-K.
- Book Value amounts are from the company's 10-K.

Market to Book Ratio for Equity

Company	Market Value of Common Equity from Value Line	Book Value of Common Equity from 10-K	Market to Book Ratio	Source	Fiscal Year End
Atmos Energy Corp	16,497,150,889	10,870,064,000	1.52	Atmos Energy Corp. 2023 10-K, p. 29	9/30/2023
Black Hills Corp	3,810,251,674	3,215,313,000	1.19	Black Hills Corp. 2023 10-K, p. 63	
CenterPoint Energy Inc.	17,642,698,502	9,667,000,000	1.83	CenterPoint Energy Inc. 2023 10-K, p. 89	
CMS Energy Corp	16,726,805,296	7,544,000,000	2.22	CMS Energy Corp. 2023 10-K, p. 99	
New Jersey Resources Corp	4,017,600,113	1,990,735,000	2.02	New Jersey Resources. 2023 10-K, p. 72	9/30/2023
NiSource Inc.	10,256,837,091	8,269,600,000	1.24	NiSource Inc. 2023 10-K, p. 63	
Northwest Natural Gas	1,314,823,188	1,232,620,000	1.07	Northwest Natural Gas 2023 10-K, p. 87	
ONE Gas Inc	3,308,943,164	2,765,877,000	1.20	One Gas Inc. 2023 10-K, p. 45	
Southwest Gas Holdings Inc.	4,201,742,719	3,310,036,000	1.27	Southwest Gas Holdings 2023 10-K, p. 55	
Spire Inc / Laclede Group Inc.	3,010,477,588	2,917,300,000	1.03	Spire Inc. 2022 10-K, p. 59	9/30/2023
WEC Energy Group	25,935,027,139	11,724,200,000	2.21	WEC Energy Group. 2023 10-K, p. 71	
		Average	**1.53**		

Market to Book Ratio for Debt

Company	Market Value of Long-Term Debt from 10-K	Book Value of Long-Term Debt from 10-K	Market to Book Ratio	Source	Fiscal Year End
Atmos Energy Corp	5,402,591,000	6,560,000,000	0.82	Atmos Energy Corp. 2023 10-K, p. 84	9/30/2023
Black Hills Corp	4,215,600,000	4,401,200,000	0.96	Black Hills Corp. 2023 10-K, p. 89	
CenterPoint Energy Inc.	17,804,000,000	18,609,000,000	0.96	CenterPoint Energy Inc. 2023 10-K, p. 141	
CMS Energy Corp	14,305,000,000	15,483,000,000	0.92	CMS Energy Corp. 2023 10-K, p. 134	

New Jersey Resources Corp	1,009,448,000	1,120,000,000	0.9	New Jersey Resources. 2023 10-K, p. 99	9/30/2023
NiSource Inc.	10,370,900,000	11,079,300,000	0.94	NiSource Inc. 2023 10-K, p. 93	
Northwest Natural Gas	1,236,559,000	1,364,723,000	0.91	Northwest Natural Gas 2023 10-K, p. 114	
ONE Gas Inc	2,800,000,000	2,960,815,000	0.95	One Gas Inc. 2023 10-K, p. 80 FV & 59 BV	
Southwest Gas Holdings Inc.	3,162,068,000	4,609,838,000	0.69	Southwest Gas Holdings 2023 10-K, p. 81-82	
Spire Inc / Laclede Group Inc.	3,270,200,000	3,710,600,000	0.88	Spire Inc. 2023 10-K, p. 86	9/30/2023
WEC Energy Group	15,564,300,000	16,631,100,000	0.94	WEC Energy Group. 2023 10-K, p. 132	
		Average	**0.90**		

Application of Capital Structure as determined in the Capitalization Rate Study

	Capital Structure	Market to Book	Composite
Common Equity	53.00%	1.53	0.81
Long-term Debt	47.00%	0.90	0.42
			1.23

Appendix C - Gas Transmission Pipeline

Yield Rate

	Capital Structure	Rate	Composite
Long-Term Debt	40.00%	5.60%	2.24%
Common Equity	60.00%	10.88%	6.53%
Yield Rate			**8.77%**

Gas Transmission Pipeline Yield Rate	**8.77%**

Capital Structure

Company	Value of Long-Term Debt	Value of Preferred Equity	Value of Common Equity	Total Market Value	% Long-Term Debt	% Preferred Equity	% Common Equity
Enbridge Inc.	68,800,000,000	7,747,000,000	99,158,046,320	175,705,046,320	39.16%	4.41%	56.43%
Kinder Morgan Inc.	27,900,000,000	-	36,720,225,373	64,620,225,373	43.18%	0.00%	56.82%
TC Energy Corp	46,934,100,000	1,855,000,000	37,207,560,000	85,996,660,000	54.58%	2.16%	43.27%
Williams Companies Inc.	22,772,000,000	-	42,492,298,613	65,264,298,613	34.89%	0.00%	65.11%
Pembina Pipeline Corp.	9,329,000,000	2,208,000,000	24,259,621,610	35,796,621,610	26.06%	6.17%	67.77%
				Mean	39.57%	2.55%	57.88%
				Median	39.16%	2.16%	56.82%

Indicated Industry Capital Structure	**40.00%**		**60.00%**

Indexed Rate of Debt

Company	Debt Rating	Long-Term Debt Rate	
Enbridge Inc.	Baa1	5.60%	
Kinder Morgan Inc.	Baa2	5.60%	
TC Energy Corp	Baa3	5.60%	
Williams Companies Inc.	Baa2	5.60%	
Pembina Pipeline Corp.	BBB	5.60%	*

Mean	5.60%
Median	5.60%
Mode	5.60%

Indicated Rate of Debt	**5.60%**

Corporate Bond Yield Averages from Mergent Bond Record, January 2024 Edition
Industrial Bond Averages, December 2023

Mergent	S&P	Dec. Yield Avg.
Aaa	AAA	4.74%
Aa1, Aa2 Aa3	AA+, AA, AA-	4.82%
A1, A2, A3	A+, A, A-	5.07%
Baa1, Baa2, Baa3	BBB+, BBB, BBB-	5.60%

*Pembina Pipeline Corp - Used S&P debt rating of BBB, sourced from company's website (pembina.com/investors) Date: February 13, 2024

Indicated Rate of Equity

Model	Rate
CAPM - Ex Ante, Three Stage	7.36%
CAPM - Damodaran	9.13%
CAPM - The CFO Survey	9.49%
CAPM - Fernandez, Banuls, and Acin	10.29%
CAPM - Ex Post (BVR Historical, Arithmetic)	11.07%
CAPM - Ex Post (BVR Historical, Geometric)	9.75%
Empirical CAPM - Ex Ante, Three Stage	7.32%
Empirical CAPM - Damodaran	9.07%
Empirical CAPM - Graham and Harvey	9.43%
Empirical CAPM - Fernandez, Banuls, and Acin	10.21%
Empirical CAPM - Ex Post (BVR Historical, Arithmetic)	10.99%
Empirical CAPM - Ex Post (BVR Historical, Geometric)	9.68%
DGM - Dividend Growth	11.69%
DGM - Earnings Growth	19.13%
DGM - Two-Stage	16.15%
DGM - Three-Stage	15.23%
Indicated Rate of Equity	**10.88%**

We established a range of acceptability for the cost of equity with all available models. We considered all of the data and placed more reliance on the CAPM using the Business Valuation Resources Historical (arithmetic) equity risk premium, and the Damodaran CAPM.

Direct Rate and Growth

	Capital Structure	Rate	Composite
Debt Component	40.00%	5.60%	2.24%
Equity Component	60.00%	5.92%	3.55%
Direct Rate			**5.79%**

Direct Rate	**5.79%**

Capital Asset Pricing Model (CAPM)

(ERP x β) + RFR = Indicated Equity Rate

	Equity Risk Premium (ERP)	x Industry Beta (β)	= Industry Risk Premium	+ Risk-Free Rate[1] (RFR)	Indicated Equity Rate
Three Stage Ex Ante[2]	2.91%	1.05	3.06%	4.30%	7.36%
Dr. Damodaran ERP[3]	4.60%	1.05	4.83%	4.30%	9.13%
The CFO Survey[4]	4.94%	1.05	5.19%	4.30%	9.49%
Fernandez, Banuls and Acin[5]	5.70%	1.05	5.99%	4.30%	10.29%
BVR - Historical, Arithmetic Mean[6]	6.45%	1.05	6.77%	4.30%	11.07%
BVR - Historical, Geometric Mean[7]	5.19%	1.05	5.45%	4.30%	9.75%

Notes:

1 U.S. Treasury on January 2, 2024 - 20-year Coupon Bond Yield, Daily Observations, Retrieved January 24, 2024 from www.federalreserve.gov

2 Three Stage Dividend Growth Model, S&P 500. See Appendix F, Three Stage Ex Ante Calculation

3 Implied Equity Risk Premium on January 5, 2024 as determined by Dr. Aswath Damodaran; Retrieved January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

4 The CFO Survey (2023). Data & Results December 20, 2023. Mean average annual S&P return over next ten years (8.9%) less annual yield on 10-year Treasury Bonds (3.96%). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

5 Fernandez, P., Garcia D., & Acin, J. F. (2023). Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023. SSRN Electronic Journal. Retrieved January 22, 2024 from https://ssrn.com/abstract=4407839

6 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using arithmetic mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

7 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using geometric mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

Empirical Capital Asset Pricing Model (ECAPM)

(ERP x β x .75) + (ERP x .25) + RFR = Indicated Equity Rate

Model	Equity Risk Premium (ERP)	Industry Beta (β)	Weighted Industry Risk Premium (weighted at 75%)	Weighted Equity Risk Premium (weighted at 25%)	Risk-Free Rate (RFR)	Indicated Equity Rate
Three Stage Ex Ante[4]	2.91%	1.05	2.29%	0.73%	4.30%	**7.32%**
Dr. Damodaran ERP[5]	4.60%	1.05	3.62%	1.15%	4.30%	**9.07%**
The CFO Survey[7]	4.94%	1.05	3.89%	1.24%	4.30%	**9.43%**
Fernandez, Banuls and Acin[8]	5.70%	1.05	4.49%	1.43%	4.30%	**10.21%**
BVR - Historical, Arithmetic Mean[9]	6.45%	1.05	5.08%	1.61%	4.30%	**10.99%**
BVR - Historical, Geometric Mean[10]	5.19%	1.05	4.09%	1.30%	4.30%	**9.68%**

Notes:

1 U.S. Treasury on January 2, 2024 - 20-year Coupon Bond Yield, Daily Observations, Retrieved January 24, 2024 from www.federalreserve.gov

2 Three Stage Dividend Growth Model, S&P 500. See Appendix F, Three Stage Ex Ante Calculation

3 Implied Equity Risk Premium on January 5, 2024 as determined by Dr. Aswath Damodaran; Retrieved January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

4 The CFO Survey (2023). Data & Results December 20, 2023. Mean average annual S&P return over next ten years (8.9%) less annual yield on 10-year Treasury Bonds (3.96%). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

5 Fernandez, P., Garcia D., & Acin, J. F. (2023). Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023. SSRN Electronic Journal. Retrieved January 22, 2024 from https://ssrn.com/abstract=4407839

6 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using arithmetic mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

7 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using geometric mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

Single-Stage Dividend Growth Model

Company	Current Dividend Yield (DY)	Projected Short-term EPS Growth Rate (EG)	Projected Short-term Dividend Growth Rate (DG)	Cost of Equity Earnings Growth DY + EG	Cost of Equity Dividend Growth DY + DG
Enbridge Inc.	7.60%	10.00%	3.00%	17.60%	10.60%
Kinder Morgan Inc.	6.80%	17.50%	6.50%	24.30%	13.30%
TC Energy Corp	8.10%	12.00%	5.00%	20.10%	13.10%
Williams Companies Inc.	5.10%	10.50%	4.00%	15.60%	9.10%
Pembina Pipeline Corp.	6.00%	11.50%	3.50%	17.50%	9.50%
Mean	6.90%	12.50%	4.63%	19.40%	11.53%
Median	7.20%	11.25%	4.50%	18.85%	11.85%

DGM - Dividend Growth, Indicated Rate	**11.69%**
DGM - Earnings Growth, Indicated Rate	**19.13%**

We placed equal reliance on the mean and median to select the indicated rate.

Notes:

Dividend Yield and projected growth rates provided by Value Line.

Two-Stage Dividend Growth Model

K_E = (DY x (1+ 0.5(G))) + 0.67(G1) +0.33(g)

K_E Cost of Equity
DY Dividend Yield
G_1 Short-term Growth Estimate
g Stable Growth
G Average Growth Rate

Company	**DY** Dividend Yield	**G1** Short-term Growth Estimate	**g** Stable Growth	**G** Average Growth Rate	**K_E** Cost of Equity
Enbridge Inc.	7.60%	10.00%	3.80%	6.90%	15.82%
Kinder Morgan Inc.	6.80%	17.50%	3.80%	10.65%	20.14%
TC Energy Corp	8.10%	12.00%	3.80%	7.90%	17.71%
Williams Companies Inc.	5.10%	10.50%	3.80%	7.15%	13.57%
Pembina Pipeline Corp.	6.00%	11.50%	3.80%	7.65%	15.19%
				Mean	16.49%
				Median	15.82%
				Two-Stage DGM, Indicated Rate	**16.15%**

We placed equal reliance on the mean and median when selecting the indicated rate.

Notes:

Dividend Yield provided by Value Line

Growth Estimates, Next 5 Years for Earnings provided Value Line

Stable growth rate is the nominal growth rate determined in the Capitalization Rate Study Narrative (indicated long-term growth rate of the U.S. economy of 1.8% plus the expected inflation rate of 2.0%).

Three-Stage Dividend Growth Model

Start Price - recent price from Value Line
Expected dividends - estimated dividends from Value Line
Stage one growth - projected earnings growth rate from Value Line
Stage two growth - reversion to long-term growth rate
Stage three growth - long-term growth rate developed in Study 3.80%

Company	Year	Enbridge Inc.		Kinder Morgan Inc.		TC Energy Corp		Williams Companies Inc.		Pembina Pipeline Corp.	
Start Price	2023		-46.65		-16.52		-35.88		-34.93		-44.17
Expected Dividends	2024		3.70		1.20		2.95		1.85		2.89
Stage One Growth	2025	10.00%	4.07	17.50%	1.41	12.00%	3.30	10.50%	2.04	11.50%	3.22
Stage One Growth	2026	10.00%	4.48	17.50%	1.66	12.00%	3.70	10.50%	2.26	11.50%	3.59
Stage One Growth	2027	10.00%	4.92	17.50%	1.95	12.00%	4.14	10.50%	2.50	11.50%	4.01
Stage One Growth	2028	10.00%	5.42	17.50%	2.29	12.00%	4.64	10.50%	2.76	11.50%	4.47
Stage One Growth	2029	10.00%	5.96	17.50%	2.69	12.00%	5.20	10.50%	3.05	11.50%	4.98
Stage Two Growth	2030	9.44%	6.52	16.25%	3.12	11.25%	5.78	9.89%	3.35	10.80%	5.52
Stage Two Growth	2031	8.87%	7.10	15.01%	3.59	10.51%	6.39	9.28%	3.66	10.10%	6.08
Stage Two Growth	2032	8.31%	7.69	13.76%	4.09	9.76%	7.02	8.67%	3.98	9.40%	6.65
Stage Two Growth	2033	7.75%	8.29	12.52%	4.60	9.02%	7.65	8.06%	4.30	8.70%	7.23
Stage Two Growth	2034	7.18%	8.88	11.27%	5.12	8.27%	8.28	7.45%	4.62	8.00%	7.80
Stage Two Growth	2035	6.62%	9.47	10.03%	5.63	7.53%	8.91	6.85%	4.94	7.30%	8.37
Stage Two Growth	2036	6.05%	10.04	8.78%	6.13	6.78%	9.51	6.24%	5.24	6.60%	8.93
Stage Two Growth	2037	5.49%	10.59	7.54%	6.59	6.04%	10.08	5.63%	5.54	5.90%	9.45
Stage Two Growth	2038	4.93%	11.11	6.29%	7.00	5.29%	10.62	5.02%	5.82	5.20%	9.94
Stage Two Growth	2039	4.36%	11.60	5.05%	7.36	4.55%	11.10	4.41%	6.07	4.50%	10.39
Stage Three Growth	2040	3.80%	12.04	3.80%	7.64	3.80%	11.52	3.80%	6.30	3.80%	10.79
Stage Three Growth	2041	3.80%	12.50	3.80%	7.93	3.80%	11.96	3.80%	6.54	3.80%	11.20
Stage Three Growth	2042	3.80%	12.97	3.80%	8.23	3.80%	12.41	3.80%	6.79	3.80%	11.62
Stage Three Growth	2043	3.80%	13.47	3.80%	8.54	3.80%	12.88	3.80%	7.05	3.80%	12.06

Stage Three Growth	2044	3.80%	13.98	3.80%	8.86	3.80%	13.37	3.80%	7.32	3.80%	12.52
Stage Three Growth	2045	3.80%	14.51	3.80%	9.20	3.80%	13.88	3.80%	7.59	3.80%	13.00
Stage Three Growth	2046	3.80%	15.06	3.80%	9.55	3.80%	14.41	3.80%	7.88	3.80%	13.49
Stage Three Growth	2047	3.80%	15.63	3.80%	9.91	3.80%	14.96	3.80%	8.18	3.80%	14.00
Stage Three Growth	2048	3.80%	16.23	3.80%	10.29	3.80%	15.53	3.80%	8.49	3.80%	14.54
Stage Three Growth	2049	3.80%	16.84	3.80%	10.68	3.80%	16.12	3.80%	8.82	3.80%	15.09
Stage Three Growth	2050	3.80%	17.48	3.80%	11.09	3.80%	16.73	3.80%	9.15	3.80%	15.66
Stage Three Growth	2051	3.80%	18.15	3.80%	11.51	3.80%	17.36	3.80%	9.50	3.80%	16.26
Stage Three Growth	2052	3.80%	18.84	3.80%	11.95	3.80%	18.02	3.80%	9.86	3.80%	16.87
Stage Three Growth	2053	3.80%	19.55	3.80%	12.40	3.80%	18.71	3.80%	10.24	3.80%	17.52
Stage Three Growth	2054	3.80%	20.30	3.80%	12.87	3.80%	19.42	3.80%	10.62	3.80%	18.18
Stage Three Growth	2055	3.80%	21.07	3.80%	13.36	3.80%	20.16	3.80%	11.03	3.80%	18.87
Stage Three Growth	2056	3.80%	21.87	3.80%	13.87	3.80%	20.92	3.80%	11.45	3.80%	19.59
Stage Three Growth	2057	3.80%	22.70	3.80%	14.39	3.80%	21.72	3.80%	11.88	3.80%	20.33
Stage Three Growth	2058	3.80%	23.56	3.80%	14.94	3.80%	22.54	3.80%	12.33	3.80%	21.11
Stage Three Growth	2059	3.80%	24.46	3.80%	15.51	3.80%	23.40	3.80%	12.80	3.80%	21.91
Stage Three Growth	2060	3.80%	25.39	3.80%	16.10	3.80%	24.29	3.80%	13.29	3.80%	22.74
Stage Three Growth	2061	3.80%	26.35	3.80%	16.71	3.80%	25.21	3.80%	13.79	3.80%	23.61
Stage Three Growth	2062	3.80%	27.35	3.80%	17.34	3.80%	26.17	3.80%	14.32	3.80%	24.50
Stage Three Growth	2063	3.80%	28.39	3.80%	18.00	3.80%	27.17	3.80%	14.86	3.80%	25.43
Stage Three Growth	2064	3.80%	29.47	3.80%	18.69	3.80%	28.20	3.80%	15.43	3.80%	26.40
Stage Three Growth	2065	3.80%	30.59	3.80%	19.40	3.80%	29.27	3.80%	16.01	3.80%	27.40
Stage Three Growth	2066	3.80%	31.75	3.80%	20.14	3.80%	30.38	3.80%	16.62	3.80%	28.44
Stage Three Growth	2067	3.80%	32.96	3.80%	20.90	3.80%	31.54	3.80%	17.25	3.80%	29.53
Stage Three Growth	2068	3.80%	34.21	3.80%	21.69	3.80%	32.73	3.80%	17.91	3.80%	30.65
Stage Three Growth	2069	3.80%	35.51	3.80%	22.52	3.80%	33.98	3.80%	18.59	3.80%	31.81
Stage Three Growth	2070	3.80%	36.86	3.80%	23.37	3.80%	35.27	3.80%	19.30	3.80%	33.02
Stage Three Growth	2071	3.80%	38.26	3.80%	24.26	3.80%	36.61	3.80%	20.03	3.80%	34.28
Stage Three Growth	2072	3.80%	39.71	3.80%	25.18	3.80%	38.00	3.80%	20.79	3.80%	35.58
Stage Three Growth	2073	3.80%	41.22	3.80%	26.14	3.80%	39.44	3.80%	21.58	3.80%	36.93
Stage Three Growth	2074	3.80%	42.79	3.80%	27.14	3.80%	40.94	3.80%	22.40	3.80%	38.33
Stage Three Growth	2075	3.80%	44.42	3.80%	28.17	3.80%	42.50	3.80%	23.25	3.80%	39.79
Stage Three Growth	2076	3.80%	46.10	3.80%	29.24	3.80%	44.11	3.80%	24.13	3.80%	41.30
Stage Three Growth	2077	3.80%	47.86	3.80%	30.35	3.80%	45.79	3.80%	25.05	3.80%	42.87

Stage Three Growth	2078	3.80%	49.67	3.80%	31.50	3.80%	47.53	3.80%	26.00	3.80%	44.50
Stage Three Growth	2079	3.80%	51.56	3.80%	32.70	3.80%	49.34	3.80%	26.99	3.80%	46.19
Stage Three Growth	2080	3.80%	53.52	3.80%	33.94	3.80%	51.21	3.80%	28.02	3.80%	47.95
Stage Three Growth	2081	3.80%	55.55	3.80%	35.23	3.80%	53.16	3.80%	29.08	3.80%	49.77
Stage Three Growth	2082	3.80%	57.67	3.80%	36.57	3.80%	55.18	3.80%	30.19	3.80%	51.66
Stage Three Growth	2083	3.80%	59.86	3.80%	37.96	3.80%	57.28	3.80%	31.33	3.80%	53.62
Stage Three Growth	2084	3.80%	62.13	3.80%	39.40	3.80%	59.45	3.80%	32.53	3.80%	55.66
Stage Three Growth	2085	3.80%	64.49	3.80%	40.90	3.80%	61.71	3.80%	33.76	3.80%	57.78
Stage Three Growth	2086	3.80%	66.94	3.80%	42.45	3.80%	64.06	3.80%	35.04	3.80%	59.97
Stage Three Growth	2087	3.80%	69.49	3.80%	44.07	3.80%	66.49	3.80%	36.38	3.80%	62.25
Stage Three Growth	2088	3.80%	72.13	3.80%	45.74	3.80%	69.02	3.80%	37.76	3.80%	64.62
Stage Three Growth	2089	3.80%	74.87	3.80%	47.48	3.80%	71.64	3.80%	39.19	3.80%	67.07
Stage Three Growth	2090	3.80%	77.71	3.80%	49.28	3.80%	74.36	3.80%	40.68	3.80%	69.62
Stage Three Growth	2091	3.80%	80.67	3.80%	51.15	3.80%	77.19	3.80%	42.23	3.80%	72.27
Stage Three Growth	2092	3.80%	83.73	3.80%	53.10	3.80%	80.12	3.80%	43.83	3.80%	75.01
Stage Three Growth	2093	3.80%	86.91	3.80%	55.12	3.80%	83.16	3.80%	45.50	3.80%	77.86
Stage Three Growth	2094	3.80%	90.22	3.80%	57.21	3.80%	86.33	3.80%	47.23	3.80%	80.82
Stage Three Growth	2095	3.80%	93.64	3.80%	59.38	3.80%	89.61	3.80%	49.02	3.80%	83.89
Stage Three Growth	2096	3.80%	97.20	3.80%	61.64	3.80%	93.01	3.80%	50.88	3.80%	87.08
Stage Three Growth	2097	3.80%	100.90	3.80%	63.98	3.80%	96.54	3.80%	52.82	3.80%	90.39
Stage Three Growth	2098	3.80%	104.73	3.80%	66.42	3.80%	100.21	3.80%	54.83	3.80%	93.82
Stage Three Growth	2099	3.80%	108.71	3.80%	68.94	3.80%	104.02	3.80%	56.91	3.80%	97.39
Stage Three Growth	2100	3.80%	112.84	3.80%	71.56	3.80%	107.97	3.80%	59.07	3.80%	101.09
Stage Three Growth	2101	3.80%	117.13	3.80%	74.28	3.80%	112.08	3.80%	61.32	3.80%	104.93
Stage Three Growth	2102	3.80%	121.58	3.80%	77.10	3.80%	116.34	3.80%	63.65	3.80%	108.92
Stage Three Growth	2103	3.80%	126.20	3.80%	80.03	3.80%	120.76	3.80%	66.06	3.80%	113.06
Stage Three Growth	2104	3.80%	131.00	3.80%	83.07	3.80%	125.35	3.80%	68.58	3.80%	117.35
Stage Three Growth	2105	3.80%	135.97	3.80%	86.23	3.80%	130.11	3.80%	71.18	3.80%	121.81
Stage Three Growth	2106	3.80%	141.14	3.80%	89.50	3.80%	135.05	3.80%	73.89	3.80%	126.44
Stage Three Growth	2107	3.80%	146.50	3.80%	92.91	3.80%	140.19	3.80%	76.69	3.80%	131.25
Stage Three Growth	2108	3.80%	152.07	3.80%	96.44	3.80%	145.51	3.80%	79.61	3.80%	136.23
Stage Three Growth	2109	3.80%	157.85	3.80%	100.10	3.80%	151.04	3.80%	82.63	3.80%	141.41
Stage Three Growth	2110	3.80%	163.85	3.80%	103.90	3.80%	156.78	3.80%	85.77	3.80%	146.78
Stage Three Growth	2111	3.80%	170.08	3.80%	107.85	3.80%	162.74	3.80%	89.03	3.80%	152.36

Stage Three Growth	2112	3.80%	176.54	3.80%	111.95	3.80%	168.92	3.80%	92.42	3.80%	158.15
Stage Three Growth	2113	3.80%	183.25	3.80%	116.21	3.80%	175.34	3.80%	95.93	3.80%	164.16
Stage Three Growth	2114	3.80%	190.21	3.80%	120.62	3.80%	182.01	3.80%	99.57	3.80%	170.40
Stage Three Growth	2115	3.80%	197.44	3.80%	125.21	3.80%	188.92	3.80%	103.36	3.80%	176.88
Stage Three Growth	2116	3.80%	204.94	3.80%	129.96	3.80%	196.10	3.80%	107.28	3.80%	183.60
Stage Three Growth	2117	3.80%	212.73	3.80%	134.90	3.80%	203.55	3.80%	111.36	3.80%	190.57
Stage Three Growth	2118	3.80%	220.81	3.80%	140.03	3.80%	211.29	3.80%	115.59	3.80%	197.82
Stage Three Growth	2119	3.80%	229.20	3.80%	145.35	3.80%	219.32	3.80%	119.99	3.80%	205.33
Stage Three Growth	2120	3.80%	237.91	3.80%	150.87	3.80%	227.65	3.80%	124.54	3.80%	213.13
Stage Three Growth	2121	3.80%	246.95	3.80%	156.61	3.80%	236.30	3.80%	129.28	3.80%	221.23
Stage Three Growth	2122	3.80%	256.34	3.80%	162.56	3.80%	245.28	3.80%	134.19	3.80%	229.64
Stage Three Growth	2123	3.80%	266.08	3.80%	168.73	3.80%	254.60	3.80%	139.29	3.80%	238.37
Stage Three Growth	2124	3.80%	276.19	3.80%	175.15	3.80%	264.28	3.80%	144.58	3.80%	247.43
Stage Three Growth	2125	3.80%	286.68	3.80%	181.80	3.80%	274.32	3.80%	150.08	3.80%	256.83
Stage Three Growth	2126	3.80%	297.58	3.80%	188.71	3.80%	284.74	3.80%	155.78	3.80%	266.59
Stage Three Growth	2127	3.80%	308.89	3.80%	195.88	3.80%	295.56	3.80%	161.70	3.80%	276.72
Stage Three Growth	2128	3.80%	320.62	3.80%	203.32	3.80%	306.79	3.80%	167.84	3.80%	287.23
Stage Three Growth	2129	3.80%	332.81	3.80%	211.05	3.80%	318.45	3.80%	174.22	3.80%	298.15
Stage Three Growth	2130	3.80%	345.45	3.80%	219.07	3.80%	330.55	3.80%	180.84	3.80%	309.48
Stage Three Growth	2131	3.80%	358.58	3.80%	227.39	3.80%	343.11	3.80%	187.71	3.80%	321.24
Stage Three Growth	2132	3.80%	372.21	3.80%	236.04	3.80%	356.15	3.80%	194.85	3.80%	333.44
Stage Three Growth	2133	3.80%	386.35	3.80%	245.00	3.80%	369.69	3.80%	202.25	3.80%	346.11
Stage Three Growth	2134	3.80%	401.03	3.80%	254.31	3.80%	383.73	3.80%	209.94	3.80%	359.27
Stage Three Growth	2135	3.80%	416.27	3.80%	263.98	3.80%	398.32	3.80%	217.91	3.80%	372.92
Stage Three Growth	2136	3.80%	432.09	3.80%	274.01	3.80%	413.45	3.80%	226.19	3.80%	387.09
Stage Three Growth	2137	3.80%	448.51	3.80%	284.42	3.80%	429.16	3.80%	234.79	3.80%	401.80
Stage Three Growth	2138	3.80%	465.55	3.80%	295.23	3.80%	445.47	3.80%	243.71	3.80%	417.07
Stage Three Growth	2139	3.80%	483.24	3.80%	306.45	3.80%	462.40	3.80%	252.97	3.80%	432.92
Implied Cost of Equity			**15.12%**		**18.71%**		**16.68%**		**12.00%**		**14.18%**

Mean	15.34%
Median	15.12%
Selected Three-Stage DGM Cost of Equity	**15.23%**

Equity Component of the Direct Rate

Company	Value Line P/E Ratio
Enbridge Inc.	25.4
Kinder Morgan Inc.	15.2
TC Energy Corp	11.0
Williams Companies Inc.	16.9
Pembina Pipeline Corp.	17.1
Mean	17.1
Median	16.9
Selected Price to Earnings (P/E) Ratio	16.9
Indicated Equity Component of the Direct Rate	**5.92%**

We placed more reliance on the median price to earnings ratio.

Notes:

The Price/Earnings Ratio was downloaded from Value Line.

Beta Analysis

Company	Beta
Enbridge Inc.	0.85
Kinder Morgan Inc.	1.10
TC Energy Corp	1.05
Williams Companies Inc.	1.15
Pembina Pipeline Corp.	1.05
Beta Mean	1.04
Beta Median	1.05
Unlevered and Relevered Mean*	1.03
Indicated Beta	**1.05**

We considered the mean, median, and unlevered/relevered mean. We placed more reliance on the median when selecting the indicated beta.

Notes:
*See the Unlevering Relevering Beta page for the calculation

Comparing betas from Value Line for the 2023, 2022, 2021, and 2020 calendar years

	Betas			
Company	**2023 CY**	**2022 CY**	**2021 CY**	**2020 CY**
Enbridge Inc.	0.85	0.85	0.90	0.90
Kinder Morgan Inc.	1.10	1.15	1.15	1.25
Pembina Pipeline Corp	1.05	1.05	1.10	1.15
TC Energy Corp	1.05	1.05	1.05	1.05
Williams Companies Inc.	1.15	1.15	1.20	1.45

Unlevering/Relevering Betas

Unlevering of Betas					
Company	*Value Line* **Actual Income Tax Rate**	*From Capital Structure Page* **Actual Debt in Capital Structure**	*From Capital Structure Page* **Actual Equity in Capital Structure**	*Value Line* **Levered Beta (Published)**	*Formula* **Unlevered Beta**
Enbridge Inc.	15.00%	39.16%	56.43%	0.85	0.53
Kinder Morgan Inc.	21.00%	43.18%	56.82%	1.10	0.69
TC Energy Corp	31.00%	54.58%	43.27%	1.05	0.56
Williams Companies Inc.	23.00%	34.89%	65.11%	1.15	0.81
Pembina Pipeline Corp.	21.00%	26.06%	67.77%	1.05	0.81
			Average	**1.04**	

Relevering of Betas				
Three Stage Dividend Growt	*Formula* **Composite Income Tax Rate**	*From Capital Structure Page* **Industry Debt in Capital Structure**	*From Capital Structure Page* **Industry Equity in Capital Structure**	*Formula* **Levered Beta**
Enbridge Inc.	22.50%	40.00%	60.00%	0.80
Kinder Morgan Inc.	22.50%	40.00%	60.00%	1.05
TC Energy Corp	22.50%	40.00%	60.00%	0.85
Williams Companies Inc.	22.50%	40.00%	60.00%	1.23
Pembina Pipeline Corp.	22.50%	40.00%	60.00%	1.23
			Average	**1.03**

Notes:

Uses the Hamada Formula

Unlevered Beta = Levered Beta / [1 + (1 - Tax Rate) x (Debt/Equity))], using company-specific components
Using company-specific components

Relevered Beta = Unlevered Beta [1 + (1 - Tax Rate) x (Debt/Equity)]
Using industry components for Tax Rate, Debt, and Equity

Calculation of Market to Book Ratios for the Gas Transmission Pipeline Market Segment

- December 31, 2023 calendar year information for the January 2, 2024 Assessment
- A market to book ratio over one would be an indication of no obsolescence.
- Market Value estimates for Common Equity are from Value Line. Market Value Estimates for Long-Term Debt are from the company's 10-K.
- Book Value amounts are from the company's 10-K.

Market to Book Ratio for Equity

Company	Market Value of Common Equity from Value Line	Book Value of Common Equity from 10-K	Market to Book Ratio	Source
Enbridge Inc.	99,158,046,320	61,454,000,000	1.61	Enbridge Inc. 2023 10-K, p. 106 (CAD)
Kinder Morgan Inc.	36,720,225,373	30,306,000,000	1.21	Kinder Morgan Inc. 2023 10-K, p. 76
TC Energy Corp*	37,207,560,000	22,345,023,300	1.67	TC Energy Corp. 2023 Annual Report, p. 143
Williams Companies Inc.	42,492,298,613	12,402,000,000	3.43	Williams Companies 2023 10-K, p. 81
Pembina Pipeline Corp.	24,259,621,610	15,813,000,000	1.53	Pembina Pipeline Corp 2023 10-K, p. 82 (CAD)
		Average	1.89	

Market to Book Ratio for Debt

Company	Market Value of Long-Term Debt from 10-K	Book Value of Long-Term Debt from 10-K	Market to Book Ratio	Source
Enbridge Inc.	78,100,000,000	81,200,000,000	0.96	Enbridge Inc. 2023 10-K, p. 168 (CAD)
Kinder Morgan Inc.	31,370,000,000	32,116,000,000	0.98	Kinder Morgan Inc. 2023 10-K, p. 103
TC Energy Corp	62,032,000,000	63,201,000,000	0.98	TC Energy Corp. 2023 Annual Report, p. 213 (CAD)
Williams Companies Inc.	25,553,000,000	25,713,000,000	0.99	Williams Companies 2023 10-K, p. 131
Pembina Pipeline Corp.	9,989,000,000	10,499,000,000	0.95	Pembina Pipeline Corp 2023 10-K, p 130
		Average	0.97	

Application of Capital Structure as determined in the Capitalization Rate Study

	Capital Structure	Market to Book	Composite
Common Equity	60.00%	1.89	1.13
Long-term Debt	40.00%	0.97	0.39
			1.52

Notes:

*Convert TC Energy Corp.'s Book Value of Common Equity from Canadian Dollars to U.S. Dollars.
TC Energy Corp.'s Annual Report is in CAD. The Value Line Report is in USD.

29,553,000,000	CAD
0.7561	Exchange Rate
22,345,023,300	USD

Appendix D - Fluid Transportation Pipeline

Yield Rate

	Capital Structure	Rate	Composite
Long-Term Debt	40.00%	5.75%	2.30%
Common Equity	60.00%	11.32%	6.79%
Yield Rate			**9.09%**

Fluid Transportation Pipeline Yield Rate	**9.09%**

Capital Structure

Company	Value of Long-Term Debt	Value of Preferred Equity	Value of Common Equity	Total Market Value	% Long-Term Debt	% Preferred Equity	% Common Equity
Enterprise Products Partners LP	27,446,000,000	-	56,447,135,288	83,893,135,288	32.72%	0.00%	67.28%
MPLX LP	20,400,000,000	965,000,000	35,332,949,483	56,697,949,483	35.98%	1.70%	62.32%
NuStar Energy LP	3,398,000,000	-	2,247,938,270	5,645,938,270	60.18%	0.00%	39.82%
Plains All American Pipeline	7,241,000,000	2,295,000,000	10,753,225,134	20,289,225,134	35.69%	11.31%	53.00%
				Mean	41.14%	3.25%	55.60%
				Median	35.83%	0.85%	57.66%
				Indicated Industry Capital Structure	**40.00%**		**60.00%**

Indexed Rate of Debt

Company	Debt Rating	Long-Term Debt Rate	
Enterprise Products Partners LP	A3	5.07%	*
MPLX LP	Baa2	5.60%	
NuStar Energy LP	Ba3	7.29%	**
Plains All American Pipeline	Baa3	5.60%	

Mean	5.89%
Median	5.60%
Mode	5.60%

Indicated Rate of Debt	5.75%

We placed equal reliance on the mean and median when selecting the indicated rate of debt.

Corporate Bond Yield Averages from Mergent Bond Record, January 2024 Edition
Industrial Bond Averages, December 2023

Mergent	S&P	Dec. Yield Avg.
Aaa	AAA	4.74%
Aa1, Aa2 Aa3	AA+, AA, AA-	4.82%
A1, A2, A3	A+, A, A-	5.07%
Baa1, Baa2, Baa3	BBB+, BBB, BBB-	5.60%

* Used the debt rating of Enterprise Products Operating LLC as a proxy for Enterprise Products Partners LP. Enterprise Products Operating LLC is the operating partnership of Enterprise Products Partners LP.

** NuStar Energy LP is rated below the Mergent Bond Record Bond Yield Averages. We analyzed the Mergent Bond Record, January 2024 issue, for U.S. Corporate Bonds with the same debt rating. We determined the median Ba1, Ba2, and Ba3 yield to maturity is 7.29%.

Indicated Rate of Equity

Model	Rate
CAPM - Ex Ante, Three Stage	7.56%
CAPM - Damodaran	9.45%
CAPM - The CFO Survey	9.83%
CAPM - Fernandez, Banuls, and Acin	10.68%
CAPM - Ex Post (BVR Historical, Arithmetic)	11.52%
CAPM - Ex Post (BVR Historical, Geometric)	10.11%
Empirical CAPM - Ex Ante, Three Stage	7.47%
Empirical CAPM - Damodaran	9.31%
Empirical CAPM - Graham and Harvey	9.68%
Empirical CAPM - Fernandez, Banuls, and Acin	10.51%
Empirical CAPM - Ex Post (BVR Historical, Arithmetic)	11.33%
Empirical CAPM - Ex Post (BVR Historical, Geometric)	9.96%
DGM - Dividend Growth	17.00%
DGM - Earnings Growth	16.70%
DGM - Two-Stage	15.57%
DGM - Three-Stage	15.26%
Indicated Rate of Equity	**11.32%**

We established a range of acceptability for the cost of equity with all available models. We considered all of the data and placed more reliance on the CAPM using the Business Valuation Resources Historical (arithmetic) equity risk premium, and the Damodaran CAPM.

Direct Rate and Growth

	Capital Structure	Rate	Composite
Debt Component	40.00%	5.75%	2.30%
Equity Component	60.00%	8.55%	5.13%
Direct Rate			**7.43%**

Direct Rate	**7.43%**

Capital Asset Pricing Model (CAPM)

(ERP x β) + RFR = Indicated Equity Rate

	Equity Risk Premium (ERP)	x Industry Beta (β)	= Industry Risk Premium	+ Risk-Free Rate[1] (RFR)	Indicated Equity Rate
Three Stage Ex Ante[2]	2.91%	1.12	3.26%	4.30%	7.56%
Dr. Damodaran ERP[3]	4.60%	1.12	5.15%	4.30%	9.45%
The CFO Survey[4]	4.94%	1.12	5.53%	4.30%	9.83%
Fernandez, Banuls and Acin[5]	5.70%	1.12	6.38%	4.30%	10.68%
BVR - Historical, Arithmetic Mean[6]	6.45%	1.12	7.22%	4.30%	11.52%
BVR - Historical, Geometric Mean[7]	5.19%	1.12	5.81%	4.30%	10.11%

Notes:

1 U.S. Treasury on January 2, 2024 - 20-year Coupon Bond Yield, Daily Observations, Retrieved January 24, 2024 from www.federalreserve.gov

2 Three Stage Dividend Growth Model, S&P 500. See Appendix F, Three Stage Ex Ante Calculation

3 Implied Equity Risk Premium on January 5, 2024 as determined by Dr. Aswath Damodaran; Retrieved January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

4 The CFO Survey (2023). Data & Results December 20, 2023. Mean average annual S&P return over next ten years (8.9%) less annual yield on 10-year Treasury Bonds (3.96%). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

5 Fernandez, P., Garcia D., & Acin, J. F. (2023). Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023. SSRN Electronic Journal. Retrieved January 22, 2024 from https://ssrn.com/abstract=4407839

6 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using arithmetic mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

7 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using geometric mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

Empirical Capital Asset Pricing Model (ECAPM)

(ERP x β x .75) + (ERP x .25) + RFR = Indicated Equity Rate

Model	Equity Risk Premium (ERP)	Industry Beta (β)	Weighted Industry Risk Premium (weighted at 75%)	Weighted Equity Risk Premium (weighted at 25%)	Risk-Free Rate (RFR)	Indicated Equity Rate
Three Stage Ex Ante[2]	2.91%	1.12	2.44%	0.73%	4.30%	**7.47%**
Dr. Damodaran ERP[3]	4.60%	1.12	3.86%	1.15%	4.30%	**9.31%**
The CFO Survey[4]	4.94%	1.12	4.15%	1.24%	4.30%	**9.68%**
Fernandez, Banuls and Acin[5]	5.70%	1.12	4.79%	1.43%	4.30%	**10.51%**
BVR - Historical, Arithmetic Mean[6]	6.45%	1.12	5.42%	1.61%	4.30%	**11.33%**
BVR - Historical, Geometric Mean[7]	5.19%	1.12	4.36%	1.30%	4.30%	**9.96%**

Notes:

1 U.S. Treasury on January 2, 2024 - 20-year Coupon Bond Yield, Daily Observations, Retrieved January 24, 2024 from www.federalreserve.gov

2 Three Stage Dividend Growth Model, S&P 500. See Appendix F, Three Stage Ex Ante Calculation

3 Implied Equity Risk Premium on January 5, 2024 as determined by Dr. Aswath Damodaran; Retrieved January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

4 The CFO Survey (2023). Data & Results December 20, 2023. Mean average annual S&P return over next ten years (8.9%) less annual yield on 10-year Treasury Bonds (3.96%). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

5 Fernandez, P., Garcia D., & Acin, J. F. (2023). Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023. SSRN Electronic Journal. Retrieved January 22, 2024 from https://ssrn.com/abstract=4407839

6 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using arithmetic mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

7 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using geometric mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

Single-Stage Dividend Growth Model

Company	Current Dividend Yield (DY)	Projected Short-term EPS Growth Rate (EG)	Projected Short-term Dividend Growth Rate (DG)	Cost of Equity Earnings Growth DY + EG	Cost of Equity Dividend Growth DY + DG
Enterprise Products Partners LP	7.80%	7.00%	9.50%	14.80%	17.30%
MPLX LP	9.60%	9.00%	3.00%	18.60%	12.60%
NuStar Energy LP	9.20%	NMF	7.50%	N/A	16.70%
Plains All American Pipeline	8.30%	NMF	21.50%	N/A	29.80%
Mean	8.73%	8.00%	10.38%	16.70%	19.10%
Median	8.75%	8.00%	8.50%	16.70%	17.00%

DGM - Dividend Growth, Indicated Rate	17.00%
DGM - Earnings Growth, Indicated Rate	16.70%

We placed more reliance on the median to select the indicated rate.

Notes:

Dividend Yield and growth rates provided by Value Line

Did not NuStar Energy LP of Plains All American Pipeline in the DGM - Earnings estimate.

Two-Stage Dividend Growth Model

K_E = (DY x (1+ 0.5(G))) + 0.67(G1) +0.33(g)

K_E Cost of Equity
G_1 Short-term Growth Estimate
DY Dividend Yield
g Stable Growth
G Average Growth Rate

Company	**DY** Dividend Yield	**G1** Short-term Growth Estimate	**g** Stable Growth	**G** Average Growth Rate	**K_E** Cost of Equity
Enterprise Products Partners LP	7.80%	7.00%	3.80%	5.40%	13.95%
MPLX LP	9.60%	9.00%	3.80%	6.40%	17.19%
NuStar Energy LP	9.20%	NMF	3.80%	3.80%	N/A
Plains All American Pipeline	8.30%	NMF	3.80%	3.80%	N/A
				Mean	15.57%
				Median	15.57%
				Two-Stage DGM, Indicated Rate	**15.57%**

We placed equal reliance on the mean and median to select the indicated rate.

Notes:

Dividend Yield provided by Value Line

Growth Estimates, Next 5 Years for Earnings provided Value Line

Stable growth rate is the nominal growth rate determined in the Capitalization Rate Study Narrative (indicated long-term growth rate of the U.S. economy of 1.8% plus the expected inflation rate of 2.0%).

Did not NuStar Energy LP of Plains All American Pipeline in the absence of reliable short-term growth estimates.

Three-Stage Dividend Growth Model

Start Price - recent price from Value Line
Expected dividends - estimated dividends from Value Line
Stage one growth - projected earnings growth rate from Value Line
Stage two growth - reversion to long-term growth rate
Stage three growth - long-term growth rate developed in Study 3.80%

Company	Year	Enterprise Products Partners LP		MPLX LP	
Start Price	2023		-25.99		-35.29
Expected Dividends	2024		2.15		3.45
Stage One Growth	2025	7.00%	2.30	9.00%	3.76
Stage One Growth	2026	7.00%	2.46	9.00%	4.10
Stage One Growth	2027	7.00%	2.63	9.00%	4.47
Stage One Growth	2028	7.00%	2.82	9.00%	4.87
Stage One Growth	2029	7.00%	3.02	9.00%	5.31
Stage Two Growth	2030	6.71%	3.22	8.53%	5.76
Stage Two Growth	2031	6.42%	3.42	8.05%	6.22
Stage Two Growth	2032	6.13%	3.63	7.58%	6.70
Stage Two Growth	2033	5.84%	3.85	7.11%	7.17
Stage Two Growth	2034	5.55%	4.06	6.64%	7.65
Stage Two Growth	2035	5.25%	4.27	6.16%	8.12
Stage Two Growth	2036	4.96%	4.48	5.69%	8.58
Stage Two Growth	2037	4.67%	4.69	5.22%	9.03
Stage Two Growth	2038	4.38%	4.90	4.75%	9.46
Stage Two Growth	2039	4.09%	5.10	4.27%	9.86
Stage Three Growth	2040	3.80%	5.29	3.80%	10.24
Stage Three Growth	2041	3.80%	5.50	3.80%	10.63
Stage Three Growth	2042	3.80%	5.70	3.80%	11.03
Stage Three Growth	2043	3.80%	5.92	3.80%	11.45

Stage Three Growth	2044	3.80%	6.15	3.80%	11.89
Stage Three Growth	2045	3.80%	6.38	3.80%	12.34
Stage Three Growth	2046	3.80%	6.62	3.80%	12.81
Stage Three Growth	2047	3.80%	6.87	3.80%	13.29
Stage Three Growth	2048	3.80%	7.14	3.80%	13.80
Stage Three Growth	2049	3.80%	7.41	3.80%	14.32
Stage Three Growth	2050	3.80%	7.69	3.80%	14.87
Stage Three Growth	2051	3.80%	7.98	3.80%	15.43
Stage Three Growth	2052	3.80%	8.28	3.80%	16.02
Stage Three Growth	2053	3.80%	8.60	3.80%	16.63
Stage Three Growth	2054	3.80%	8.92	3.80%	17.26
Stage Three Growth	2055	3.80%	9.26	3.80%	17.91
Stage Three Growth	2056	3.80%	9.62	3.80%	18.59
Stage Three Growth	2057	3.80%	9.98	3.80%	19.30
Stage Three Growth	2058	3.80%	10.36	3.80%	20.03
Stage Three Growth	2059	3.80%	10.75	3.80%	20.80
Stage Three Growth	2060	3.80%	11.16	3.80%	21.59
Stage Three Growth	2061	3.80%	11.59	3.80%	22.41
Stage Three Growth	2062	3.80%	12.03	3.80%	23.26
Stage Three Growth	2063	3.80%	12.48	3.80%	24.14
Stage Three Growth	2064	3.80%	12.96	3.80%	25.06
Stage Three Growth	2065	3.80%	13.45	3.80%	26.01
Stage Three Growth	2066	3.80%	13.96	3.80%	27.00
Stage Three Growth	2067	3.80%	14.49	3.80%	28.02
Stage Three Growth	2068	3.80%	15.04	3.80%	29.09
Stage Three Growth	2069	3.80%	15.61	3.80%	30.19
Stage Three Growth	2070	3.80%	16.21	3.80%	31.34
Stage Three Growth	2071	3.80%	16.82	3.80%	32.53
Stage Three Growth	2072	3.80%	17.46	3.80%	33.77
Stage Three Growth	2073	3.80%	18.13	3.80%	35.05
Stage Three Growth	2074	3.80%	18.82	3.80%	36.38
Stage Three Growth	2075	3.80%	19.53	3.80%	37.77
Stage Three Growth	2076	3.80%	20.27	3.80%	39.20
Stage Three Growth	2077	3.80%	21.04	3.80%	40.69

Stage Three Growth	2078	3.80%	21.84	3.80%	42.24
Stage Three Growth	2079	3.80%	22.67	3.80%	43.84
Stage Three Growth	2080	3.80%	23.53	3.80%	45.51
Stage Three Growth	2081	3.80%	24.43	3.80%	47.24
Stage Three Growth	2082	3.80%	25.36	3.80%	49.03
Stage Three Growth	2083	3.80%	26.32	3.80%	50.90
Stage Three Growth	2084	3.80%	27.32	3.80%	52.83
Stage Three Growth	2085	3.80%	28.36	3.80%	54.84
Stage Three Growth	2086	3.80%	29.44	3.80%	56.92
Stage Three Growth	2087	3.80%	30.56	3.80%	59.09
Stage Three Growth	2088	3.80%	31.72	3.80%	61.33
Stage Three Growth	2089	3.80%	32.92	3.80%	63.66
Stage Three Growth	2090	3.80%	34.17	3.80%	66.08
Stage Three Growth	2091	3.80%	35.47	3.80%	68.59
Stage Three Growth	2092	3.80%	36.82	3.80%	71.20
Stage Three Growth	2093	3.80%	38.22	3.80%	73.90
Stage Three Growth	2094	3.80%	39.67	3.80%	76.71
Stage Three Growth	2095	3.80%	41.18	3.80%	79.63
Stage Three Growth	2096	3.80%	42.74	3.80%	82.65
Stage Three Growth	2097	3.80%	44.37	3.80%	85.79
Stage Three Growth	2098	3.80%	46.05	3.80%	89.05
Stage Three Growth	2099	3.80%	47.80	3.80%	92.44
Stage Three Growth	2100	3.80%	49.62	3.80%	95.95
Stage Three Growth	2101	3.80%	51.51	3.80%	99.60
Stage Three Growth	2102	3.80%	53.46	3.80%	103.38
Stage Three Growth	2103	3.80%	55.49	3.80%	107.31
Stage Three Growth	2104	3.80%	57.60	3.80%	111.39
Stage Three Growth	2105	3.80%	59.79	3.80%	115.62
Stage Three Growth	2106	3.80%	62.06	3.80%	120.02
Stage Three Growth	2107	3.80%	64.42	3.80%	124.58
Stage Three Growth	2108	3.80%	66.87	3.80%	129.31
Stage Three Growth	2109	3.80%	69.41	3.80%	134.22
Stage Three Growth	2110	3.80%	72.05	3.80%	139.32
Stage Three Growth	2111	3.80%	74.79	3.80%	144.62

Stage Three Growth	2112	3.80%	77.63	3.80%	150.11
Stage Three Growth	2113	3.80%	80.58	3.80%	155.82
Stage Three Growth	2114	3.80%	83.64	3.80%	161.74
Stage Three Growth	2115	3.80%	86.82	3.80%	167.89
Stage Three Growth	2116	3.80%	90.12	3.80%	174.27
Stage Three Growth	2117	3.80%	93.54	3.80%	180.89
Stage Three Growth	2118	3.80%	97.10	3.80%	187.76
Stage Three Growth	2119	3.80%	100.79	3.80%	194.90
Stage Three Growth	2120	3.80%	104.62	3.80%	202.30
Stage Three Growth	2121	3.80%	108.59	3.80%	209.99
Stage Three Growth	2122	3.80%	112.72	3.80%	217.97
Stage Three Growth	2123	3.80%	117.00	3.80%	226.25
Stage Three Growth	2124	3.80%	121.45	3.80%	234.85
Stage Three Growth	2125	3.80%	126.06	3.80%	243.77
Stage Three Growth	2126	3.80%	130.85	3.80%	253.04
Stage Three Growth	2127	3.80%	135.83	3.80%	262.65
Stage Three Growth	2128	3.80%	140.99	3.80%	272.63
Stage Three Growth	2129	3.80%	146.34	3.80%	282.99
Stage Three Growth	2130	3.80%	151.91	3.80%	293.75
Stage Three Growth	2131	3.80%	157.68	3.80%	304.91
Stage Three Growth	2132	3.80%	163.67	3.80%	316.50
Stage Three Growth	2133	3.80%	169.89	3.80%	328.52
Stage Three Growth	2134	3.80%	176.35	3.80%	341.01
Stage Three Growth	2135	3.80%	183.05	3.80%	353.96
Stage Three Growth	2136	3.80%	190.00	3.80%	367.42
Stage Three Growth	2137	3.80%	197.22	3.80%	381.38
Stage Three Growth	2138	3.80%	204.72	3.80%	395.87
Stage Three Growth	2139	3.80%	212.50	3.80%	410.91
Implied Cost of Equity			**13.81%**		**16.72%**

Mean	15.26%
Median	15.26%
Selected Three-Stage DGM Cost of Equity	**15.26%**

Note:

NuStar Energy LP, and Plains All American's estimated earnings growth rate is NMF and therefore, we were not able to complete this analysis for the company.

Equity Component of the Direct Rate

Company	Value Line P/E Ratio
Enterprise Products Partners LP	9.7
MPLX LP	9.3
NuStar Energy LP	19.4
Plains All American Pipeline	11.9
Mean	12.58
Median	10.80
Selected Price to Earnings (P/E) Ratio	11.69
Indicated Equity Component of the Direct Rate	**8.55%**

We placed equal reliance on the mean and median price to earnings ratio.

Notes:

The Price/Earnings Ratio was downloaded from Value Line.

Beta Analysis

Company	Beta
Enterprise Products Partners LP	1.00
MPLX LP	1.00
NuStar Energy LP	1.15
Plains All American Pipeline	1.40
Beta Mean	1.14
Beta Median	1.08
Unlevered and Relevered Mean*	1.09
Indicated Beta	**1.12**

We considered the mean, median, and unlevered/relevered mean. We placed more reliance on the mean when selecting the indicated beta. We placed no reliance on the unlevered and relevered mean given the minimal tax rate applicable to the guideline companies. The Hamada formula used to unlever and relever betas relies on an income tax component, which these guideline companies do not have.

Notes:

*See the Unlevering Relevering Beta page for the calculation

Unlevering/Relevering Betas

Unlevering of Betas					
Company	*Value Line* **Actual Income Tax Rate**	*From Capital Structure Page* **Actual Debt in Capital Structure**	*From Capital Structure Page* **Actual Equity in Capital Structure**	*Value Line* **Levered Beta (Published)**	*Formula* **Unlevered Beta**
Enterprise Products Partners LI	1.10%	32.72%	67.28%	1.00	0.68
MPLX LP	0.50%	35.98%	62.32%	1.00	0.64
NuStar Energy LP	1.50%	60.18%	39.82%	1.15	0.46
Plains All American Pipeline	10.50%	35.69%	53.00%	1.40	0.87
			Average	**1.14**	

Relevering of Betas				
Company	*Formula* **Composite Income Tax Rate**	*From Capital Structure Page* **Industry Debt in Capital Structure**	*From Capital Structure Page* **Industry Equity in Capital Structure**	*Formula* **Levered Beta**
Enterprise Products Partners LI	3.40%	40.00%	60.00%	1.12
MPLX LP	3.40%	40.00%	60.00%	1.05
NuStar Energy LP	3.40%	40.00%	60.00%	0.76
Plains All American Pipeline	3.40%	40.00%	60.00%	1.43
			Average	**1.09**

Notes:

Uses the Hamada Formula

Unlevered Beta = Levered Beta / [1 + (1 - Tax Rate) x (Debt/Equity))], using company-specific components
Using company-specific components

Relevered Beta = Unlevered Beta [1 + (1 - Tax Rate) x (Debt/Equity))]
Using industry components for Tax Rate, Debt, and Equity

Calculation of Market to Book Ratios for the Fluid Transportation Market Segment

- December 31, 2023 calendar year information for the January 2, 2024 Assessment
- A market to book ratio over one would be an indication of no obsolescence.
- Market Value estimates for Common Equity are from Value Line. Market Value Estimates for Long-Term Debt are from the company's 10-K.
- Book Value amounts are from the company's 10-K.

Market to Book Ratio for Equity

Company	Market Value of Common Equity from Value Line	Book Value of Common Equity from 10-K	Market to Book Ratio	Source
Enterprise Products Partners LP	56,447,135,288	N/A	N/A	N/A
MPLX LP	35,332,949,483	12,454,000,000	2.84	MPLX LP 2023 10-K, p. 79
NuStar Energy LP	2,247,938,270	1,046,281,000	2.15	NuStar Energy LP 2023 10-K, p. 58
Plains All American Pipeline	10,753,225,134	10,422,000,000	1.03	Plains All American Pipeline LP 2023 10-K, p. F-5
		Average	2.01	

Market to Book Ratio for Debt

Company	Market Value of Long-Term Debt from 10-K	Book Value of Long-Term Debt from 10-K	Market to Book Ratio	Source
Enterprise Products Partners LP	N/A	N/A	N/A	N/A
MPLX LP	19,377,000,000	20,547,000,000	0.94	MPLX LP 2023 10-K, p. 104
NuStar Energy LP	3,426,307,000	3,359,631,000	1.02	NuStar Energy LP 2023 10-K, p. 75 & 82
Plains All American Pipeline	6,900,000,000	7,300,000,000	0.95	Plains All American Pipeline LP 2023 10-K, p. F-31
		Average	0.97	

Application of Capital Structure as determined in the Capitalization Rate Study

	Capital Structure	Market to Book	Composite
Common Equity	60.00%	2.01	1.21
Long-term Debt	40.00%	0.97	0.39
			1.60

Appendix E - Railroad

Yield Rate

	Capital Structure	Rate	Composite
Long-Term Debt	21.00%	5.13%	1.08%
Common Equity	79.00%	10.88%	8.60%
Yield Rate			**9.68%**

Yield Rate	**9.68%**

Capital Structure

Company	Value of Long-Term Debt	Value of Preferred Equity	Value of Common Equity	Total Market Value	% Long-Term Debt	% Preferred Equity	% Common Equity
Canadian National Railway	11,845,000,000	-	72,496,248,000	84,341,248,000	14.04%	0.00%	85.96%
CSX Corporation	17,903,000,000	-	60,034,859,780	77,937,859,780	22.97%	0.00%	77.03%
Norfolk Southern Corp	16,179,000,000	-	44,159,903,304	60,338,903,304	26.81%	0.00%	73.19%
Union Pacific Corp	31,153,000,000	-	129,905,226,185	161,058,226,185	19.34%	0.00%	80.66%
				Mean	20.79%	0.00%	79.21%
				Median	21.16%	0.00%	78.84%
	Indicated Capital Structure				**21.00%**		**79.00%**

Notes:
Data downloaded from Value Line.

DEPARTMENT OF REVENUE

Indexed Rate of Debt

Company	Debt Rating	Long-Term Debt Rate
Canadian National Railway	A2	5.07%
CSX Corporation	A3	5.07%
Norfolk Southern Corp	Baa1	5.60%
Union Pacific Corp	A3	5.07%

Mean	5.18%
Median	5.07%
Mode	5.07%

Indicated Rate of Debt	**5.13%**

We placed equal reliance on the mean and median when selecting the indicated rate of debt.

Corporate Bond Yield Averages from Mergent Bond Record, January 2024 Edition

Industrial Bond Averages, December 2023

Mergent	S&P	Dec. Yield Avg.
Aaa	AAA	4.74%
Aa1, Aa2 Aa3	AA+, AA, AA-	4.82%
A1, A2, A3	A+, A, A-	5.07%
Baa1, Baa2, Baa3	BBB+, BBB, BBB-	5.60%

Notes:

Indicated Rate of Equity

Model	Rate
CAPM - Ex Ante, Three Stage	7.36%
CAPM - Damodaran	9.13%
CAPM - The CFO Survey	9.49%
CAPM - Fernandez, Banuls, and Acin	10.29%
CAPM - Ex Post (BVR Historical, Arithmetic)	11.07%
CAPM - Ex Post (BVR Historical, Geometric)	9.75%
Empirical CAPM - Ex Ante, Three Stage	7.32%
Empirical CAPM - Damodaran	9.07%
Empirical CAPM - Graham and Harvey	9.43%
Empirical CAPM - Fernandez, Banuls, and Acin	10.21%
Empirical CAPM - Ex Post (BVR Historical, Arithmetic)	10.99%
Empirical CAPM - Ex Post (BVR Historical, Geometric)	9.68%
DGM - Dividend Growth	10.74%
DGM - Earnings Growth	10.81%
DGM - Two-Stage	9.40%
DGM - Three-Stage	7.42%
Indicated Rate of Equity	**10.88%**

We established a range of acceptability for the cost of equity with all available models. We considered all of the data and placed more reliance on the CAPM using the Business Valuation Resources Historical (arithmetic) equity risk premium, and the Damodaran CAPM.

Direct Rate and Growth

	Capital Structure	Rate	Composite
Debt Component	21.00%	5.13%	1.08%
Equity Component	79.00%	5.38%	4.25%
Direct Rate			**5.33%**
		Direct Rate	**5.33%**

Capital Asset Pricing Model (CAPM)

(ERP x β) + RFR = Indicated Equity Rate

	Equity Risk Premium (ERP)	x Industry Beta (β)	= Industry Risk Premium	+ Risk-Free Rate[1] (RFR)	Indicated Equity Rate
Three Stage Ex Ante[2]	2.91%	1.05	3.06%	4.30%	7.36%
Dr. Damodaran ERP[3]	4.60%	1.05	4.83%	4.30%	9.13%
The CFO Survey[4]	4.94%	1.05	5.19%	4.30%	9.49%
Fernandez, Banuls and Acin[5]	5.70%	1.05	5.99%	4.30%	10.29%
BVR - Historical, Arithmetic Mean[6]	6.45%	1.05	6.77%	4.30%	11.07%
BVR - Historical, Geometric Mean[7]	5.19%	1.05	5.45%	4.30%	9.75%

Notes:

1 U.S. Treasury on January 2, 2024 - 20-year Coupon Bond Yield, Daily Observations, Retrieved January 24, 2024 from www.federalreserve.gov

2 Three Stage Dividend Growth Model, S&P 500. See Appendix F, Three Stage Ex Ante Calculation

3 Implied Equity Risk Premium on January 5, 2024 as determined by Dr. Aswath Damodaran; Retrieved January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

4 The CFO Survey (2023). Data & Results December 20, 2023. Mean average annual S&P return over next ten years (8.9%) less annual yield on 10-year Treasury Bonds (3.96%). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

5 Fernandez, P., Garcia D., & Acin, J. F. (2023). Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023. SSRN Electronic Journal. Retrieved January 22, 2024 from https://ssrn.com/abstract=4407839

6 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using arithmetic mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

7 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using geometric mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

Empirical Capital Asset Pricing Model (ECAPM)

(ERP x β x .75) + (ERP x .25) + RFR = Indicated Equity Rate

Model	Equity Risk Premium (ERP)	Industry Beta (β)	Weighted Industry Risk Premium (weighted at 75%)	Weighted Equity Risk Premium (weighted at 25%)	Risk-Free Rate (RFR)	Indicated Equity Rate
Three Stage Ex Ante[2]	2.91%	1.05	2.29%	0.73%	4.30%	**7.32%**
Dr. Damodaran ERP[3]	4.60%	1.05	3.62%	1.15%	4.30%	**9.07%**
The CFO Survey[4]	4.94%	1.05	3.89%	1.24%	4.30%	**9.43%**
Fernandez, Banuls and Acin[5]	5.70%	1.05	4.49%	1.43%	4.30%	**10.21%**
BVR - Historical, Arithmetic Mean[6]	6.45%	1.05	5.08%	1.61%	4.30%	**10.99%**
BVR - Historical, Geometric Mean[7]	5.19%	1.05	4.09%	1.30%	4.30%	**9.68%**

Notes:

1 U.S. Treasury on January 2, 2024 - 20-year Coupon Bond Yield, Daily Observations, Retrieved January 24, 2024 from www.federalreserve.gov

2 Three Stage Dividend Growth Model, S&P 500. See Appendix F, Three Stage Ex Ante Calculation

3 Implied Equity Risk Premium on January 5, 2024 as determined by Dr. Aswath Damodaran; Retrieved January 24, 2024 from http://pages.stern.nyu.edu/~adamodar/

4 The CFO Survey (2023). Data & Results December 20, 2023. Mean average annual S&P return over next ten years (8.9%) less annual yield on 10-year Treasury Bonds (3.96%). Retrieved January 22, 2024 from https://www.richmondfed.org/research/national_economy/cfo_survey

5 Fernandez, P., Garcia D., & Acin, J. F. (2023). Survey: Market Risk Premium and Risk-Free Rate used for 80 countries in 2023. SSRN Electronic Journal. Retrieved January 22, 2024 from https://ssrn.com/abstract=4407839

6 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using arithmetic mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

7 Business Valuation Resources, Cost of Capital Professional. (2024). Historical ERP, using geometric mean and 20-Year Treasury Securities. Retrieved February 1, 2024 from https://www.bvresources.com/products/faqs/cost-of-capital-professional

Single-Stage Dividend Growth Model

Company	Current Dividend Yield (DY)	Projected Short-term EPS Growth Rate (EG)	Projected Short-term Dividend Growth Rate (DG)	Cost of Equity Earnings Growth DY + EG	Cost of Equity Dividend Growth DY + DG
Canadian National Railway	2.30%	10.50%	9.00%	12.80%	11.30%
CSX Corporation	1.50%	8.00%	9.50%	9.50%	11.00%
Norfolk Southern Corp	2.80%	8.50%	7.00%	11.30%	9.80%
Union Pacific Corp	2.60%	7.50%	8.00%	10.10%	10.60%
Mean	2.30%	8.63%	8.38%	10.93%	10.68%
Median	2.45%	8.25%	8.50%	10.70%	10.80%

DGM - Dividend Growth, Indicated Rate	**10.74%**
DGM - Earnings Growth, Indicated Rate	**10.81%**

We placed equal reliance on the mean and median to arrive at the indicated rates for DGM - Earnings Growth and DGM - Dividend Growth.

Notes:

Dividend Yield and growth rates provided by Value Line

Two-Stage Dividend Growth Model

K_E = (DY x (1+ 0.5(G))) + 0.67(G1) +0.33(g)

K_E Cost of Equity
G_1 Short-term Growth Estimate
DY Dividend Yield
g Stable Growth
G Average Growth Rate

Company	**DY** Dividend Yield	**G1** Short-term Growth Estimate	**g** Stable Growth	**G** Average Growth Rate	**K_E** Cost of Equity
Canadian National Railway	2.30%	10.50%	3.80%	7.15%	10.67%
CSX Corporation	1.50%	8.00%	3.80%	5.90%	8.16%
Norfolk Southern Corp	2.80%	8.50%	3.80%	6.15%	9.84%
Union Pacific Corp	2.60%	7.50%	3.80%	5.65%	8.95%
				Mean	9.40%
				Median	9.39%
				Two-Stage DGM, Indicated Rate	**9.40%**

We placed equal reliance on the mean and median to select the indicated rate.

Notes:

Dividend Yield provided by Value Line

Growth Estimates, Next 5 Years for Earnings provided Value Line

Stable growth rate is the nominal growth rate determined in the Capitalization Rate Study Narrative (indicated long-term real growth rate of the U.S. economy of 1.8% plus the expected inflation rate of 2.0%).

Three-Stage Dividend Growth Model

Start Price - recent price from Value Line
Expected dividends - estimated dividends from Value Line
Stage one growth - projected earnings growth rate from Value Line
Stage two growth - reversion to long-term growth rate
Stage three growth - long-term growth rate developed in Study 3.80%

Company	Year	Canadian National Railway		CSX Corporation		Norfolk Southern Corp		Union Pacific Corp	
Start Price	2023		-110.58		-30.38		-195.28		-213.10
Expected Dividends	2024		2.60		0.48		5.60		6.00
Stage One Growth	2025	10.50%	2.87	8.00%	0.52	8.50%	6.08	7.50%	6.45
Stage One Growth	2026	10.50%	3.17	8.00%	0.56	8.50%	6.59	7.50%	6.93
Stage One Growth	2027	10.50%	3.51	8.00%	0.60	8.50%	7.15	7.50%	7.45
Stage One Growth	2028	10.50%	3.88	8.00%	0.65	8.50%	7.76	7.50%	8.01
Stage One Growth	2029	10.50%	4.28	8.00%	0.71	8.50%	8.42	7.50%	8.61
Stage Two Growth	2030	9.89%	4.71	7.62%	0.76	8.07%	9.10	7.16%	9.23
Stage Two Growth	2031	9.28%	5.14	7.24%	0.81	7.65%	9.80	6.83%	9.86
Stage Two Growth	2032	8.67%	5.59	6.85%	0.87	7.22%	10.50	6.49%	10.50
Stage Two Growth	2033	8.06%	6.04	6.47%	0.93	6.79%	11.22	6.15%	11.15
Stage Two Growth	2034	7.45%	6.49	6.09%	0.98	6.36%	11.93	5.82%	11.80
Stage Two Growth	2035	6.85%	6.94	5.71%	1.04	5.94%	12.64	5.48%	12.44
Stage Two Growth	2036	6.24%	7.37	5.33%	1.09	5.51%	13.33	5.15%	13.08
Stage Two Growth	2037	5.63%	7.78	4.95%	1.15	5.08%	14.01	4.81%	13.71
Stage Two Growth	2038	5.02%	8.17	4.56%	1.20	4.65%	14.66	4.47%	14.33
Stage Two Growth	2039	4.41%	8.53	4.18%	1.25	4.23%	15.28	4.14%	14.92
Stage Three Growth	2040	3.80%	8.86	3.80%	1.30	3.80%	15.87	3.80%	15.48
Stage Three Growth	2041	3.80%	9.19	3.80%	1.35	3.80%	16.47	3.80%	16.07
Stage Three Growth	2042	3.80%	9.54	3.80%	1.40	3.80%	17.09	3.80%	16.68
Stage Three Growth	2043	3.80%	9.91	3.80%	1.45	3.80%	17.74	3.80%	17.32

Stage Three Growth	2044	3.80%	10.28	3.80%	1.51	3.80%	18.42	3.80%	17.98
Stage Three Growth	2045	3.80%	10.67	3.80%	1.56	3.80%	19.12	3.80%	18.66
Stage Three Growth	2046	3.80%	11.08	3.80%	1.62	3.80%	19.84	3.80%	19.37
Stage Three Growth	2047	3.80%	11.50	3.80%	1.69	3.80%	20.60	3.80%	20.10
Stage Three Growth	2048	3.80%	11.94	3.80%	1.75	3.80%	21.38	3.80%	20.87
Stage Three Growth	2049	3.80%	12.39	3.80%	1.82	3.80%	22.19	3.80%	21.66
Stage Three Growth	2050	3.80%	12.86	3.80%	1.88	3.80%	23.04	3.80%	22.48
Stage Three Growth	2051	3.80%	13.35	3.80%	1.96	3.80%	23.91	3.80%	23.34
Stage Three Growth	2052	3.80%	13.86	3.80%	2.03	3.80%	24.82	3.80%	24.23
Stage Three Growth	2053	3.80%	14.38	3.80%	2.11	3.80%	25.76	3.80%	25.15
Stage Three Growth	2054	3.80%	14.93	3.80%	2.19	3.80%	26.74	3.80%	26.10
Stage Three Growth	2055	3.80%	15.50	3.80%	2.27	3.80%	27.76	3.80%	27.09
Stage Three Growth	2056	3.80%	16.09	3.80%	2.36	3.80%	28.81	3.80%	28.12
Stage Three Growth	2057	3.80%	16.70	3.80%	2.45	3.80%	29.91	3.80%	29.19
Stage Three Growth	2058	3.80%	17.33	3.80%	2.54	3.80%	31.05	3.80%	30.30
Stage Three Growth	2059	3.80%	17.99	3.80%	2.64	3.80%	32.23	3.80%	31.45
Stage Three Growth	2060	3.80%	18.68	3.80%	2.74	3.80%	33.45	3.80%	32.65
Stage Three Growth	2061	3.80%	19.38	3.80%	2.84	3.80%	34.72	3.80%	33.89
Stage Three Growth	2062	3.80%	20.12	3.80%	2.95	3.80%	36.04	3.80%	35.18
Stage Three Growth	2063	3.80%	20.89	3.80%	3.06	3.80%	37.41	3.80%	36.51
Stage Three Growth	2064	3.80%	21.68	3.80%	3.18	3.80%	38.83	3.80%	37.90
Stage Three Growth	2065	3.80%	22.50	3.80%	3.30	3.80%	40.31	3.80%	39.34
Stage Three Growth	2066	3.80%	23.36	3.80%	3.42	3.80%	41.84	3.80%	40.84
Stage Three Growth	2067	3.80%	24.25	3.80%	3.55	3.80%	43.43	3.80%	42.39
Stage Three Growth	2068	3.80%	25.17	3.80%	3.69	3.80%	45.08	3.80%	44.00
Stage Three Growth	2069	3.80%	26.12	3.80%	3.83	3.80%	46.79	3.80%	45.67
Stage Three Growth	2070	3.80%	27.12	3.80%	3.97	3.80%	48.57	3.80%	47.41
Stage Three Growth	2071	3.80%	28.15	3.80%	4.12	3.80%	50.42	3.80%	49.21
Stage Three Growth	2072	3.80%	29.22	3.80%	4.28	3.80%	52.33	3.80%	51.08
Stage Three Growth	2073	3.80%	30.33	3.80%	4.44	3.80%	54.32	3.80%	53.02
Stage Three Growth	2074	3.80%	31.48	3.80%	4.61	3.80%	56.39	3.80%	55.03
Stage Three Growth	2075	3.80%	32.68	3.80%	4.79	3.80%	58.53	3.80%	57.12
Stage Three Growth	2076	3.80%	33.92	3.80%	4.97	3.80%	60.75	3.80%	59.29
Stage Three Growth	2077	3.80%	35.21	3.80%	5.16	3.80%	63.06	3.80%	61.55

Stage Three Growth	2078	3.80%	36.54	3.80%	5.35	3.80%	65.46	3.80%	63.89
Stage Three Growth	2079	3.80%	37.93	3.80%	5.56	3.80%	67.94	3.80%	66.31
Stage Three Growth	2080	3.80%	39.37	3.80%	5.77	3.80%	70.53	3.80%	68.83
Stage Three Growth	2081	3.80%	40.87	3.80%	5.99	3.80%	73.21	3.80%	71.45
Stage Three Growth	2082	3.80%	42.42	3.80%	6.22	3.80%	75.99	3.80%	74.17
Stage Three Growth	2083	3.80%	44.04	3.80%	6.45	3.80%	78.88	3.80%	76.98
Stage Three Growth	2084	3.80%	45.71	3.80%	6.70	3.80%	81.87	3.80%	79.91
Stage Three Growth	2085	3.80%	47.45	3.80%	6.95	3.80%	84.98	3.80%	82.95
Stage Three Growth	2086	3.80%	49.25	3.80%	7.22	3.80%	88.21	3.80%	86.10
Stage Three Growth	2087	3.80%	51.12	3.80%	7.49	3.80%	91.57	3.80%	89.37
Stage Three Growth	2088	3.80%	53.06	3.80%	7.78	3.80%	95.05	3.80%	92.76
Stage Three Growth	2089	3.80%	55.08	3.80%	8.07	3.80%	98.66	3.80%	96.29
Stage Three Growth	2090	3.80%	57.17	3.80%	8.38	3.80%	102.41	3.80%	99.95
Stage Three Growth	2091	3.80%	59.34	3.80%	8.70	3.80%	106.30	3.80%	103.75
Stage Three Growth	2092	3.80%	61.60	3.80%	9.03	3.80%	110.34	3.80%	107.69
Stage Three Growth	2093	3.80%	63.94	3.80%	9.37	3.80%	114.53	3.80%	111.78
Stage Three Growth	2094	3.80%	66.37	3.80%	9.73	3.80%	118.88	3.80%	116.03
Stage Three Growth	2095	3.80%	68.89	3.80%	10.09	3.80%	123.40	3.80%	120.44
Stage Three Growth	2096	3.80%	71.51	3.80%	10.48	3.80%	128.09	3.80%	125.02
Stage Three Growth	2097	3.80%	74.23	3.80%	10.88	3.80%	132.96	3.80%	129.77
Stage Three Growth	2098	3.80%	77.05	3.80%	11.29	3.80%	138.01	3.80%	134.70
Stage Three Growth	2099	3.80%	79.98	3.80%	11.72	3.80%	143.25	3.80%	139.82
Stage Three Growth	2100	3.80%	83.01	3.80%	12.16	3.80%	148.70	3.80%	145.13
Stage Three Growth	2101	3.80%	86.17	3.80%	12.63	3.80%	154.35	3.80%	150.64
Stage Three Growth	2102	3.80%	89.44	3.80%	13.11	3.80%	160.21	3.80%	156.37
Stage Three Growth	2103	3.80%	92.84	3.80%	13.60	3.80%	166.30	3.80%	162.31
Stage Three Growth	2104	3.80%	96.37	3.80%	14.12	3.80%	172.62	3.80%	168.48
Stage Three Growth	2105	3.80%	100.03	3.80%	14.66	3.80%	179.18	3.80%	174.88
Stage Three Growth	2106	3.80%	103.83	3.80%	15.21	3.80%	185.99	3.80%	181.53
Stage Three Growth	2107	3.80%	107.78	3.80%	15.79	3.80%	193.05	3.80%	188.42
Stage Three Growth	2108	3.80%	111.88	3.80%	16.39	3.80%	200.39	3.80%	195.58
Stage Three Growth	2109	3.80%	116.13	3.80%	17.02	3.80%	208.01	3.80%	203.02
Stage Three Growth	2110	3.80%	120.54	3.80%	17.66	3.80%	215.91	3.80%	210.73
Stage Three Growth	2111	3.80%	125.12	3.80%	18.33	3.80%	224.11	3.80%	218.74

Stage Three Growth	2112	3.80%	129.87	3.80%	19.03	3.80%	232.63	3.80%	227.05
Stage Three Growth	2113	3.80%	134.81	3.80%	19.75	3.80%	241.47	3.80%	235.68
Stage Three Growth	2114	3.80%	139.93	3.80%	20.50	3.80%	250.65	3.80%	244.63
Stage Three Growth	2115	3.80%	145.25	3.80%	21.28	3.80%	260.17	3.80%	253.93
Stage Three Growth	2116	3.80%	150.77	3.80%	22.09	3.80%	270.06	3.80%	263.58
Stage Three Growth	2117	3.80%	156.50	3.80%	22.93	3.80%	280.32	3.80%	273.59
Stage Three Growth	2118	3.80%	162.45	3.80%	23.80	3.80%	290.97	3.80%	283.99
Stage Three Growth	2119	3.80%	168.62	3.80%	24.71	3.80%	302.03	3.80%	294.78
Stage Three Growth	2120	3.80%	175.03	3.80%	25.65	3.80%	313.51	3.80%	305.98
Stage Three Growth	2121	3.80%	181.68	3.80%	26.62	3.80%	325.42	3.80%	317.61
Stage Three Growth	2122	3.80%	188.58	3.80%	27.63	3.80%	337.78	3.80%	329.68
Stage Three Growth	2123	3.80%	195.75	3.80%	28.68	3.80%	350.62	3.80%	342.21
Stage Three Growth	2124	3.80%	203.19	3.80%	29.77	3.80%	363.94	3.80%	355.21
Stage Three Growth	2125	3.80%	210.91	3.80%	30.90	3.80%	377.77	3.80%	368.71
Stage Three Growth	2126	3.80%	218.92	3.80%	32.08	3.80%	392.13	3.80%	382.72
Stage Three Growth	2127	3.80%	227.24	3.80%	33.30	3.80%	407.03	3.80%	397.27
Stage Three Growth	2128	3.80%	235.87	3.80%	34.56	3.80%	422.50	3.80%	412.36
Stage Three Growth	2129	3.80%	244.84	3.80%	35.88	3.80%	438.55	3.80%	428.03
Stage Three Growth	2130	3.80%	254.14	3.80%	37.24	3.80%	455.22	3.80%	444.30
Stage Three Growth	2131	3.80%	263.80	3.80%	38.65	3.80%	472.52	3.80%	461.18
Stage Three Growth	2132	3.80%	273.82	3.80%	40.12	3.80%	490.47	3.80%	478.71
Stage Three Growth	2133	3.80%	284.23	3.80%	41.65	3.80%	509.11	3.80%	496.90
Stage Three Growth	2134	3.80%	295.03	3.80%	43.23	3.80%	528.46	3.80%	515.78
Stage Three Growth	2135	3.80%	306.24	3.80%	44.87	3.80%	548.54	3.80%	535.38
Stage Three Growth	2136	3.80%	317.88	3.80%	46.58	3.80%	569.38	3.80%	555.72
Stage Three Growth	2137	3.80%	329.96	3.80%	48.35	3.80%	591.02	3.80%	576.84
Stage Three Growth	2138	3.80%	342.50	3.80%	50.19	3.80%	613.48	3.80%	598.76
Stage Three Growth	2139	3.80%	355.51	3.80%	52.09	3.80%	636.79	3.80%	621.51
Implied Cost of Equity			**7.71%**		**5.81%**		**7.88%**		**7.50%**

Mean	7.23%
Median	7.61%
Selected Three-Stage DGM Cost of Equity	**7.42%**

Equity Component of the Direct Rate

Company	Value Line P/E Ratio
Canadian National Railway	20.9
CSX Corporation	17.2
Norfolk Southern Corp	16.4
Union Pacific Corp	19.9
Mean	18.60
Median	18.55
Selected Price to Earnings (P/E) Ratio	18.60
Indicated Equity Component of the Direct Rate	**5.38%**

We placed the most reliance on the mean price to earnings ratio.

Notes:

The Price/Earnings Ratio was downloaded from Value Line.

Beta Analysis

Company	Beta
Canadian National Railway	0.90
CSX Corporation	1.05
Norfolk Southern Corp	1.05
Union Pacific Corp	1.05
Beta Mean	1.01
Beta Median	1.05
Unlevered Relevered Beta Mean^	1.01
Indicated Beta	**1.05**

We considered the mean, median, and unlevered/relevered mean. We placed more reliance on the median when selecting the indicated beta.

Notes:

^See the Unlevering Relevering Beta page for the calculation

Unlevering/Relevering Betas

Unlevering of Betas					
Company	*Value Line* **Actual Income Tax Rate**	*From Capital Structure Page* **Actual Debt in Capital Structure**	*From Capital Structure Page* **Actual Equity in Capital Structure**	*Value Line* **Levered Beta (Published)**	*Formula* **Unlevered Beta**
Canadian National Railway	24.00%	14.04%	85.96%	0.90	0.80
CSX Corporation	24.00%	22.97%	77.03%	1.05	0.86
Norfolk Southern Corp	24.00%	26.81%	73.19%	1.05	0.82
Union Pacific Corp	24.00%	19.34%	80.66%	1.05	0.89
			Average	**1.01**	

Relevering of Betas				
Company	*Formula* **Composite Income Tax Rate**	*From Capital Structure Page* **Industry Debt in Capital Structure**	*From Capital Structure Page* **Industry Equity in Capital Structure**	*Formula* **Levered Beta**
Canadian National Railway	24.00%	21.00%	79.00%	0.96
CSX Corporation	24.00%	21.00%	79.00%	1.03
Norfolk Southern Corp	24.00%	21.00%	79.00%	0.99
Union Pacific Corp	24.00%	21.00%	79.00%	1.07
			Average	**1.01**

Notes:

Uses the Hamada Formula

Unlevered Beta = Levered Beta / [1 + (1 - Tax Rate) x (Debt/Equity))], using company-specific components
Using company-specific components

Relevered Beta = Unlevered Beta [1 + (1 - Tax Rate) x (Debt/Equity))]
Using industry components for Tax Rate, Debt, and Equity

Calculation of Market to Book Ratios for the Railroad Market Segment

- December 31, 2023 calendar year information for the January 2, 2024 Assessment
- A market to book ratio over one would be an indication of no obsolescence.
- Market value estimates for common equity from Value Line. Market and book value estimates for long-term debt and book value estimates for common equity from 10-K.

Market to Book Ratio for Equity

Company	Market Value of Common Equity from Value Line	Book Value of Common Equity from 10-K	Market to Book Ratio	Source
Canadian National Railway*	72,496,248,000	15,210,463,700	4.77	Canadian National Railway. 2023 Annual Report, p. 37
CSX Corporation	60,034,859,780	12,133,000,000	4.95	CSX Corporation. 2023 10-K, p. 54
Norfolk Southern Corp	44,159,903,304	12,781,000,000	3.46	Norfolk Southern. 2023 10-K, p. K47
Union Pacific Corp	129,905,226,185	14,788,000,000	8.78	Union Pacific Corporation. 2023 10-K, p. 44
		Average	5.49	

Market to Book Ratio for Debt

Company	Market Value of Long-Term Debt from 10-K	Book Value of Long-Term Debt from 10-K	Market to Book Ratio	Source
Canadian National Railway	17,844,000,000	18,435,000,000	0.97	Canadian National Railway. 2023 Annual Report, p. 50
CSX Corporation	17,528,000,000	18,533,000,000	0.95	CSX Corporation. 2023 10-K, p. 106
Norfolk Southern Corp	16,361,000,000	17,179,000,000	0.95	Norfolk Southern. 2023 10-K, p. K55
Union Pacific Corp	28,500,000,000	32,600,000,000	0.87	Union Pacific Corporation. 2023 10-K, p. 65
		Average	0.94	

Application of Capital Structure as determined in the Capitalization Rate Study

	Capital Structure	Market to Book	Composite
Common Equity	79.00%	5.49	4.34
Long-term Debt	21.00%	0.94	0.20
			4.54

Note:

*Convert Canadian National Railway's Book Value of Common Equity from Canadian Dollars to U.S. Dollars. Canadian National Railway's Annual Report is in CAD. The Value Line Report is in USD.

20,117,000,000	CAD
0.7561	Exchange Rate
15,210,463,700	USD

Appendix F - Three Stage Ex Ante Calculation

Three Stage Ex Ante Equity Risk Premium Calculation

Implied Market Rate Range =	**7.42%**	**to**	**7.00%**
Mean	7.21%		
Median	7.21%		
Market Rate Used	**7.21%**		
(Less) Risk-Free Rate	4.30%		
Equals Equity Risk Premium	**2.91%**		

Assumptions:

Stages	**Years**		**Growth**	**Model 1**					**Model 2**			
1st Stage	1-5 years		Constant @:	13.51%			*		11.68%			*
												Linear
2nd Stage	6-15 years		Linear from:	12.62%	to	3.71%		OR	11.06%	to	4.91%	*from*
				Real Growth**					Inflation^			*1st*
3rd Stage	15 years -perpetuity	GDP Growth:	Real and Inflation	1.50%		2.50%		+	2.21%	to	2.41%	*Stage*
												to 3rd
		GDP Growth^^:	Real + Inflation	3.71%				TO	4.91%			*Stage*

	Model 1	Model 2
Implied Market Return	7.00%	7.42%

Year	Model 1				Model 2			
	Starting Industry			S & P 500	Starting Industry			S & P 500
2024	Start Price†		$	(4,742.83)	Start Price†		$	(4,742.83)
2025	Expected Dividends††		$	73.11	Expected Dividends††		$	73.11
2026	1st Stage Growth Rates	13.51%	$	82.99	1st Stage Growth Rates	11.68%	$	81.65
2027		13.51%	$	94.20		11.68%	$	91.19
2028		13.51%	$	106.92		11.68%	$	101.84
2029		13.51%	$	121.37		11.68%	$	113.73
2030		13.51%	$	137.77		11.68%	$	127.01
2031	2nd Stage Growth Rates	12.62%	$	155.15	2nd Stage Growth Rates	11.06%	$	141.07
2032		11.73%	$	173.35		10.45%	$	155.81
2033		10.84%	$	192.14		9.83%	$	171.13
2034		9.95%	$	211.25		9.22%	$	186.91
2035		9.06%	$	230.38		8.60%	$	202.98
2036		8.16%	$	249.18		7.99%	$	219.20
2037		7.27%	$	267.31		7.37%	$	235.36
2038		6.38%	$	284.37		6.76%	$	251.26
2039		5.49%	$	299.99		6.14%	$	266.69
2040		4.60%	$	313.79		5.53%	$	281.42
2041		3.71%	$	325.43		4.91%	$	295.24
2042		3.71%	$	337.51		4.91%	$	309.74
2043		3.71%	$	350.03		4.91%	$	324.94
2044		3.71%	$	363.01		4.91%	$	340.90
2045		3.71%	$	376.48		4.91%	$	357.64
2046		3.71%	$	390.45		4.91%	$	375.20
2047		3.71%	$	404.93		4.91%	$	393.62
2048		3.71%	$	419.96		4.91%	$	412.95
2049		3.71%	$	435.54		4.91%	$	433.22
2050		3.71%	$	451.70		4.91%	$	454.49
2051		3.71%	$	468.45		4.91%	$	476.81
2052		3.71%	$	485.83		4.91%	$	500.22
2053		3.71%	$	503.86		4.91%	$	524.78
2054		3.71%	$	522.55		4.91%	$	550.55
2055		3.71%	$	541.94		4.91%	$	577.58
2056		3.71%	$	562.04		4.91%	$	605.94
2057		3.71%	$	582.89		4.91%	$	635.69
2058		3.71%	$	604.52		4.91%	$	666.90
2059		3.71%	$	626.95		4.91%	$	699.65
2060		3.71%	$	650.21		4.91%	$	734.00
2061		3.71%	$	674.33		4.91%	$	770.04
2062		3.71%	$	699.35		4.91%	$	807.85
2063		3.71%	$	725.29		4.91%	$	847.52
2064		3.71%	$	752.20		4.91%	$	889.13
2065		3.71%	$	780.11		4.91%	$	932.78
2066		3.71%	$	809.05		4.91%	$	978.58
2067		3.71%	$	839.07		4.91%	$	1,026.63
2068		3.71%	$	870.20		4.91%	$	1,077.04
2069		3.71%	$	902.48		4.91%	$	1,129.92
2070		3.71%	$	935.96		4.91%	$	1,185.40
2071		3.71%	$	970.69		4.91%	$	1,243.61
2072		3.71%	$	1,006.70		4.91%	$	1,304.67
2073		3.71%	$	1,044.05		4.91%	$	1,368.73
2074		3.71%	$	1,082.78		4.91%	$	1,435.93
2075		3.71%	$	1,122.95		4.91%	$	1,506.43

2076		3.71%	$	1,164.61		4.91%	$	1,580.40
2077		3.71%	$	1,207.82		4.91%	$	1,658.00
2078		3.71%	$	1,252.63		4.91%	$	1,739.41
2079		3.71%	$	1,299.11		4.91%	$	1,824.81
2080		3.71%	$	1,347.30		4.91%	$	1,914.41
2081		3.71%	$	1,397.29		4.91%	$	2,008.41
2082		3.71%	$	1,449.13		4.91%	$	2,107.02
2083		3.71%	$	1,502.89		4.91%	$	2,210.47
2084		3.71%	$	1,558.65		4.91%	$	2,319.01
2085		3.71%	$	1,616.47		4.91%	$	2,432.87
2086		3.71%	$	1,676.44		4.91%	$	2,552.32
2087		3.71%	$	1,738.64		4.91%	$	2,677.64
2088		3.71%	$	1,803.14		4.91%	$	2,809.12
2089		3.71%	$	1,870.04		4.91%	$	2,947.04
2090	3rd Stage Growth Rates	3.71%	$	1,939.42	3rd Stage Growth Rates	4.91%	$	3,091.74
2091		3.71%	$	2,011.37		4.91%	$	3,243.55
2092		3.71%	$	2,085.99		4.91%	$	3,402.81
2093		3.71%	$	2,163.38		4.91%	$	3,569.88
2094		3.71%	$	2,243.64		4.91%	$	3,745.17
2095		3.71%	$	2,326.88		4.91%	$	3,929.05
2096		3.71%	$	2,413.21		4.91%	$	4,121.97
2097		3.71%	$	2,502.74		4.91%	$	4,324.36
2098		3.71%	$	2,595.59		4.91%	$	4,536.68
2099		3.71%	$	2,691.89		4.91%	$	4,759.44
2100		3.71%	$	2,791.76		4.91%	$	4,993.12
2101		3.71%	$	2,895.33		4.91%	$	5,238.29
2102		3.71%	$	3,002.75		4.91%	$	5,495.49
2103		3.71%	$	3,114.15		4.91%	$	5,765.31
2104		3.71%	$	3,229.68		4.91%	$	6,048.39
2105		3.71%	$	3,349.51		4.91%	$	6,345.37
2106		3.71%	$	3,473.77		4.91%	$	6,656.93
2107		3.71%	$	3,602.65		4.91%	$	6,983.78
2108		3.71%	$	3,736.31		4.91%	$	7,326.68
2109		3.71%	$	3,874.92		4.91%	$	7,686.42
2110		3.71%	$	4,018.68		4.91%	$	8,063.83
2111		3.71%	$	4,167.78		4.91%	$	8,459.76
2112		3.71%	$	4,322.40		4.91%	$	8,875.14
2113		3.71%	$	4,482.76		4.91%	$	9,310.90
2114		3.71%	$	4,649.07		4.91%	$	9,768.07
2115		3.71%	$	4,821.55		4.91%	$	10,247.68
2116		3.71%	$	5,000.43		4.91%	$	10,750.84
2117		3.71%	$	5,185.95		4.91%	$	11,278.71
2118		3.71%	$	5,378.35		4.91%	$	11,832.49
2119		3.71%	$	5,577.89		4.91%	$	12,413.47
2120		3.71%	$	5,784.83		4.91%	$	13,022.97
2121		3.71%	$	5,999.44		4.91%	$	13,662.40
2122		3.71%	$	6,222.02		4.91%	$	14,333.22
2123		3.71%	$	6,452.86		4.91%	$	15,036.98
2124		3.71%	$	6,692.26		4.91%	$	15,775.30
2125		3.71%	$	6,940.54		4.91%	$	16,549.87
2126		3.71%	$	7,198.04		4.91%	$	17,362.47
2127		3.71%	$	7,465.08		4.91%	$	18,214.96
2128		3.71%	$	7,742.04		4.91%	$	19,109.32
2129		3.71%	$	8,029.27		4.91%	$	20,047.59
2130		3.71%	$	8,327.15		4.91%	$	21,031.92
2131		3.71%	$	8,636.09		4.91%	$	22,064.59
2132		3.71%	$	8,956.49		4.91%	$	23,147.96
2133		3.71%	$	9,288.78		4.91%	$	24,284.53
2134		3.71%	$	9,633.39		4.91%	$	25,476.90
2135		3.71%	$	9,990.79		4.91%	$	26,727.81
2136		3.71%	$	10,361.45		4.91%	$	28,040.15
2137		3.71%	$	10,745.86		4.91%	$	29,416.92
2138		3.71%	$	11,144.53		4.91%	$	30,861.29
2139		3.71%	$	11,557.99		4.91%	$	32,376.58
		Reversion``	$	90.07		Reversion``	$	150.25
		Implied Market Return		**7.00%**		**Implied Market Return**		**7.42%**

*S&P 500 Earnings and Estimate Report dated 2/7/2024, http://us.spindices.com/indices/equity/sp-500

**First Quarter 2024 Survey of Professional Forecasters - Philadelphia Federal Reserve Release Date 2/9/2024

^Inflation Range = Federal Reserve, Treasuries Inflation - Indexed

^^GDP Growth = Real growth + Inflation

† Start Price is the S&P 500 Index adjusted close on 1/2/2024, downloaded from Yahoo! Finance

††Expected Dividends downloaded from http://www.cmegroup.com/trading/equity-index/us-index/sp-500-quarterly-dividend-index.html, 2/20/2024

``Reversion Calculation:

A.	Last period's expected dividends, growth applied	11,986.79	33,966.27
B.	Implied Market Risk Premium Less Long-Term Growth	5.20%	5.62%
C.	A / B	230,546.9	604,653.5
D.	C / ((1 + Implied Market Risk Premium) ^ Last Period +1)	90.07	150.25

Appendix G – Guideline Company Selection

Section Contents

Note: The information below is verbatim from Value Line and the company's website.

Market Segment: Electric

Companies Included in the Electric Market Segment

ALLETE Inc.

Company Summary from Value Line:

ALLETE, Inc. is the parent of Minnesota Power, which supplies electricity to 146,000 customers in northeastern MN, & Superior Water, Light & Power in northwestern WI. Electric rev. breakdown: taconite mining/processing, 26%; paper/wood products, 9%; other industrial, 8%; residential, 13%; commercial, 13%; wholesale, 14%; other, 17%. ALLETE Clean Energy (ACE) owns renewable energy projects. Acq'd U.S. Water Services 2/15; sold it 3/19. Generating sources: coal, 28%; wind, 10%; other, 4%; purchased, 58%. Fuel costs: 40% of revs. '22 deprec. rate: 3.2%. Has 1,400 employees.

Additional Company Information from Website:

ALLETE (NYSE: ALE) is well-positioned as a reliable provider of competitively-priced energy in the Upper Midwest, and invests in transmission infrastructure and other energy-centric businesses. ALLETE's Minnesota Power electric utility serves 145,000 residents, 15 municipalities and some of the nation's largest industrial customers. Other businesses include ALLETE Clean Energy, a developer of energy projects with limited environmental impact; BNI Energy in North Dakota; Superior Water, Light and Power in Superior, Wisconsin; and ALLETE Renewable Resources, which operates and maintains wind generation facilities in North Dakota; and New Energy Equity, a leading developer of distributed solar energy projects.[1]

Why was the company included?

ALLETE Inc. is the parent company of Minnesota Power, which supplies electricity to customers. This company is similar to (and is one of) the electric companies that we are responsible for valuing. The company provides energy in the upper Midwest.

Alliant Energy Corp.

Company Summary from Value Line:

Alliant Energy Corporation (formerly Interstate Energy) is a holding company formed through the merger of WPL Holdings, IES Industries, and Interstate Power. Supplies electricity to 985,000 customers and gas to 425,000 customers in Wisconsin, Iowa, and Minnesota. Electric revenue by state: WI, 43%; IA, 56%; MN, 1%. Electric revenue: residential, 36%; commercial, 25%; industrial, 29%; wholesale, 8%; other, 2%. Generating sources: coal, 32%; gas, 32%; wind, 16%; other, 1%; purchased, 19%. Fuel costs: 25% of revs. '22 reported depreciation rates: 2.9%-6.1%. Has 3,300 employees.

Additional Company Information from Website:

Alliant Energy Corporation (NASDAQ: LNT) provides regulated energy service to 995,000 electric and 425,000 natural gas retail customers across Iowa and Wisconsin. With a focus on powering beyond the market challenges of today, Alliant Energy is committed to powering what's next in energy. Guided by

[1] http://www.allete.com/OurBusinesses, accessed 1/30/2024

our purpose-driven strategy to serve customers and build stronger communities, our mission is to deliver the energy solutions and exceptional service our customers and communities count on – safely, efficiently and responsibly. Alliant Energy takes its responsibility as a corporate citizen seriously. We are thoughtful stewards of the environment and supporters of the communities in which we do business. We aggressively pursue emerging technologies and safe, sustainable methods of energy production. We are also an Equal Opportunity Employer and appreciate the differences and perspectives a diverse culture brings to our work environment, company and customers. We recognize and respect diversity and take pride in providing an inclusive work environment. This has earned Alliant Energy placement on the Nasdaq CRD Sustainability Index, Bloomberg's Gender-Equality Index and the S&P 500 index. We have two public energy companies: Interstate Power and Light Company (IPL) and Wisconsin Power and Light Company (WPL). Both companies are principally engaged in the generation and distribution of electricity to retail electric customers, along with the distribution and transportation of natural gas to customers in primarily rural communities across Iowa and Wisconsin. IPL provides electricity to approximately 500,000 retail electric customers and transports natural gas to approximately 225,000 customers across Iowa. As directed by the IUB, we provide utility services to incorporated communities and utilize non-exclusive franchises, which cover the use of public rights-of-way for utility facilities in incorporated communities for a maximum term of 25 years. In Iowa, we also sell electricity to wholesale customers in Minnesota, Illinois and Iowa. WPL provides electricity to approximately 495,000 electric retail customers and transports natural gas to about 200,000 natural gas retail customers across Wisconsin. We operate in municipalities pursuant to permits of indefinite duration and state statutes authorizing utility operation in areas annexed by a municipality. In addition, we sell electricity to wholesale customers in Wisconsin.[2]

Why was the company included?
Alliant Energy Corp. supplies electricity, gas, and other services to customers. Electric customers represent 70% of customers and gas customers represent 30% of customers. This company is similar to (and is one of) the electric companies that we are responsible for valuing. The company engages in providing energy in the upper Midwest.

Ameren Corporation
Company Summary from Value Line:
Ameren Corporation is a holding company formed through the merger of Union Electric and CIPSCO. Has 1.2 million electric and 127,000 gas customers in Missouri; 1.2 million electric and 813,000 gas customers in Illinois. Discontinued nonregulated power-generation operation in '13. Electric revenue breakdown: residential, 49%; commercial, 34%; industrial, 8%; other, 9%. Generating sources: coal, 73%; nuclear, 11%; hydro & other, 9%; purchased, 7%. Fuel costs: 25% of revenues. Has approximately 9,250 employees.

Additional Company Information from Website?
Ameren Corporation is a Fortune 500 company that trades on the New York Stock Exchange under the symbol AEE. It is the parent company of Ameren Illinois, based in Collinsville, Ill., and Ameren Missouri in St. Louis. Ameren Transmission Company, also based in St. Louis, designs and builds regional transmission projects. Ameren was created by the combination of three Illinois utilities (CIPSCO Incorporated, CILCO Inc. and Illinois Power Company) and Union Electric Company of St. Louis. The name comes from combining the words American and Energy. Employing more than 9,000

[2] https://www.alliantenergy.com/aboutus/whoweare/whoweare, accessed 1/30/2024

personnel, Ameren powers the quality of life for 2.4 million electric customers and more than 900,000 natural gas customers across a 64,000-square-mile area. Ameren Missouri ranks as the largest electric power provider in Missouri, and Ameren Illinois ranks as Illinois' third largest natural gas distribution operation in total number of customers. Ameren companies generate a net capacity of nearly 10,200 megawatts of electricity and own more than 7,500 circuit miles of transmission lines.[3]

Why was the company included?
Ameren Corporation provides electric and gas to customers. Electric customers represent 72% of customers and gas customers represent 28% of customers. This company is similar to the electric companies that we are responsible for valuing. The company engages in providing energy in the Midwest.

American Electric Power Company Inc.
Company Summary from Value Line:
American Electric Power Company Inc. (AEP), through 10 operating utilities, serves 5.5 million customers in Arkansas, Kentucky, Indiana, Louisiana, Michigan, Ohio, Oklahoma, Tennessee, Texas, Virginia, & West Virginia. Has a transmission subsidiary. Electric revenue breakdown: residential, 43%; commercial, 23%; industrial, 18%; wholesale, 10%; other, 6%. Sold commercial barge operation in ‘15.

Generating sources not available. Fuel costs: 33% of revenues. ’22 reported depreciation rates (utility): 2.6%-12.5%. Has 16,700 employees.

Additional Company Information from Website:
As one of the largest electric energy companies in the U.S., we power millions of homes and businesses. We’re working together with our customers and communities to create the future of energy. We’re listening, going beyond customers’ expectations and developing innovative solutions to build a future that is boundless for us all. We’re continually energized by our team members, their passions, and their drive to make a difference in the communities we serve.[4]

Why was the company included?
American Electric Power Company Inc. provides electricity to customers. This company is similar to the electric companies that we are responsible for valuing. The company engages in providing energy in the Midwest.

Black Hills Corporation
Company Summary from Value Line:
Black Hills Corporation is a holding company for Black Hills Energy, which serves 220,431 electric customers in CO, SD, WY and MT, and 1.1 million gas customers in NE, IA, KS, CO, WY, and AR. Has coal mining sub. Acq’d utility ops. from Aquila 7/08; SourceGas 2/16. Discontinued gas marketing in ’11; gas & oil E&P in ’17. Electric rev. breakdown: residential, 35%; commercial, 39%; industrial, 23%; other, 3%. Generating sources: coal, 35%; gas, 19%; wind, 11%; purchased, 35%. Fuel costs: 38% of revs. ’22 deprec. rate: 3.2%. Has 2,982 employees.

Additional Company Information from Website:

[3] https://www.ameren.com/company/about-ameren, accessed 1/30/2024
[4] https://www.aep.com/about/, accessed 1/30/2024

Black Hills Corp. (NYSE: BKH) is a customer focused, growth-oriented utility company with a tradition of exemplary service and a vision to be the energy partner of choice. Based in Rapid City, South Dakota, we serve over 1.3 million natural gas and electric utility customers in eight states: Arkansas, Colorado, Iowa, Kansas, Montana, Nebraska, South Dakota and Wyoming.[5]

Why was the company included?
Black Hills Corporation provides electric and gas to customers. Electric customers represent 17% of customers and gas customers represent 83% of customers. This company is similar to the electric companies that we are responsible for valuing. The company engages in providing energy in the Midwest.

We are also using this company as a guideline company for the Gas Distribution Market Segment. Over 80% of this company's customers are gas distribution customers.

CenterPoint Energy Inc.
Company Summary from Value Line:
CenterPoint Energy, Inc. is a holding company for Houston Electric, which serves 2.7 million customers in Houston and environs, Indiana Electric, which serves 151,000 customers, and gas utilities with 4.27 million customers in Texas, Minnesota, Louisiana, Mississippi, Indiana, and Ohio. Acquired Vectren 2/19. Sold nonutility operations in '20. Sold its stake in Energy Transfer LP in '21 and '22. Electric Revenue breakdown not available. Fuel costs: 33% of revenues. '22 depreciation rate: 3.8%. Has 8,986 employees.

Additional Company Information from Website:
Our vision to lead the nation in delivering energy, service and value drives our strategy and performance. We have an unwavering commitment to safely and reliably deliver electricity and natural gas to millions of people. Natural Gas. We sell and deliver natural gas to approximately 4 million homes and businesses in six states: Indiana, Louisiana, Minnesota (including Minneapolis), Mississippi, Ohio, and Texas (including greater Houston area). We are investing in modernizing our natural gas infrastructure and are committed to eliminating cast-iron pipe in all our territories. Electric Transmission and Distribution and Power Generation. We maintain the wires, poles and electric infrastructure serving more than 2.8 million metered customers in the greater Houston area and in southwestern Indiana. We also own and operate nearly 1,300 megawatts of electric generation capacity in Indiana. We are committed to the reliable delivery of electricity generated from power plants and renewable energy resources to homes and businesses. CenterPoint Energy Home Service Plus®. For over 80 years, HSP has provided heating and cooling solutions for Minnesota homeowners. We proudly offer expert repair, along with service and maintenance plans, and professional sales for both gas and electric equipment. CenterPoint Energy and HomeServe. We have selected HomeServe, a trusted nationwide provider of emergency home repair programs, in our natural gas markets in Mississippi and Texas (including greater Houston area) to offer our customers service repair plans that help reduce the stress and expense from the unexpected.[6]

Why was the company included?

[5] https://www.blackhillscorp.com/about, accessed 1/30/2024
[6] https://www.centerpointenergy.com/en-us/corporate/about-us/company-overview, accessed on 1/30/2024

CenterPoint Energy Inc. provides electricity and gas to customers. Electric customers represent 39% of customers and gas customers represent 61% of customers. This company is similar to the electric companies that we are responsible for valuing.

We are also using this company as a guideline company for the Gas Distribution Market Segment because over 60% of their customers are gas customers.

CMS Energy Corporation

Company Summary from Value Line:

CMS Energy Corporation is a holding company for Consumers Energy, which supplies electricity and gas to lower Michigan (excluding Detroit). Has 1.9 million electric, 1.8 million gas customers. Has 1,836 megawatts of nonregulated generating capacity. Sold EnerBank in '21. Electric revenue breakdown: residential, 46%; commercial, 32%; industrial, 15%; other, 7%. Generating sources: coal, 29%; gas, 19%; renewables, 6%; purchased, 47%. Fuel costs: 34% of revenues. '22 depreciation rates: 3.7% electric, 2.9% gas, 8.9% other. Has 8,560 fulltime employees.

Additional Company Information from Website:

CMS Energy Corporation's business strategy is focused primarily on its principal subsidiary, Consumers Energy Company, Michigan's largest electric and natural gas utility, serving 6.8 million of the state's 10 million residents. With our subsidiary, NorthStar Clean Energy, we are also engaged in independent power generation in several states. Consumers Energy is one of the nation's largest combination electric and natural gas utilities. NorthStar Clean Energy helps clients reach ambitious business and sustainability goals with a wide range of custom energy and carbon reduction products. The company also owns and operates independent power generating plants, natural gas assets and an energy marketing group for the non-utility segment of CMS Energy's business.[7]

Why was the company included?

CMS Energy Corporation provides electricity and gas to customers. Electric customers represent 51% of customers and gas customers represent 49% of customers. This company is similar to the electric companies that we are responsible for valuing. The company serves an electric service territory in the Midwest.

We are also using this company as a guideline company for the Gas Distribution Market Segment because over 49% of their customers are gas distribution customers.

DTE Energy Company

Company Summary from Value Line:

DTE Energy Company is a holding company for DTE Electric (formerly Detroit Edison), which supplies electricity in Detroit and a 7,600-square-mile area in southeastern Michigan, and DTE Gas (formerly Michigan Consolidated Gas). Customers: 2.2 mill. electric, 1.3 mill. gas. Has various nonutility operations. Electric revenue breakdown: residential, 50%; commercial, 33%; industrial, 11%; other, 6%. Generating sources: coal, 67%; nuclear, 17%; gas, 1%; purchased, 15%. Fuel costs: 62% of revenues. '22 reported deprec. rates: 4.2% electric, 2.9% gas. Has 10,600 employees.

Additional Company Information from Website:

[7] https://www.cmsenergy.com/about-cms-energy/default.aspx, accessed 1/30/2024

DTE Energy (NYSE: DTE) is a Detroit-based diversified energy company involved in the development and management of energy-related businesses and services nationwide. Its operating units include an electric utility serving 2.3 million customers in Southeastern Michigan and a natural gas company serving 1.3 million customers in Michigan. The DTE portfolio also includes non-utility businesses focused on industrial energy services, renewable natural gas, and energy marketing and trading. As one of Michigan's leading corporate citizens, DTE Energy is a force for growth and prosperity in the 450 Michigan communities it serves in a variety of ways, including philanthropy, volunteerism and economic progress. Information about DTE Energy is available on the DTE Energy home page, Twitter account and Facebook page. DTE Energy has more than 10,000 employees in utility and non-utility subsidiaries involved in a wide range of energy-related businesses. The company's growing non-utility businesses are built around the strengths, skills and assets of DTE Energy's electric and gas utilities.[8]

Why was the company included?
DTE Energy Company provides electricity and gas to customers. Electric customers represent 63% of customers and gas customers represent 37% of customers. This company is similar to the electric companies that we are responsible for valuing. The company serves an electric service territory in the Midwest.

Evergy Inc.
Company Summary from Value Line:
Evergy, Inc. was formed through the merger of Great Plains Energy and Westar Energy in June of 2018. Through its subsidiaries (now doing business under the Evergy name), provides electric service to 1.6 million customers in Kansas and Missouri, including the greater Kansas City area. Electric revenue breakdown: residential, 32%; commercial, 27%; industrial, 15%; wholesale, 13%; other, 13%. Generating sources: coal, 54%; nuclear, 17%; purchased, 29%. Fuel costs: 28% of revenues. ’22 reported deprec. rate: 3%. Has 4,900 employees.

Additional Company Information from Website:

Evergy Inc. (NYSE: EVRG), through its operating subsidiaries Evergy Kansas Central, Evergy Metro, and Evergy Missouri West, provides clean, safe, reliable energy to 1.7 million customers in Kansas and Missouri. By combining Great Plains Energy and Westar Energy in 2018, a leading energy company was created that provides value to shareholders and a stronger company for customers. As a combined company, our mission is to empower a better future. Today, half of the power supplied by Evergy comes from clean sources, creating more reliable energy with less impact to the environment. And as the industry evolves, we will continue to innovate and adopt new technologies that give our customers better ways to manage their energy use.[9]

Why was the company included?
Evergy, Inc. was created through the merger of Great Plains Energy Incorporated and Westar Energy, Inc. in 2018. This company is in the Electric Utility (Central) Value Line Industry. This company is similar to the electric companies that we are responsible for valuing. The company serves an electric service territory in the Midwest.

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[8] https://newlook.dteenergy.com/wps/wcm/connect/dte-web/home/about-dte/common/about-dte/about-dte, accessed 1/30/2024
[9] https://investors.evergy.com/about-evergy/company-information, accessed 1/30/2024

NorthWestern Corporation

Company Summary from Value Line:
NorthWestern Corporation (doing business as NorthWestern Energy) supplies electricity & gas in the Upper Midwest and Northwest, serving 463,000 electric customers in Montana and South Dakota and 301,000 gas customers in Montana, South Dakota, and Nebraska. Electric revenue breakdown: residential, 45%; commercial, 46%; industrial, 5%; other, 4%. Generating sources: coal, 28%; hydro, 26%; wind, 6%; natural gas, 6%; purchased, 34%. Fuel costs: 33% of revenues. 2022 reported depreciation rate: 2.8%. Has approximately 1,500 employees.

Additional Company Information from Website:
For more than 100 years, NorthWestern Energy has been committed to delivering safe, reliable and innovative energy solutions. We serve gas and electric to customers in the western two-thirds of Montana and eastern South Dakota. We also have gas service in Nebraska, and serve electricity to Yellowstone National Park. We own and operate a diverse generation fleet of wind, water, natural gas and coal-fired resources and the high-voltage electric transmission system and distribution system. We also own and operate natural gas production, transmission and distribution systems. NorthWestern Energy has provided reliable and affordable electricity and natural gas to customers in Montana, South Dakota and Nebraska for more than 100 years.[10]

Why was the company included?
NorthWestern Corporation provides electricity and gas to customers. Electric customers represent 60% of customers and gas customers represent 40% of customers. This company is similar to the electric companies that we are responsible for valuing. This company operates in the Midwest.

OGE Energy Corporation

Company Summary from Value Line:
OGE Energy Corp. is a holding company for Oklahoma Gas and Electric Company (OG&E), which supplies electricity to 879,000 customers in Oklahoma (84% of electric revenues) and western Arkansas (8%); wholesale is (8%). Owns 3% of Energy Transfer’s limited partnership units. Electric revenue breakdown: residential, 44%; commercial, 25%; industrial, 11%; oilfield, 10%; other, 10%. Generating sources: gas, 25%; coal, 21%; wind, 6%; purchased, 48%. Fuel costs: 58% of revenues. ’22 reported depreciation rate (utility): 2.6%. Has 2,200 employees.

Additional Company Information from Website:
We not only serve more than 887,000 electric customers, we also power communities in other ways. We’re the largest ad valorem taxpayer in Oklahoma, contributing approximately $80 million annually, which funds public education, libraries and career techs. Our employees also generously give their time and money to support their communities. With about 7,240 megawatts of capacity, our generation portfolio represents a balanced approach to generating electricity through a diversity of fuel types — 66 percent natural gas, 26 percent coal and 8 percent renewable energy (solar and wind). This fuel diversity allows us to maintain system reliability and affordable rates for the people we serve. We continuously seek opportunities to bring value to our customers and investors through the use of new technology. We were the first public utility in our area to install a Smart Grid, so all customers can participate in the

[10] https://www.northwesternenergy.com/about-us/our-company, accessed 1/30/2024

management of their energy use and costs.[11]

Why was the company included?
OGE Energy Corporation provides electricity to customers. This company is similar to the electric companies that we are responsible for valuing. The company serves an electric service territory in Oklahoma and Arkansas.

Otter Tail Corporation
Company Summary from Value Line:
Otter Tail Corporation is the parent of Otter Tail Power Company, which supplies electricity to 133,000 customers in Minnesota (52% of retail electric revenues), North Dakota (38%), and South Dakota (10%). Electric rev. breakdown: residential, 32%; commercial & farms, 36%; industrial, 30%; other, 2%. Generating sources: coal, 38%; wind & other, 18%; purchased, 44%. Fuel costs: 10% of revenues. Also has operations in manufacturing and plastics (72% of ’22 operating income). ’22 deprec. rate: 3.0%. Has 2,500 employees.

Additional Company Information from Website:
Our strategy is to continue to grow our largest business, the regulated electric utility, which will lower our overall risk, create a more predictable earnings stream, improve our credit quality, and preserve our ability to fund the dividend. Over time, we expect the electric utility business will provide approximately 65% of our overall earnings. We expect our manufacturing and plastic pipe businesses will provide 35% of our earnings and will continue to be a fundamental part of our strategy. Reliable utility performance along with rate base investment opportunities over the next five years will provide us with a strong base of revenues, earnings, and cash flows. We also look to our manufacturing and plastic pipe companies to provide organic growth. Organic, internal growth comes from new products and services, market expansion, and increased efficiencies. We expect much of our growth in these businesses in the next few years will come from utilizing existing plant capacity from capital investments made in previous years. We will also evaluate opportunities to allocate capital to potential acquisitions in our Manufacturing and Plastics segments. We are a committed long-term owner and therefore we do not acquire companies in pursuit of short-term gains. However, we will divest operating companies that no longer fit into our strategy and risk profile over the long term. In evaluating our portfolio of operating companies, we look for the following characteristics: A threshold level of net earnings and a return on invested capital in excess of our weighted average cost of capital. A strategic differentiation from competitors and sustainable cost advantage. Operates within a stable and growing industry and is able to quickly adapt to changing economic cycles. A strong management team committed to operational excellence.[12]

[11] https://www.oge.com/wps/portal/ord/who-we-are/what-we-do/!ut/p/z1/jZBPb4JAEMU_DUeYESva3kibstpGY1Iq3Uuz2i1gVoYMi8Rv7_rn0ENLnTm9l9-8yQxIyEBWal_mypZUKeP0h4w-xWISiVmCi2R-P8bl-1Q8D6YCk5cIVmcgFE9X4C0d4HLo-vFuFCKGIG-Zxz8qxtvmewDZH78CeUb6LvgvYwYyN7S-vCuu1sNJDpL1t2bNQcvOLqytmwcPPey6LqBcBxvaOVE3HtbEVhkPib-cU5DfaV-xdkbL_qY1tj2Jomws8eG3DQU1FrIfwVDv0jTD7cjsX-Mj0NT0_A!!/dz/d5/L2dJQSEvUUt3QS80TmxFL1o2XzJIRDZISkcwTzhWQUQwUTM2Nk9JOVAyR0c2/, accessed 1/30/2024
[12] https://www.ottertail.com/investors/corporate-profile/default.aspx, accessed 1/30/2024

Why was the company included?
Otter Tail Corporation provides electricity to customers. This company is similar to (and is one of) the electric companies that we are responsible for valuing. The company serves an electric service territory in the Midwest.

WEC Energy Group
Company Summary from Value Line:
WEC Energy Group, Inc. (formerly Wisconsin Energy) is a holding company for utilities that provide electric, gas & steam service in WI & gas service in IL, MN, & MI. Customers: 1.6 mill. elec., 2.9 mill. gas. Acq'd Integrys Energy 6/15. Sold Point Beach nuclear plant in '07. Electric revenue breakdown: residential, 39%; small commercial & industrial, 32%; large commercial & industrial, 21%; other, 8%. Generating sources: coal, 36%; gas, 28%; renewables, 5%; purchased, 31%. Fuel costs: 40% of revenues. '22 reported deprec. rates: 2.4%-3.1%. Has 6,900 employees.

Additional Company Information from Website:
We are one of the nation's largest electric generation and distribution and natural gas delivery holding companies, with the operational expertise and financial resources to serve the Midwest's energy needs safely, reliably and responsibly. Our subsidiaries focus on reliable service, customer satisfaction and shareholder value. Together, we provide energy services to more than 4.6 million customers in Wisconsin, Illinois, Michigan and Minnesota. Our combined assets allow operating efficiencies across 71,700 miles of electric distribution lines, 52,000 miles of natural gas distribution and transmission lines, and 7,700 megawatts of reliable power capacity. Our family of companies is committed to delivering world-class reliability and the very best customer care anywhere. Customers are the heart of our business, and we work every day to help grow and support communities where we provide vital energy services. As a Fortune 500 company, we value and develop our employees who are making a difference in a mission that matters.[13]

Why was the company included?
WEC Energy Group provides electricity and gas to customers. Electric customers represent 36% of customers and gas customers represent 64% of customers. This company is similar to the electric companies that we are is responsible for valuing. The company serves an electric service territory in the Midwest.

We are also using this company as a guideline company for the Gas Distribution Market Segment because over 60% of their customers are gas distribution customers.

Xcel Energy Inc.
Company Summary from Value Line:
Xcel Energy Inc. is the parent of Northern States Power (NSP), which supplies electricity to MN, WI, ND, SD & MI & gas to MN, WI, ND & MI; Public Service Company of Colorado (PSCo), which supplies electricity & gas to CO; & Southwestern Public Service Company (SPS), which supplies electricity to TX & NM. Customers: 3.8 mill. electric, 2.1 mill. gas. Electric revenues: resid'l, 29%; comm'l & ind'l, 48%; other, 23%. Purchases 33% of power, owns 67%. Total electric mix: wind, 33%; gas, 24%; coal, 23%, nuclear, 13%, solar/other, 7%. Fuel costs: 45% of revenues. '22 deprec. rate: 3.7%.

[13] https://www.wecenergygroup.com/about/aboutus.htm, accessed 1/30/2024

Employs 11,982.

Additional Company Information from Website:
Xcel Energy is a major U.S. electricity and natural gas company, with operations in 8 Western and Midwestern states. Xcel Energy provides a comprehensive portfolio of energy-related products and services to millions of electricity and natural gas customers through its regulated operating companies. Company headquarters are located in Minneapolis.[14]

Why was the company included?
Xcel Energy Inc. provides electricity and gas to customers. Electric customers represent 64% of customers and gas customers represent 36% of customers. This company is similar to (and is one of) the electric companies that we are is responsible for valuing. The company serves an electric service territory in the Midwest.

[14] https://investors.xcelenergy.com/corporate-information/corporate-profile/default.aspx, accessed 1/30/2024

Companies Not Included in the Electric Market Segment

AVANGRID Inc.

Company Summary from Value Line:

AVANGRID Inc. (formerly Iberdrola USA, Inc.), is a diversified energy and utility company that serves 2.3 million electric customers in New York, Connecticut, and Maine and 1 million gas customers in New York, Connecticut, Massachusetts & Maine. Has a nonregulated generating subsidiary focused on wind and solar power generation, with 9.2 GW of capacity and 1.7 GW under construction. Renewables segment accounted for about 17% of net profits trailing for 12 months. Power/fuel costs: 31% of rev. '22 reported depr. rate: 2.6%. Iberdrola owns 81.5% of stock. Employs 7,579.

Additional Company Information from Website:

Avangrid is a leading sustainable energy company transitioning America toward a clean and connected future headquartered in Orange, CT, and has a footprint in 24 states with $41 billion in assets. Our primary businesses are Networks, which serves 3.3 million electric and natural gas customers in the Northeast, and Renewables, the third-largest renewable energy company in the U.S. with a diverse onshore and offshore renewable energy portfolio. With more than 7,600 employees, Avangrid has built a culture that blends diversity, equity and inclusion guided by the company's ESG+F framework and the UN Sustainable Development Goals. This has led to recognition by JUST Capital for three consecutive years as one of America's best corporate citizens and second in utilities for our commitment to the environment and the communities we serve. Avangrid has been named one of the World's Most Ethical Companies for five consecutive years by the Ethisphere Institute.[15]

AVANGRID, Inc. (NYSE: AGR), a leading sustainable energy company and member of the Iberdrola Group, announced today that it has agreed to extend the merger agreement with PNM Resources (NYSE: PNM) through July 20, 2023. The extension will allow the companies time to continue to work together through the regulatory review process in New Mexico.

"We remain committed to the merger of AVANGRID and PNM Resources, which will bring more than $300 million in benefits to the customers and communities of New Mexico and more than $16 million in rate relief to Texas customers," said Pedro Azagra, AVANGRID CEO. "Together, we will accelerate Texas and New Mexico's clean energy futures and increase the focus on reliability and resiliency for customers. We also understand that we are an anchor institution in the communities we serve, beyond just the services we provide. Through this merger, we will contribute to the economic development of the regions and support their continued vibrancy and prosperity."

The merger has received approval from five federal agencies and the Public Utility Commission of Texas. AVANGRID and PNM Resources together with the New Mexico Public Regulation Commission (NMPRC) filed a joint motion at the New Mexico Supreme Court in March 2023 to dismiss the companies' appeal of the December 2021 NMPRC denial and remand the case back to the NMPRC.[16]

Why was the company not included?

Avangrid is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies

[15] https://www.avangrid.com/wps/portal/avangrid/aboutus, accessed on 1/30/2024
[16] https://www.avangrid.com/w/avangrid-pnm-resources-merger-agreement-extended, accessed 1/30/2024

for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota. Avangrid Renewables has wind facilities in Minnesota, however, Avangrid Networks (electric and gas utilities) are located in New York and New England. The company recently extended a merger plan with PNM Resources. PNM Resources is in the Electric Utility (West) Value Line Industry.

Avista Corporation

Company Summary from Value Line:

Avista Corporation (formerly The Washington Water Power Company) supplies electricity & gas in eastern Washington & northern Idaho. Supplies electricity to part of Alaska & gas to part of Oregon. Customers: 411,000 electric, 377,000 gas. Acq'd Alaska Electric Light and Power 7/14. Sold Ecova energy-management sub. 6/14. Electric rev. breakdown: residential, 38%; commercial, 30%; industrial, 10%; wholesale, 17%; other, 5%. Generating sources: gas & coal, 31%; hydro, 31%; purch., 38%. Fuel costs: 35% of revs. '22 reported depr. rate (Avista Utilities): 3.6%. Has 1,767 employees.

Additional Company Information from Website:

We are an energy company involved in the production, transmission and distribution of energy as well as other energy-related businesses. Avista Utilities is our operating division, providing electricity to nearly 410,000 customers and natural gas to about 377,000 customers across 30,000 square miles and four northwestern states. Alaska Energy and Resources Company, an Avista subsidiary, provides retail electric service in the city and borough of Juneau through its subsidiary Alaska Electric Light and Power Company. Avista's history of innovations rooted in the renewable energy we've generated since our founding in 1889.[17]

Why was the company not included?

Avista is in the Electric Utility (West) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Consolidated Edison Inc.

Company Summary from Value Line:

Consolidated Edison, Inc. (ConEd) is a holding company for Consolidated Edison Company of New York (CECONY), which sells electricity, gas, and steam in most of NY city and Westchester County. ConEd also owns Orange and Rockland Utilities (O&R), which operates in New York and New Jersey. ConEd has 3.9 mill. electric, 1.2 mill. gas customers. Expected to close on the sale of its portfolio of renewable generation for $6.8 bill. by mid-2022. It entered into midstream gas joint venture 6/16; sold it 7/21. Purchases most of its power. Fuel costs: 26% of revenues. '22 reported deprec. rates: 3.0%-3.5%. Employs 14,319.

Additional Company Information from Website:

We operate one of the world's largest energy delivery systems. Founded in 1823 as the New York Gas Light company, our electric, gas, and steam service now provides energy for the 10 million people who live in New York City and Westchester County. We're constantly looking toward the future and exploring ways to innovate and take advantage of developing technology. But, more than anything,

[17] https://investor.avistacorp.com/, accessed 1/30/2024

we’re listening to you and working hard to give you cleaner, more efficient energy choices, and more control over when and how you use your power.[18]

Consolidated Edison, Inc. ("Con Edison") (NYSE:ED) has successfully completed the sale of its wholly-owned subsidiary, Con Edison Clean Energy Businesses, Inc. (the "Clean Energy Businesses"), including the transfer of substantially all of its assets, to RWE Renewables Americas, LLC. The transaction is valued at $6.8 billion.[19]

Why was the company not included?
Consolidated Edison is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Dominion Energy Inc.
Company Summary from Value Line:
Dominion Energy, Inc. (formerly Dominion Resources) is a holding company for Virginia Power, North Carolina Power, & South Carolina E&G, which serve 3.5 mill. customers in VA, SC, & NC. Serves 3.5 mill. gas customers in OH, WV, UT, SC, & NC. Other ops. incl. independent power production. Acq’d Questar 9/16; SCANA 1/19. Elec. rev. breakdown: residential, 47%; commercial, 34%; industrial, 8%; other, 11%. Generating sources: gas, 36%; nuclear, 28%; coal, 8%; other, 5%; purchased, 23%. Power/fuel costs: 31% of revs. ’22 reported deprec. rates: 1.9%-3.9%. Employs 17,100.

Additional Company Information from Website:
We are committed to serving our customers and the communities where we all live and work. Dominion Energy employees are committed to a simple mission: To provide reliable, affordable, and increasingly clean energy that powers our customers every day. Our customers expect us to:

- Provide reliable energy
- Protect the environment
- Give back to the communities we serve

Dedicated Dominion Energy employees are putting their energy to work every day to exceed your expectations. The future of energy is exciting, and we want to share this future with you.[20]

Dominion Energy Advances Business Review; Announces Agreements to Sell Gas Distribution Companies to Enbridge

- Consistent with the previously outlined commitments & priorities of the ongoing business review
- Transactions valued at $14.0 billion – all cash consideration of $9.4 billion plus assumption of debt
- Highly credit accretive—100% of after-tax proceeds expected to be used to retire debt
- All sales expected to close by end of 2024, subject to customary regulatory approvals
- Company now expects to conclude review and announce repositioned outlook during the fourth quarter of 2023 given vital importance of ensuring the company is best positioned to create maximum long-term value for shareholders

[18] https://www.coned.com/en/about-us/company-information, accessed 1/30/2024
[19] https://investor.conedison.com/news-releases/news-release-details/con-edison-finalizes-sale-its-clean-energy-businesses, accessed 1/30/2024
[20] https://www.dominionenergy.com/our-company, accessed 1/31/2024

> Dominion Energy (NYSE: D) today announced that it has concluded a robust and competitive sale process and executed three separate definitive agreements to sell its three natural gas distribution companies to Enbridge (TSX: ENB) (NYSE: ENB).
>
> The three LDCs – The East Ohio Gas Company, Public Service Company of North Carolina, Incorporated, and Questar Gas Company along with Wexpro Company – serve about 3 million homes and businesses in Ohio, North Carolina, Utah, Wyoming, and Idaho and collectively comprise approximately 78,000 miles of natural gas distribution, transmission, gathering, and storage pipelines; more than 62 Bcf of working underground and liquefied natural gas storage capacity; and approximately 400 Bcfe of cost-of-service regulated gas reserves as of year-end 2022.[21]

Why was the company not included?
Dominion Energy is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Duke Energy Corporation
Company Summary from Value Line:
Duke Energy Corporation is a holding company for utilities with 7.6 mill. elec. customers in NC, FL, IN, SC, OH, & KY, and 1.6 mill. gas customers in OH, KY, NC, SC, and TN. Owns independent power plants & has 25% stake in National Methanol in Saudi Arabia. Acq'd Progress Energy 7/12; Piedmont Natural Gas 10/16; discontinued most int'l ops. in '16. Elec. rev. breakdown: residential, 45%; commercial, 28%; industrial, 13%; other, 14%. Generating sources: gas, 32%; nuclear, 30%; coal, 18%; other, 1%; purchased, 19%. Fuel costs: 28% of revs. '21 reported deprec. rate: 2.9%. Has 27,600 employees.

Additional Company Information from Website:
Duke Energy, a Fortune 150 company headquartered in Charlotte, N.C., is one of America's largest energy holding companies. Our electric utilities serve 8.2 million customers in North Carolina, South Carolina, Florida, Indiana, Ohio and Kentucky, and collectively own 50,000 megawatts of energy capacity. Our natural gas unit serves 1.6 million customers in North Carolina, South Carolina, Tennessee, Ohio and Kentucky. Our company employs 28,000 people.[22]

Why was the company not included?
Duke Energy is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Edison International (Formerly SCECorp)
Company Summary from Value Line:
Edison International is a holding company for Southern California Edison Company (SoCal Edison), which supplies electricity to 5.2 mill. customers in a 50,000-sq.-mi. area in central, coastal, & southern CA (excl. Los Angeles & San Diego). Edison Energy is an energy svcs. co. Disc. Edison Mission

[21] https://news.dominionenergy.com/2023-09-05-Dominion-Energy-Advances-Business-Review-Announces-Agreements-to-Sell-Gas-Distribution-Companies-to-Enbridge, accessed 1/30/2024
[22] https://www.duke-energy.com/our-company/about-us, accessed 1/31/2024

Energy (independent power producer) in ’12. Elec. rev. breakdown: residential, 40%; commercial, 42%; industrial, 3%; other, 15%. Generating sources: nuclear, 9%; gas, 7%; hydroelectric, 4%; purchased, 80%. Power costs: 37% of revs. ’22 reported depr. rate: 3.8%. Employs 13,385.

Additional Company Information from Website:
At Edison International, our vision is to lead the transformation of the electric power industry toward a clean energy future. Through our subsidiaries, we generate and distribute electric power, as well as provide energy services and technologies, including renewable energy. With 136 years of innovation in our history, our company is well-positioned and prepared for the work that lies ahead as we focus on opportunities in clean energy, efficient electrification, the grid of the future, and customer choice to strengthen and grow our business.[23]

Why was the company not included?
Edison International is in the Electric Utility (West) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Entergy Corporation
Company Summary from Value Line:
Entergy Corporation supplies electricity to 3 million customers through subsidiaries in Arkansas, Louisiana, Mississippi, Texas, and New Orleans (regulated separately from Louisiana). Distributes gas to 206,000 customers in Louisiana. Is selling its last nonutility nuclear unit (shut down 5/22). Electric revenue breakdown: residential, 37%; commercial, 24%; industrial, 27%; other, 12%. Generating sources: gas, 68%; nuclear, 22%; coal, 9%; hydro and solar, 1%. Fuel costs: 32% of revenues. ’22 reported depreciation rate: 2.7%. Has 11,707 employees.

Additional Company Information from Website:
Entergy is a Fortune 500 company that powers life for 3 million customers through our operating companies in Arkansas, Louisiana, Mississippi and Texas. We’re investing in the reliability and resilience of the energy system while helping our region transition to cleaner, more efficient energy solutions. With roots in our communities for more than 100 years, Entergy is a nationally recognized leader in sustainability and corporate citizenship. Since 2018, we have delivered more than $100 million in economic benefits each year to local communities through philanthropy, volunteerism and advocacy. Entergy is headquartered in New Orleans, Louisiana, and has approximately 12,000 employees.[24]

Why was the company not included?
Entergy Corporation serves an electric service territory in Arkansas, Louisiana, Mississippi, New Orleans, and Texas. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Eversource Energy
Company Summary from Value Line:

[23] https://www.edison.com/about-us, accessed 1/31/2024
[24] http://entergy.com/about_entergy/, accessed 1/31/2024

Eversource Energy (formerly Northeast Utilities) is the parent of 12 regulated utilities with 4.4 million electric, natural gas, and water customers. Supplies power to most of Connecticut and gas to part of CT; supplies power to 3/4 of New Hampshire's population; supplies power to western Massachusetts and parts of eastern MA & gas to central & eastern MA; supplies water to CT, MA, & NH. Acq'd NSTAR 4/12; Aquarion 12/17; Columbia Gas 10/20. Electric rev. breakdown: residential, 53%; commercial/indus'l/other, 47%. Fuel costs: 41% of revs. '22 reported deprec. rate: 3.6%. Employs 9,626.

Additional Company Information from Website:
At Eversource, Energy brings us together. We live in the neighborhoods we serve, working for a better tomorrow. We're 9,600 people committed to providing safe, reliable and sustainable electric, gas and water service in Massachusetts, Connecticut and New Hampshire. Our operations trace their roots back to the middle of the 19th century. Through the decades, many companies have come together to form Eversource, New England's largest energy delivery company. Today, we're proud to serve 4.4 million customers. Like our predecessor companies, we're focused on supporting every one of our communities, to power the possible for New England.[25]

Why was the company not included?
Eversource Energy is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Exelon Corporation
Company Summary from Value Line:
Exelon Corporation is a holding company for Commonwealth Edison (ComEd), PECO Energy, Baltimore Gas and Electric (BGE), Pepco, Delmarva Power (DPL), & Atlantic City Electric (ACE). Has 9.1 mill. elec., 1.3 mill. gas customers. Spun off Constellation Energy (nonregulated generating & energy-marketing ops.) 2/22. Acq'd Constellation Energy 3/12; Pepco Holdings 3/16. Elec. rev. breakdown: residntl, 54%; small commercl. & indstrl, 16%; large commercl. & indstrl, 17%; other, 13%. Fuel costs: 48% of revs. '22 deprec. rates: 2.8%-8.7% elec., 2.1% gas. Has 18,700 empls.

Additional Company Information from Website:
Exelon is recognized as an industry leader with best-in-class operations, with utilities achieving top quartile or better performance in customer satisfaction, reduced outage frequency, and faster service restoration. This strong record of reliability and customer satisfaction is reinforced by substantial infrastructure investments across the fleet. Exelon (Nasdaq: EXC) is a Fortune 250 company and the nation's largest utility company, serving more than 10 million customers through six fully regulated transmission and distribution utilities — Atlantic City Electric (ACE), Baltimore Gas and Electric (BGE), Commonwealth Edison (ComEd), Delmarva Power & Light (DPL), PECO Energy Company (PECO), and Potomac Electric Power Company (Pepco). More than 19,500 Exelon employees dedicate their time and expertise to supporting our communities through reliable, affordable and efficient energy delivery, workforce development, equity, economic development and volunteerism.[26]

[25] https://www.eversource.com/content/general/about/about-us/about-us/welcome-to-eversource, accessed 1/31/2024
[26] http://www.exeloncorp.com/company/about-exelon, accessed 1/31/2024

Why was the company not included?
Exelon is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

FirstEnergy Corporation
Company Summary from Value Line:
FirstEnergy Corp. is a holding company for Ohio Edison, Pennsylvania Power, Cleveland Electric, Toledo Edison, Metropolitan Edison, Penelec, Jersey Central Power & Light, West Penn Power, Potomac Edison, & Mon Power. Provides electric service to 6.214 million customers in OH, PA, NJ, WV, MD, & NY. Acq'd Allegheny Energy 2/11. Electric revenue breakdown: residential, 57.2%; commercial, industrial & other, 42.8%. Purchases most of its power. Power costs: 36.9% of revenues. 2022 reported depreciation rate: 2.7%. Has 12,335 employees.

Additional Company Information from Website:
We are a forward-thinking electric utility centered on integrity, powered by a diverse team of employees committed to making customers' lives brighter, the environment better and our communities stronger. FirstEnergy (NYSE: FE) is dedicated to integrity, safety, reliability and operational excellence. Headquartered in Akron, Ohio, FirstEnergy includes one of the nation's largest investor-owned electric systems, approximately 24,000 miles of transmission lines that connect the Midwest and Mid-Atlantic regions, and a regulated generating fleet with a total capacity of more than 3,500 megawatts.[27]

Why was the company not included?
FirstEnergy is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Fortis Inc.
Company Summary from Value Line:
Fortis Inc.'s main focus is electricity, hydroelectric, and gas utility operations (both regulated and nonregulated) in the United States, Canada, and the Caribbean. Has 2 mill. electric, 1.3 mill. gas customers. Owns UNS Energy (Arizona), Central Hudson (New York), FortisBC Energy (British Columbia), FortisAlberta (Central Alberta), and Eastern Canada (Newfoundland). Sold commercial real estate and hotel property assets in 2015. Acquired ITC Holdings 10/16. Fuel costs: 31% of revs. '22 reported deprec. rate: 2.6%. Has 9,100 employees.

Additional Company Information from Website:
We are an energy delivery business. Ninety-three percent of our total assets are investments in infrastructure that support the safe and reliable transmission and distribution of electricity and natural gas to our customers. We are diverse from a regulatory and a geographic perspective. Fortis is virtually 100% regulated and we operate in 18 jurisdictions. We are one of the most geographically diverse utility businesses on the continent, with each jurisdiction having distinct regulatory regimes. Our utility leadership is local. Fortis utilities operate close to their customers and regulators. Our local teams have the authority and independence to deliver what's most important in their communities. Fortis Inc. has its

[27] https://www.firstenergycorp.com/about.html, accessed 1/31/2024

origin in the formation of St. John's Electric Light Company in 1885 in the province now known as Newfoundland and Labrador. That company eventually became Newfoundland Light & Power Co. Limited which became the first wholly owned subsidiary of Fortis Inc. Fortis was created as a holding company in 1987 with the mission to expand and diversify.[28]

Why was the company not included?
Although Fortis is similar to the electric companies that we are responsible for valuing, and it is in the Electric Utility (Central) Value Line Industry, they trade on the Toronto and New York Stock Exchanges. All data provided by Value Line is in Canadian Dollars, making conversion to U.S. dollars necessary. Since there are enough comparable companies, we will not use this company. This also limits the number of additional calculations that can decrease the reliability of the data.

Hawaiian Electric Industries Inc.
Company Summary from Value Line:
Hawaiian Electric Industries, Inc. is the parent company of Hawaiian Electric Company, Inc. (HECO), American Savings Bank (ASB), and Pacific Current. HECO & its subs., Maui Electric Co. (MECO) & Hawaii Electric Light Co. (HELCO), supply electricity to 469,668 customers on Oahu, Maui, Molokai, Lanai, & Hawaii. Operating companies' systems are not interconnected. Elec. rev. breakdown: residential, 44%; commercial, 19%; industrial, 37%; other, less than 1%. Generating sources: oil, 52%; purchased, 48%. Fuel costs: 50%+ of revs. '22 reported deprec. rate: 3.3%. Has 3,756 employees.

Additional Company Information from Website:
Hawaiian Electric strives to be one of the most progressive and highest performing companies in the world, serving the energy needs of each person in Hawaii with purpose, compassion, empathy, and aloha for our fellow humans and our natural environment. We commit to be the best in all we do. We turn our Hawaii spirit and our connectedness with others to our community's advantage. We act with boldness and urgency, without fear of failure. Our highest priority is to build a sustainable Hawaii in which our children and grandchildren, our communities, our customers, and employees will thrive, together.
We succeed by providing exceptional service to our customers and integrating and aligning our actions with those of other businesses and organizations. We drive ourselves and others to higher levels of achievement than ever before. At Hawaiian Electric, we're committed to reaching our 100% clean energy future, and reducing our carbon footprint. Let's continue to work together to build sustainable, resilient communities.[29]

Why was the company not included?
Hawaiian Electric is in the Electric Utility (West) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

IDACORP Inc.
Company Summary from Value Line:
IDACORP, Inc. is a holding company for Idaho Power Company, a regulated electric utility that serves

[28] https://www.fortisinc.com/about-us/about-us#profile, accessed 1/31/2024
[29] https://www.hei.com/company-profile/about-hawaiian-electric/default.aspx, accessed 1/31/2024

618,000 customers throughout a 24,000-square-mile area in southern Idaho and eastern Oregon (population: 1.4 million). Most of the company's revenues are derived from the Idaho portion of its service area. Revenue breakdown: residential, 38%; commercial, 27%; industrial, 22%; irrigation, 12%; other, 1%. Generating sources: hydro, 29%; coal, 20%; gas, 13%; purchased, 39%. Fuel costs: 40% of revenues. '22 reported depreciation rate: 3.0%. Has 2,077 employees.

Additional Company Information from Website:
Boise, Idaho-based IDACORP is a holding company comprised of Idaho Power Company, a regulated electric utility; IDACORP Financial, a holder of affordable housing projects and other real estate investments; and Ida-West Energy, an operator of small hydroelectric generation projects that satisfy the requirements of the Public Utility Regulatory Policies Act of 1978. IDACORP was formed Oct. 1, 1998, following approval by Idaho Power shareholders, the Federal Energy Regulatory Commission and the public utility commissions of Idaho, Oregon, Nevada and Wyoming (states where IDACORP has conducted business or has holdings). Under the holding company structure, Idaho Power Company is the primary subsidiary. This regulated utility, headquartered in vibrant and fast-growing Boise, Idaho, has been a locally operated energy company since 1916. Today, it serves a 24,000-square-mile service area in Idaho and Oregon. Idaho Power's goal to provide 100% clean energy by 2045 builds on its long history as a clean-energy leader that provides reliable service at affordable prices. With 17 low-cost hydropower projects at the core of its diverse energy mix, Idaho Power's residential, business, and agricultural customers pay among the nation's lowest prices for electricity. It's 2,000 employees proudly serve more than 620,000 customers with a culture of safety first, integrity always, and respect for all. IDACORP's common stock is traded on the New York Stock Exchange under the trading symbol "IDA".[30]

Why was the company not included?
IDACORP is part of Value Line's Electric Utility (West) industry, but it is similar to the electric companies that we are responsible for valuing. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

MDU Resources Group Inc.
Company Summary from Value Line:
MDU Resources Group, Inc. is a regulated energy delivery and construction materials and services company. Segments: construction materials and contracting (36% of '22 revs; 34% of '22 op. inc.), construction services (39%, 29%), natural gas distribution (18%, 16%); electric (5%, 14%) and pipeline (2%, 7%). Utilities sell gas & electricity in northwest and upper midwest U.S. Construction materials has 1.1 billion tons of construction reserves. Has about 14,929 employees.

Additional Company Information from Website:
MDU Resources provides essential products and services through its regulated energy delivery and construction services businesses. Our company was founded in 1924 as a small electric utility serving a handful of farm communities on the border of Montana and North Dakota. We realized early the value of delivering a variety of services and grew our company by developing businesses around our expertise. Today, MDU Resources has operations, customers and employees across the country. We have more than 11,000 employees and conduct business in nearly every state. We are the largest

[30] http://www.idacorpinc.com/about-us/at-a-glance, accessed 1/31/2024

publicly traded company headquartered in North Dakota. Our stock has traded since 1948 under the symbol MDU on the New York Stock Exchange. We provide the natural gas and electricity that power business, industry and our daily lives, and we construct the pipes and wires that connect our homes, factories, offices and stores to bring them to life. We have paid dividends uninterrupted to our stockholders for 84 years. We have increased dividends 32 consecutive years, a feat accomplished by only about 80 other U.S.-listed companies. Our commitment to paying dividends is reflected in our membership in the S&P High-Yield Dividend Aristocrats index. Our utility companies serve approximately 1.18 million customers across eight states. WBI Energy provides natural gas transportation through approximately 3,800 miles of regulated pipeline systems as well as underground natural gas storage services with the largest gas storage field in North America. MDU Construction Services Group is one of the largest electrical contractors in the United States, with more than 8,500 employees.[31]

Why was the company not included?
MDU Resources was reviewed as a potential guideline company because it has an operating subsidiary located in Minnesota. This company is in the Natural Gas Diversified Company Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota that are very similar to the companies in Minnesota. This company's majority operating segment is construction materials and contracting.

MGE Energy Inc.
Company Summary from Value Line:
MGE Energy, Inc. is a holding company for Madison Gas and Electric Company (MGE), which provides electric service to 161,000 customers in Dane County and gas service to 173,000 customers in nine counties in Wisconsin. Electric revenue breakdown: residential, 35%; commercial, 50%; industrial, 3%; other, 12%. Generating sources: coal, 35%; gas, 16%; renewables, 22%; purchased power, 27%. Fuel costs: 36% of revenues.'22 reported depreciation rates: electric, 3.2%; gas, 2.1%; nonregulated, 2.3%. Has about 700 employees.

Additional Company Information from Website:
MGE Energy, a public utility holding company, is headquartered in the state capital Madison, Wis. MGE Energy trades on NASDAQ with the stock ticker MGEE. MGE Energy is dedicated to long-term value for its shareholders. We have increased our dividend for more than 48 consecutive years and have paid dividends for more than 110 years. MGE Energy is the parent company of the following:

- Madison Gas and Electric Company (MGE) provides natural gas and electric service in south-central and western Wisconsin.
- MGE Transco Investment holds an ownership interest in ATC LLC, which invests in transmission assets, primarily within Wisconsin.
- MGEE Transco LLC holds an ownership interest in ATC Holdco, which invests in transmission assets outside ATC LLC service territory.
- MGE Power owns assets in the West Campus Cogeneration Facility in Madison, Wis. and the Elm Road Generating Station in Oak Creek, Wis.
- MAGAEL, LLC holds title to properties acquired for future utility plant expansion.
- Central Wisconsin Development Corporation promotes business growth in MGE's service area.

[31] https://www.mdu.com/our-company/overview/default.aspx, accessed 1/31/2024

- MGE Services, LLC provides construction and other services.[32]

Why was the company not included?
MGE Energy Inc. provides electricity and gas to customers. Electric customers represent 49% of customers and gas customers represent 51% of customers. This company is similar to the electric companies that we are responsible for valuing. The company serves an electric service territory in the Midwest. However, the company has less publicly available information than other guideline companies used in this market segment.

NextEra Energy Inc.
Company Summary from Value Line:
NextEra Energy, Inc. is a holding company for Florida Power & Light Company (FPL), which provides electricity to roughly 5.8 million customers in eastern, southern, & northwestern FL. NextEra Energy Resources is a nonregulated power generator with nuclear, gas, & renewable ownership. Has 54% stake in NextEra Energy Partners. Acquired Gulf Power 1/19; Florida City Gas 7/18. Revenue.: residential, about 55%; commercial/industrial/other, 45%. Generating sources: gas, 71%; nuclear, 21%; solar/other, 7%; purchased, 1%. Fuel costs: 30.5% of revenues. ’22 depreciation rate: 3.4%. Employs 15,300.

Additional Company Information from Website:
NextEra Energy, Inc. (NYSE: NEE) is a leading clean energy company headquartered in Juno Beach, Florida. NextEra Energy owns Florida Power & Light Company, which is America’s largest electric utility that sells more power than any other utility, providing clean, affordable, reliable electricity to approximately 5.9 million customer accounts, or more than 12 million people across Florida. NextEra Energy also owns a competitive clean energy business, NextEra Energy Resources, LLC, which, together with its affiliated entities, is the world’s largest generator of renewable energy from the wind and sun and a world leader in battery storage. Through its subsidiaries, NextEra Energy generates clean, emissions-free electricity from seven commercial nuclear power units in Florida, New Hampshire and Wisconsin. NextEra Energy has been recognized often by third parties for its efforts in sustainability, corporate responsibility, ethics and compliance, and diversity. NextEra Energy is ranked No. 1 in the electric and gas utilities industry on Fortune’s 2023 list of “World's Most Admired Companies,” recognized on Fortune’s 2021 list of companies that “Change the World” and received the S&P Global Platts 2020 Energy Transition Award for leadership in environmental, social and governance.[33]

Why was the company not included?
NextEra Energy is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota. This company has nuclear plants in Wisconsin as well as renewable energy generators in Minnesota. However, these operations are very small considering the overall company.

Ormat Technologies Inc.
Company Summary from Value Line:
Ormat Technologies, Inc., together with its subsidiaries, provides geothermal and recovered energy

[32] https://www.mgeenergy.com/en/about/about-mge-energy/, accessed 1/31/2024
[33] http://www.investor.nexteraenergy.com, accessed 1/31/2024

power and products through two operating segments. Its electricity division, 88% of 2022 revs., develops, constructs, owns, and operates geothermal power plants that sell electricity. Under the product segment, 10% of revs., the company designs and manufactures power units for geothermal plants and power units for recovered generation. Other revs., 4%. Employs about 1,480.

Additional Company Information from Website:
Headquartered in Reno, Nevada, Ormat is a leading geothermal company and the only vertically integrated company engaged in geothermal and recovered energy generation (REG). Ormat leveraged its core capabilities and global presence to expand its activity into different energy storage services and solar photovoltaic (PV), including hybrid geothermal and solar PV as well as energy storage plus Solar PV. Ormat's objective is to become a leading global provider of renewable energy. The Company has over five decades of experience in the development of state-of-the-art, environmentally sound power solutions. The company designs, develops, builds, owns and operates geothermal and recovered energy-based power plants. The in-depth knowledge gained from these operations gives the Company the competitive edge by enabling efficient maintenance and timely response to operational issues. Ormat leveraged its core capabilities in the geothermal and REG industries and its global presence to expand the Company's activity into energy storage services, solar Photovoltaic (PV) and energy storage plus Solar PV. Ormat's current total generating portfolio is 1.2 GW with 1,107 MW of geothermal and Solar generation portfolio that is spread globally in the U.S., Kenya, Guatemala, Indonesia, Honduras, and Guadeloupe, and 150 MW energy storage portfolio that is located in the U.S. In addition to owning and operating geothermal power plants in the United States and other countries, the Company designs, manufactures and sells power generating equipment as well as complete power plants on a turnkey basis. [34]

Why was the company not included?
Ormat is in the Power Company Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota. Ormat does have generating facilities in Minnesota, but they are a very small portion of their overall company, and Ormat is not an accurate reflection of the types of companies we are valuing.

PG&E Corporation (Pacific Gas and Electric Company Inc.)
Company Summary from Value Line:
PG&E Corporation is a holding company for Pacific Gas and Electric Company and nonutility subsidiaries. Supplies electricity and natural gas to most of northern and central California (population 16 million). Has 5.6 million electric and 4.6 million natural gas customers. Electric revenue breakdown: residential, 41%; commercial, 36%; industrial, 11%; agricultural, 12; other, less than 1%. Power generating sources: nuclear, 49%; renewable, 40%; large hydro, 7%; fossil fuel, 4%. Power and Fuel costs: 22% of revenues. '22 reported depr. rate: 3.74% (utility). Has 26,000 employees.

Additional Company Information from Website:
Pacific Gas and Electric Company, incorporated in California in 1905, is one of the largest utility companies in the United States. Based in Oakland, the company is part of PG&E Corporation. There are approximately 23,000 employees who carry out Pacific Gas and Electric Company's primary business—

[34] https://investor.ormat.com/corporate-profile/default.aspx, accessed 1/31/2024

the transmission and delivery of energy. The company provides natural gas and electric service to approximately 16 million people throughout a 70,000-square-mile service area in northern and central California. Pacific Gas and Electric Company and other energy companies in the state are regulated by the California Public Utilities Commission. The CPUC was created by the state Legislature in 1911. PG&E service area stretches from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines. 42,141 miles of natural gas distribution pipelines and 6,438 miles of transmission pipelines. 5.5 million electric customer accounts. 4.5 million natural gas customer accounts.[35]

Why was the company not included?
PG&E is in the Electric Utility (West) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Pinnacle West Capital Corporation
Company Summary from Value Line:
Pinnacle West Capital Corporation is a holding company for Arizona Public Service Company (APS), which supplies electricity to 1.3 million customers in most of Arizona, except about half of the Phoenix metro area, the Tucson metro area, and Mohave County in northwestern Arizona. Discontinued SunCor real estate subsidiary in ’10. Electric revenue breakdown: residential, 51%; commercial/industrial, 41%; other, 12%. Generating sources: gas, 25%; nuclear, 24%; coal, 20%; renewables, 12%; purchased, 19%. Fuel costs: 38% of revenues. ’22 reported deprec. rate: 3.03%. Has 5,861 employees.

Additional Company Information from Website:
Pinnacle West Capital Corporation (NYSE: PNW) is an investor-owned electric utility holding company based in Phoenix, Ariz. We are recognized for our strong customer growth, healthy finances, principled ESG focus and innovative energy solutions to meet the changing needs of our customers. Along with our main subsidiary, Arizona Public Service (APS), we are working to meet business needs with practices that balance a healthy environment, a vibrant economy and strong communities for current and future generations. We provide our approximately 1.4 million customers with clean, reliable and affordable energy today and are committed to power Arizona’s future with electricity that is 100% clean and carbon-free by 2050. APS also is the operator and co-owner of the Palo Verde Generating Station – the largest nuclear plant and the single-largest generator of carbon-free electricity in the U.S. Beyond electricity, Arizona is our home and giving back is an important part of our culture. Our employees volunteer hundreds of thousands of hours to support causes and non-profits important to them. And, our company contributes to teachers and charitable organizations, assists our communities with economic development, and provides millions of dollars in direct financial assistance to customers struggling to pay their bills.[36]

Why was the company not included?
Pinnacle West Capital Corporation is in the Electric Utility (West) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as

[35] https://www.pge.com/en/about/company-information/company-profile.html, accessed 1/31/2024
[36] http://www.pinnaclewest.com/about-us/default.aspx, accessed 1/31/2024

companies located in or directly next to Minnesota.

PNM Resources Inc.

Company Summary from Value Line:
PNM Resources, Inc. is a holding company with two regulated electric utilities. Public Service Company of New Mexico (PNM) serves 544,000 customers in north central New Mexico, including Albuquerque and Santa Fe. Texas-New Mexico Power Company (TNMP) transmits and distributes power to 268,000 customers in Texas. Electric revenue breakdown: residential, 30%; commercial, 26%; industrial, 5%; other, 39%. Generating sources not available. Fuel costs: 44% of revenues. '22 reported depreciation rates: 2.6%-7.8%. Has 1,537 employees.

Additional Company Information from Website:
PNM Resources is an energy holding company based in Albuquerque, N.M., with 2022 consolidated operating revenues of $2.2 billion. Through its regulated utilities, PNM and TNMP, PNM Resources provides electricity to more than 800,000 homes and businesses in New Mexico and Texas. PNM serves its customers with a diverse mix of generation and purchased power resources totaling 2.7 gigawatts of capacity, with a goal to achieve 100% emissions-free energy by 2040. PNM Resources is publicly traded on the New York Stock Exchange as PNM. PNM Resources strives to create enduring value for customers, communities and shareholders built on a foundation of Environmental, Social and Governance Principles. At the core of our business we are focused on our Vision, our Purpose and our Values.[37]

On October 21, 2020, PNM Resources announced an agreement to enter into a merger with AVANGRID. Under the terms of the proposed merger, PNM Resources shareholders will receive $50.30 in cash for each share of PNM Resources common stock held at closing.

PNM Resources (NYSE: PNM) and Avangrid have mutually agreed to an amendment and extension of their merger agreement through December 31, 2023. The agreement can be further extended by three months upon mutual agreement from the companies.[38]

Why was the company not included?
PNM Resources is in the Electric Utility (West) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota. Also, PNM Resources and AVANGRID Inc. entered into an amendment of their merger agreement, extending the end date to December 31, 2023. AVANGRID Inc. is in the Electric Utility (East) Value Line Industry.

Portland General Electric Company

Company Summary from Value Line:
Portland General Electric Company (PGE) provides electricity to 926,000 customers in 51 cities in a 4,000-square-mile area of Oregon, including Portland and Salem (population: 1.9 million). The company is in the process of decommissioning the Trojan nuclear plant, which it closed in 1993. Electric revenue breakdown: residential, 52%; commercial, 33%; industrial, 14%; other, 1%. Generating sources: gas, 32%; wind, 15%; coal, 4%; hydro, 7%; purchased, 41%. Fuel costs: 37% of

[37] https://www.pnmresources.com/about-us.aspx, accessed 2/1/2024
[38] https://www.pnmresources.com/media/news.aspx, accessed 2/1/2024

revenues. ’22 reported depreciation rate: 3.4%. Has 2,873 full-time employees.

Additional Company Information from Website:
Portland General Electric is a fully integrated investor-owned utility that generates, transmits and distributes electricity to over 900,000 customers in 51 cities across the state of Oregon. We’re committed to providing shareholders with easy access to information about the company. As Oregon's largest utility, PGE is expanding to keep pace with the economic growth in northwest Oregon. See the PGE service territory. PGE offers a diverse mix of resources that includes hydropower, coal and gas combustion, wind and solar, as well as key transmission resources. Our power plants have a combined generating capacity of more than 3,300 megawatts.[39]

Why was the company not included?
Portland General Electric is in the Electric Utility (West) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

PPL Corporation
Company Summary from Value Line:
PPL Corporation (formerly PP&L Resources, Inc.) is a holding company for PPL Electric Utilities, which distributes electricity to 1.4 mill. customers in eastern & central Pennsylvania. Acquired Kentucky Utilities and Louisville Gas and Electric (1.3 mill. customers) 11/10. Acq’d Narragansett Electric (770,000 customers, renamed Rhode Island Energy) 5/22. Spun off power-generating sub. in ’15. Sold electric distribution sub. in U.K. in ’21. Electric rev. breakdown: res’l, 46%; comm’l, 21%; ind’l, 10%; other, 23%. Fuel costs: 33% of revs. ’22 reported deprec. rate: 3.2%. Has 6,527 employees.

Additional Company Information from Website:

We are customer-centric, people-driven and technology-enabled. We are harnessing our power to lead the clean energy transition while keeping energy service affordable and reliable for our customers. PPL Corporation’s family of companies provide electricity and natural gas to power our customers’ lives. PPL’s high-performing, award-winning utilities are addressing energy challenges head-on by building smarter, more resilient and more dynamic power grids and advancing sustainable energy solutions. We’re focused on an economical and sustainable transition to cleaner energy sources through innovation, responsible resource management and investments in infrastructure that support a more reliable, resilient and efficient grid.[40]

Why was the company not included?
PPL Corporation is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Public Service Enterprise Group, Inc.
Company Summary from Value Line:
Public Service Enterprise Group Inc. is a holding company for Public Service Electric and Gas Company

[39] https://investors.portlandgeneral.com/?_ga=2.127402757.96222047.1610120276-359187513.1610120276, accessed 2/1/2024
[40] https://www.pplweb.com/who-we-are/about-us/, accessed 2/2/2024

(PSE&G), which serves 2.3 million electric and 1.9 million gas customers in NJ, and PSEG Power LLC, a nonregulated power generator with nuclear plants in the Northeast (sold its fossil-fuel generating plants, 2/22). In mid- 2022, announced intent to divest offshore wind assets. Percentage of electric sales: Commercial (57%); Residential (34%); Industrial (9%). Fuel costs: 41% of revenues. ’22 reported depreciation rates (utility): 1.9%-2.6%. Has 12,525 employees.

Additional Company Information from Website:
The Public Service Corporation was formed in 1903, by combining more than 400 gas, electric and transportation companies in New Jersey. Thomas McCarter was named the Corporation's first president and held the position until 1939. Internally, Public Service consolidated its gas and electric interests into Public Service Electric and Gas, and its transportation interests into Public Service Coordinated Transport (later Transport of New Jersey). Concerns about the concentration of economic power resulted in federal and state actions requiring the breakup of utilities. In 1943, Public Service once again became a stand-alone company, and was renamed Public Service Electric and Gas Company (PSE&G) in 1948.[41]

Why was the company not included?
Public Service Enterprise Group is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

Sempra Energy
Company Summary from Value Line:
Sempra Energy is a holding company for San Diego Gas & Electric (SDG&E), which sells electricity & gas mainly in San Diego County, & Southern California Gas (SoCalGas), which distributes gas to most of Southern California. Owns 80% of Oncor (acquired 3/18), which distributes electricity in TX. Customers: 5.2 mill. electric, 7.0 mill. gas. Electric revenue breakdown: N/A. Purchases 76% of its power; the rest is gas. The Sempra Infrastrucure subsidiary (SI) is active in LNG exportation and other energy endeavors. Sold SA utilities in 2020. Power costs: 24.5% of revenues. ’22 reported deprec. rates: 2.6%-7.0%. Employs 15,785.

Additional Company Information from Website:
Sempra is an energy infrastructure company focused on connecting millions through the power of people, ideas and innovation. Our 20,000 employees pride themselves on being part of a leader in the energy industry, serving approximately 40 million consumers worldwide. From our San Diego, CA headquarters to our operations in key markets in North America, we are making great strides in developing forward-thinking energy solutions and positively impacting the communities we serve by delivering energy with purpose. With $79 billion in total assets at the end of 2022, combined with informed and impactful strategies and an inspiring mission, we strive for sustainable long-term growth.[42]

Why was the company not included?
Sempra is in the Electric Utility (West) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly

[41] https://corporate.pseg.com/aboutpseg/companyinformation, accessed 2/1/2024
[42] http://www.sempra.com/about-us, accessed 2/1/2024

next to Minnesota.

Southern Company

Company Summary from Value Line:

The Southern Company, through its subsidiaries, supplies electricity to 4.4 mill. customers in GA, AL, and MS. Also has a competitive generation business. Acq'd AGL Resources (renamed Southern Company Gas, 4.4 mill. customers in GA, NJ, IL, VA, & TN) 7/16. Sold Gulf Power 1/19. Electric revenue breakdown: residential, 37%; commercial, 30%; industrial, 19%; other, 14%. Generating sources: gas, 44%; coal, 20%; nuclear, 16%; other, 11%; purchased, 9%. Fuel costs: 29% of revenues. '22 reported deprec. rates (utility.): 2.7%-3.6%. Has 27,300 employees.

Additional Company Information from Website:

Our family of companies is proud to deliver clean, safe, reliable and affordable energy to our 9 million customers across the Southeast and beyond. Every day, our employees carry out their jobs with a customer-focused approach and service excellence. That means we are leaders who take action to meet our customers' and communities' needs while advancing our commitment to net zero emissions by 2050. We create community value through energy, social, economic and environmental progress. We do this through electric operating companies in three states and natural gas distribution companies in four states. Our system draws on diverse energy sources to create the best mix for our service areas, including electricity, natural gas, solar power, wind power, carbon-free nuclear, battery storage, microgrids and other sustainable sources. We leverage our leading distributed energy infrastructure company and other innovative technology to better serve every customer. Our competitive, national generation company serves wholesale customers, and our family includes a fiber optics network and telecommunications services. Together, we're building the future of energy. [43]

Why was the company not included?

Southern Company is in the Electric Utility (East) Value Line Industry. We are limiting the guideline companies for electric to the Electric Utility (Central) Value Line Industry as well as companies located in or directly next to Minnesota.

[43] https://www.southerncompany.com/about/our-business.html, accessed 2/1/2024

Market Segment: Gas Distribution

Companies Included in the Gas Distribution Market Segment

Atmos Energy Corporation
Company Summary from Value Line:
Atmos Energy Corporation is engaged primarily in the distribution and sale of natural gas to over three million customers through six regulated natural gas utility operations: Louisiana Division, West Texas Division, Mid-Tex Division, Mississippi Division, Colorado-Kansas Division, and Kentucky/Mid-States Division. Gas sales breakdown for fiscal 2022: 63.7%, residential; 28.8%, commercial; 5.8%, industrial; and 1.7% other. The company sold Atmos Energy Marketing, 1/17.

Additional Company Information from Website:
We are the country’s largest natural gas-only distributor and safely deliver reliable, affordable, efficient, and abundant natural gas to more than 3 million distribution customers in over 1,400 communities across eight states located primarily in the South. Our vision is for Atmos Energy to be the safest provider of natural gas services. We will be recognized for Exceptional Customer Service, for being a Great Employer and for achieving Superior Financial Results. As part of our vision, we are modernizing our business and infrastructure while continuing to invest in safety, innovation, environmental sustainability and our communities. We're investing approximately $2 billion a year in system upgrades to provide our customers with safe and reliable natural gas service for generations to come. Atmos Energy has grown from 279,000 customers in 1983 to more than 3 million customers today - mainly by acquiring utility assets. The company has regulated utility operations in Colorado, Kansas, Kentucky, Louisiana, Mississippi, Tennessee, Texas and Virginia. We are the largest natural gas distributor in the states of Texas, Louisiana, and Mississippi. We work closely with our state and federal regulators to operate a safe and reliable natural gas system.[44]

Why was the company included?
Atmos Energy Corporation provides gas to customers through six regulated natural gas utility operations. This company is similar to the gas distribution companies that we are responsible for valuing.

Black Hills Corporation
Company Summary from Value Line:
Black Hills Corporation is a holding company for Black Hills Energy, which serves 220,431 electric customers in CO, SD, WY and MT, and 1.1 million gas customers in NE, IA, KS, CO, WY, and AR. Has coal mining sub. Acq’d utility ops. from Aquila 7/08; SourceGas 2/16. Discontinued gas marketing in ’11; gas & oil E&P in ’17. Electric rev. breakdown: residential, 35%; commercial, 39%; industrial, 23%; other, 3%. Generating sources: coal, 35%; gas, 19%; wind, 11%; purchased, 35%. Fuel costs: 38% of revs. ’22 deprec. rate: 3.2%. Has 2,982 employees.

Additional Company Information from Website:

[44] https://www.atmosenergy.com/company/about-atmos-energy/, accessed 2/1/2024

Black Hills Corp. (NYSE: BKH) is a customer focused, growth-oriented utility company with a tradition of improving life with energy and a vision to be the energy partner of choice. Based in Rapid City, South Dakota, we serve 1.3 million natural gas and electric utility customers in eight states: Arkansas, Colorado, Iowa, Kansas, Montana, Nebraska, South Dakota and Wyoming.[45]

Why was the company included?
Black Hills Corporation provides electric and gas to customers. Electric customers represent 17% of customers and gas customers represent 83% of customers. This company is similar to the gas distribution companies that we are responsible for valuing. The company provides gas distribution services.

We are also using this company as a guideline company for the Electric Market Segment.

CenterPoint Energy Inc.
Company Summary from Value Line:
CenterPoint Energy, Inc. is a holding company for Houston Electric, which serves 2.7 million customers in Houston and environs, Indiana Electric, which serves 151,000 customers, and gas utilities with 4.27 million customers in Texas, Minnesota, Louisiana, Mississippi, Indiana, and Ohio. Acquired Vectren 2/19. Sold nonutility operations in ’20. Sold its stake in Energy Transfer LP in ’21 and ’22. Electric revenue breakdown not available. Fuel costs: 33% of revenues. ’22 depreciation rate: 3.8%. Has 8,986 employees.

Additional Company Information from Website:
Our vision to lead the nation in delivering energy, service and value drives our strategy and performance. We have an unwavering commitment to safely and reliably deliver electricity and natural gas to millions of people. Natural Gas. We sell and deliver natural gas to approximately 4 million homes and businesses in six states: Indiana, Louisiana, Minnesota (including Minneapolis), Mississippi, Ohio, and Texas (including greater Houston area). We are investing in modernizing our natural gas infrastructure and are committed to eliminating cast-iron pipe in all our territories. Electric Transmission and Distribution and Power Generation. We maintain the wires, poles and electric infrastructure serving more than 2.8 million metered customers in the greater Houston area and in southwestern Indiana. We also own and operate nearly 1,300 megawatts of electric generation capacity in Indiana. We are committed to the reliable delivery of electricity generated from power plants and renewable energy resources to homes and businesses. CenterPoint Energy Home Service Plus®. For over 80 years, HSP has provided heating and cooling solutions for Minnesota homeowners. We proudly offer expert repair, along with service and maintenance plans, and professional sales for both gas and electric equipment. CenterPoint Energy and HomeServe. We have selected HomeServe, a trusted nationwide provider of emergency home repair programs, in our natural gas markets in Mississippi and Texas (including greater Houston area) to offer our customers service repair plans that help reduce the stress and expense from the unexpected.[46]

Why was the company included?

[45] https://www.blackhillscorp.com/about, accessed on 1/30/2024
[46] https://www.centerpointenergy.com/en-us/corporate/about-us/company-overview, accessed on 1/30/2024

CenterPoint Energy Inc. provides electricity and gas to customers. Electric customers represent 39% of customers and gas customers represent 61% of customers. This company is similar to the gas distribution companies that we are responsible for valuing. The company engages in providing gas distribution services in Minnesota.

We are also using this company as a guideline company for the Electric Market Segment.

CMS Energy Corporation

Company Summary from Value Line:

CMS Energy Corporation is a holding company for Consumers Energy, which supplies electricity and gas to lower Michigan (excluding Detroit). Has 1.9 million electric, 1.8 million gas customers. Has 1,836 megawatts of nonregulated generating capacity. Sold EnerBank in '21. Electric revenue breakdown: residential, 46%; commercial, 32%; industrial, 15%; other, 7%. Generating sources: coal, 29%; gas, 19%; renewables, 6%; purchased, 47%. Fuel costs: 34% of revenues. '22 depreciation rates: 3.7% electric, 2.9% gas, 8.9% other. Has 8,560 fulltime employees.

Additional Company Information from Website:

CMS Energy Corporation's business strategy is focused primarily on its principal subsidiary, Consumers Energy Company, Michigan's largest electric and natural gas utility, serving 6.8 million of the state's 10 million residents. With our subsidiary, NorthStar Clean Energy, we are also engaged in independent power generation in several states. Consumers Energy is one of the nation's largest combination electric and natural gas utilities. NorthStar Clean Energy helps clients reach ambitious business and sustainability goals with a wide range of custom energy and carbon reduction products. The company also owns and operates independent power generating plants, natural gas assets and an energy marketing group for the non-utility segment of CMS Energy's business.[47]

Why was the company included?

CMS Energy Corporation provides electricity and gas to customers. Electric customers represent 51% of customers and gas customers represent 49% of customers. This company is similar to the gas distribution companies that we are responsible for valuing. The company provides gas distribution services.

We are also using this company as a guideline company for the Electric Market Segment.

New Jersey Resources Corporation

Company Summary from Value Line:

New Jersey Resources Corp. is a holding company providing retail/wholesale energy svcs. to customers in NJ, and in states from the Gulf Coast to New England, and Canada. New Jersey Natural Gas had 569,300 cust. at 9/30/22. Fiscal 2022 volume: 144 bill. cu. ft. (23% interruptible, 47% residential, commercial & firm transportation, 30% other). N.J. Natural Energy subsidiary provides unregulated retail/wholesale natural gas and related energy svcs. 2021 dep. rate: 2.7%. Has 1,288 empls.

Additional Company Information from Website:

New Jersey Resources (NJR) is a *Fortune 1000* company that provides natural gas and clean energy services, including transportation, distribution, asset management, and home services. With its

[47] https://www.cmsenergy.com/about-cms-energy/default.aspx, accessed 1/30/2024

demonstrated leadership as a premier energy infrastructure and environmentally-forward thinking company, NJR is committed to meeting customers' expectations for safe, reliable service; delivering value for our shareowners; strengthening our communities, and supporting a transition to a clean energy future. NJR is composed of the following core **businesses**: New Jersey Natural Gas - New Jersey Natural Gas (NJNG), NJR's principal subsidiary, operates and maintains over 7,600 miles of natural gas transportation and distribution infrastructure to serve over half a million customers in New Jersey's Monmouth, Ocean, Morris, Middlesex and Burlington counties.
NJR Energy Services - NJR Energy Services (NJRES) manages a diversified portfolio of natural gas transportation and storage assets and provides physical natural gas services and customized energy solutions to its customers across North America. NJR Clean Energy Ventures - NJR Clean Energy Ventures (NJRCEV) invests in, owns and operates solar projects with a total capacity of nearly 365 megawatts, providing residential and commercial customers with low-carbon solutions. Storage & Transportation - Storage & Transportation serves customers from local distributors and producers to electric generators and wholesale marketers through its ownership of Leaf River Energy Center and the Adelphia Gateway Pipeline Project, as well as a 50 percent equity ownership in Steckman Ridge natural gas storage facility. NJR Home Services - NJR Home Services (NJRHS) provides service contracts as well as heating, central air conditioning, water heaters, standby generators, solar and other indoor and outdoor comfort products to residential homes throughout New Jersey. NJR and its more than 1,200 employees are committed to helping customers save energy and money by promoting conservation and encouraging efficiency through Conserve to Preserve® and initiatives such as The SAVEGREEN Project® and The Sunlight Advantage®.[48]

Why was the company included?
New Jersey Resources Corporation provides energy and natural gas services to customers. This company is similar to the gas distribution companies that we are responsible for valuing.

NiSource Inc.
Company Summary from Value Line:
NiSource Inc. is a holding company for Northern Indiana Public Service Company (NIPSCO), which supplies electricity and gas to the northern third of Indiana. Customers: 479,185 electric in Indiana, 3,200,000 million gas in Indiana, Ohio, Pennsylvania, Kentucky, Virginia, Maryland, through its Columbia subsidiaries. Revenue breakdown, 2022: electrical, 31%; gas, 69%; other, less than 1%. Generating sources, coal, 69.4%; purchased & other, 30.6%. 2022 reported depreciation rates: 3.1% electric, 2.3% gas. Has 7,304 employees.

Additional Company Information from Website:
We're a leading natural gas and electric utility company. Our over 7,500 employees ensure Columbia Gas and NIPSCO customers have the energy they need across six states. Strategically investing in our energy infrastructure will enable us to meet our customer commitments as the future of energy evolves. It's all about our customers. By investing at record levels, we're: Improving reliability and safety for our customers and our communities. Making it easier for customers to do business with us. Providing additional access to natural gas and electric service. Reducing emissions and preserving our natural resources.[49]

[48] https://www.njresources.com/about/index.aspx, accessed 2/1/2024
[49] https://www.nisource.com/company, accessed 2/1/2024

Why was the company included?
NiSource Inc. provides electricity and gas to customers. This company is similar to the gas distribution companies that we are responsible for valuing.

Northwest Natural Holding Company
Company Summary from Value Line:
Northwest Natural Holding Co. distributes natural gas to 1,000 communities, 795,000 customers, in Oregon (88% of customers) and in southwest Washington state. Principal cities served: Portland and Eugene, OR; Vancouver, WA. Service area population: 3.7 mill. (77% in OR). Company buys gas supply from Canadian and U.S. producers; has transportation rights on Northwest Pipeline system. Owns local underground storage. Rev. breakdown: residential, 37%; commercial, 22%; industrial, gas transportation, 41%. Employs 1,258.

Additional Company Information from Website:
NW Natural is a local distribution company that currently provides natural gas service to approximately 2.5 million people in more than 140 communities through nearly 795,000 meters in Oregon and Southwest Washington with one of the most modern pipeline systems in the nation.[50]

Why was the company included?
Northwest Natural Holding Company provides gas to customers. This company is similar to the gas distribution companies that we are responsible for valuing.

ONE Gas Inc.
Company Summary from Value Line:
ONE Gas, Inc. provides natural gas distribution services to more than two million customers. There are three divisions: Oklahoma Natural Gas, Kansas Gas Service, and Texas Gas Service. The company purchased 165 Bcf of natural gas supply in 2022, compared to 164 Bcf in 2021. Total volumes delivered by customer (fiscal 2022): transportation, 57.3%; residential, 31.2%; commercial & industrial, 10.8 %; other, .7%. ONE Gas has around 3,600 employees.

Additional Company Information from Website:
ONE Gas Inc. (NYSE: OGS) is a 100-percent regulated natural gas utility, and trades on the New York Stock Exchange under the symbol "OGS." ONE Gas is included in the S&P MidCap 400 Index, and is one of the largest natural gas utilities in the United States. ONE Gas provides natural gas distribution services to more than 2.3 million customers in Kansas, Oklahoma and Texas. ONE Gas is headquartered in Tulsa, Okla. It’s divisions include Kansas Gas Service, the largest natural gas distributor in Kansas; Oklahoma Natural Gas, the largest in the state, and Texas Gas Service, the third largest in the state in terms of customers. Its largest natural gas distribution markets by customer count are Oklahoma City and Tulsa, Okla.; Kansas City, Wichita and Topeka, Kan.; and Austin and El Paso, Texas. ONE Gas serves residential, commercial, industrial, transportation and wholesale customers in all three states.[51]

[50] https://www.nwnatural.com/about-us/the-company/overview, accessed 2/1/2024
[51] https://www.onegas.com/about-one-gas/default.aspx, accessed 2/1/2024

Why was the company included?
ONE Gas Inc. provides natural gas to customers. This company is similar to the gas distribution companies that we are responsible for valuing.

Southwest Gas Holdings Inc.
Company Summary from Value Line:
Southwest Gas Holdings Inc. is the parent holding company of Southwest Gas and Centuri Group. Southwest Gas is a regulated gas distributor serving 2.2 million customers in Arizona, Nevada, and California. Centuri provides construction services. 2022 margin mix: residential and small commercial, 85%; large commercial and industrial, 4%; transportation, 11%. Total throughput: 2.2 billion therms. Has 13,614 employees.

Additional Company Information from Website:
Southwest Gas Corporation was founded in 1931 and is a subsidiary of Southwest Gas Holdings Inc. We provide natural gas service to Arizona, Nevada, and portions of California. Our communities, and the more than 2 million customers we serve, are the reasons why we've been heating things up for decades. So, whether you're enjoying a backyard barbeque with friends, getting cozy indoors during the winter, or preparing an epicurean delight in your new restaurant, Southwest Gas is here to support your comfort and your lifestyle.[52]

Why was the company included?
Southwest Gas Holdings Inc. provides gas to customers and also has a construction services company. The gas distribution segment is similar to the gas distribution companies that we are responsible for valuing.

Spire Inc. (Formerly The Laclede Group)
Company Summary from Value Line:
Spire Inc., formerly known as the Laclede Group, Inc., is a holding company for natural gas utilities, which distributes natural gas across Missouri, including the cities of St. Louis and Kansas City, Alabama, and Mississippi. Has roughly 1.7 million customers. Acquired Missouri Gas 9/13, Alabama Gas Co 9/14. Utility therms sold and transported in fiscal 2022: 3.2 bill. Revenue mix for regulated operations: residential, 73%; commercial and industrial, 17%; transportation, 6%; other, 4%.

Additional Company Information from Website:
The energy industry is changing, and we know that natural gas plays a key role in creating a sustainable energy future. That's why we're committed to advancing our industry, delivering personalized experiences for our customers, and being a company that loves both people and the planet. We serve 1.7 million homes and businesses across Alabama, Mississippi and Missouri by providing safe, reliable and clean natural gas to warm homes, grow businesses and advance communities. For more than 160 years, we've served people. With a vision for the future, we're now redefining what it means to serve our customers and communities for the next 100 years. Learn more about our history and how it has shaped our future.[53]

[52] https://www.swgas.com/en/about-us, accessed 2/1/2024
[53] https://www.spireenergy.com/about-spire, accessed 2/1/2024

Why was the company included?
Spire Inc. provides gas to customers. This company is similar to the gas distribution companies that we are responsible for valuing.

WEC Energy Group
Company Summary from Value Line:
WEC Energy Group, Inc. (formerly Wisconsin Energy) is a holding company for utilities that provide electric, gas & steam service in WI & gas service in IL, MN, & MI. Customers: 1.6 mill. elec., 2.9 mill. gas. Acq'd Integrys Energy 6/15. Sold Point Beach nuclear plant in '07. Electric revenue breakdown: residential, 39%; small commercial & industrial, 32%; large commercial & industrial, 21%; other, 8%. Generating sources: coal, 36%; gas, 28%; renewables, 5%; purchased, 31%. Fuel costs: 40% of revenues. '22 reported deprec. rates: 2.4%-3.1%. Has 6,900 employees.

Additional Company Information from Website:
We are one of the nation's largest electric generation and distribution and natural gas delivery holding companies, with the operational expertise and financial resources to serve the Midwest's energy needs safely, reliably and responsibly. Our subsidiaries focus on reliable service, customer satisfaction and shareholder value. Together, we provide energy services to more than 4.6 million customers in Wisconsin, Illinois, Michigan and Minnesota. Our combined assets allow operating efficiencies across 71,700 miles of electric distribution lines, 52,000 miles of natural gas distribution and transmission lines, and 7,700 megawatts of reliable power capacity. Our family of companies is committed to delivering world-class reliability and the very best customer care anywhere. Customers are the heart of our business, and we work every day to help grow and support communities where we provide vital energy services. As a Fortune 500 company, we value and develop our employees who are making a difference in a mission that matters.[54]

Why was the company included?
WEC Energy Group provides electricity and gas to customers. Electric customers represent 36% of customers and gas customers represent 64% of customers. This company is similar to the gas distribution companies that we are responsible for valuing. The company provides gas distribution services in Minnesota.

We are also using this company as a guideline company for the Electric Market Segment.

[54] https://www.wecenergygroup.com/about/aboutus.htm, accessed 1/30/2024

Companies Not Included in the Gas Distribution Market Segments

Adams Resources and Energy Inc.
Company Summary from Value Line:
Adams Resources & Energy, Inc., through its subsidiaries, is primarily engages the marketing, transportation, terminalling, and storage in various crude oil and natural gas basins in the US. The company also conducts tank truck transportation of liquid chemicals, pressurized gases, asphalt, and dry bulk primarily in the lower 48 states of the US with deliveries into Canada and Mexico, and with 19 terminals across the US. Adams' crude oil marketing activities includes a fleet of 201 tractor-trailer rigs, the majority of which it owns and operates, used to transport crude oil. It operates and reports in four business segments: crude oil marketing, transportation and storage; tank truck transportation of liquid chemicals, pressurized gases, asphalt and dry bulk; pipeline transportation, terminalling and storage of crude oil; and interstate bulk transportation logistics of crude oil, condensate, fuels, oils and other petroleum products. Has 882 employees.

Additional Company Information from Website:
Adams Resources & Energy, Inc. ("Adams" or "AE") is primarily engaged in the business of crude oil marketing, transportation and storage and tank truck transportation of liquid chemicals and dry bulk through its two wholly owned subsidiaries, GulfMark Energy, Inc. ("GulfMark") and Service Transport Company. Adams' strategy is to enhance shareholder value through providing competitive crude oil marketing and transportation services from petroleum producing companies to the refining community, as well as provide safe, reliable and competitive liquid and dry chemical tank transportation services to customers throughout the United States, Canada and into Mexico. Adams' business principles are founded on honesty and integrity and the Company maintains and cultivates an entrepreneurial spirt throughout the organization. Adams believes that strong relationships with its customers and vendors are keys to success for both Adams and its stakeholders. Additionally, the Company is committed to paying a consistent and reliable dividend.[55]

Why was the company not included?
Adams Resources and Energy Inc. is primarily engaged in the business of crude oil marketing, transportation, and storage and tank truck transportation of liquid chemicals and dry bulk. These business segments are different than the business segments of the companies that we are responsible for valuing.

AltaGas Canada Inc.
Company Summary from Value Line:
Value Line summary not available.

Additional Company Information from Website:
We are a North American energy infrastructure company with a focus on connecting customers and markets to affordable and reliable sources of energy. Our talented team about 3,000 strong, leverages the strength of our assets and expertise along the energy value chain to connect customers with premier energy solutions – from the well sites of upstream producers to the doorsteps of homes and businesses, to new markets in Asia. Our Midstream business is comprised of global export facilities and strategically located processing, fractionation, and logistics infrastructure, as well as hydrocarbon

[55] https://www.adamsresources.com/, accessed 2/2/2024

storage in North America that connects North American producers from wellhead to offshore global export and domestic markets. It also includes integrated hydrocarbons handling services comprised of storage, rail logistics, pipeline, transportation services, and wellsite fluids; natural gas and NGL marketing initiatives that support the Midstream infrastructure; and three gas-fired cogeneration plants. Our integrated footprint in the region provides North American producers with value-added services and the opportunity to move LPGs to premium markets in Asia through Ridley Island Propane Export Terminal (RIPET) and the Ferndale Terminal. Through our regulated natural gas utilities – Washington Gas and SEMCO – we serve approximately 1.6 million residential, commercial and industrial customers in four jurisdictions in the U.S.: the District of Columbia (D.C.), Maryland, Virginia and Michigan. The Utilities business also comprises interests in natural gas storage facilities. With infrastructure assets in some of the fastest growing energy markets in North America, including prominent positions in the Montney basin and utilities operations in three states and the District of Columbia, we are developing an integrated footprint capable of delivering sustained value to shareholders and customers alike.[56]

Why was the company not included?
AltaGas Canada's initial public offering was on October 25, 2018. The company's operations are in Western Canada. We will consider this company as a guideline company after several years of established financials.

MGE Energy Inc.
Company Summary from Value Line:
MGE Energy, Inc. is a holding company for Madison Gas and Electric Company (MGE), which provides electric service to 161,000 customers in Dane County and gas service to 173,000 customers in nine counties in Wisconsin. Electric revenue breakdown: residential, 35%; commercial, 50%; industrial, 3%; other, 12%. Generating sources: coal, 35%; gas, 16%; renewables, 22%; purchased power, 27%. Fuel costs: 36% of revenues.'22 reported depreciation rates: electric, 3.2%; gas, 2.1%; nonregulated, 2.3%. Has about 700 employees.

Additional Company Information from Website:
- MGE Energy, a public utility holding company, is headquartered in the state capital Madison, Wis. MGE Energy trades on NASDAQ with the stock ticker MGEE. MGE Energy is dedicated to long-term value for its shareholders. We have increased our dividend for more than 48 consecutive years and have paid dividends for more than 110 years. MGE Energy is the parent company of the following:
- Madison Gas and Electric Company (MGE) provides natural gas and electric service in south-central and western Wisconsin.
- MGE Transco Investment holds an ownership interest in ATC LLC, which invests in transmission assets, primarily within Wisconsin.
- MGEE Transco LLC holds an ownership interest in ATC Holdco, which invests in transmission assets outside ATC LLC service territory.
- MGE Power owns assets in the West Campus Cogeneration Facility in Madison, Wis. and the Elm Road Generating Station in Oak Creek, Wis.
- MAGAEL, LLC holds title to properties acquired for future utility plant expansion.
- Central Wisconsin Development Corporation promotes business growth in MGE's service area.

[56] https://www.altagas.ca/about/overview-altagas, accessed 2/2/2024

- MGE Services, LLC provides construction and other services.[57]

Why was the company not included?
MGE Energy Inc. provides electricity and gas to customers. Electric customers represent 49% of customers and gas customers represent 51% of customers. This company is similar to the electric companies that we are responsible for valuing. The company serves an electric service territory in the Midwest. However, the company has less publicly available information than other guideline companies used in this market segment.

RGC Resources Inc.
Company Summary from Value Line:
RGC Resources, Inc. is engaged in the regulated sale and distribution of natural gas to approximately 62,400 residential, commercial, and industrial customers in Roanoke, Virginia and the surrounding localities through its Roanoke Gas Company subsidiary. The utility operations of Roanoke Gas are regulated by the Virginia State Corporation Commission (SCC), which oversees the terms, conditions, and rates charged to customers for natural gas service, safety standards, extension of service, and depreciation. Nearly all of the company's revenues, excluding equity in earnings of Mountain Valley Pipeline (MVP), are derived from the sale and delivery of natural gas to Roanoke Gas customers based on rates and fees authorized by the SCC. As a wholly owned subsidiary of Resources, RGC Midstream, L.L.C. (Midstream), is a more than 1% investor in MVP and a less than 1% investor in Mountain Valley Pipeline, LLC's Southgate project (Southgate). Has 96 employees.

Additional Company Information from Website:
RGC Resources Inc. is a public utility holding Company providing energy and related products and services through its operating subsidiaries Roanoke Gas Company and RGC Midstream, LLC. Roanoke Gas, which began in 1883, provides safe, reliable natural gas service to more than 60,000 customers in the greater Roanoke Valley. RGC Midstream owns a 1 percent interest in the Mountain Valley Pipeline project.[58]

Why was the company not included?
RGC Resources Inc. provides gas to customers. This company is similar to the gas distribution companies that we are responsible for valuing. However, the company has limited analysts' estimates available.

South Jersey Industries Inc.
Company Summary from Value Line:
Value Line summary not available.

Additional Company Information from Website:
SJI (NYSE: SJI), an energy services holding company based in Folsom, NJ, delivers energy services to its customers through three primary subsidiaries. SJI Utilities, SJI's regulated natural gas utility business, delivers safe, reliable, affordable natural gas to approximately 700,000 South Jersey Gas and Elizabethtown Gas customers. SJI's non-utility businesses within South Jersey Energy Solutions

[57] https://www.mgeenergy.com/en/about/about-mge-energy/, accessed 1/31/2024
[58] https://www.rgcresources.com/about/, accessed 2/2/2024

promote efficiency, clean technology and renewable energy by providing customized wholesale commodity marketing and fuel management services; and developing, owning and operating on-site energy production facilities. SJI Midstream houses the company's interest in the PennEast Pipeline Project.[59]

FOLSOM, NJ, and NEW YORK, February 1, 2023 – South Jersey Industries, Inc. (NYSE: SJI) (SJI) and the Infrastructure Investments Fund (IIF), a private investment vehicle focused on investing in critical infrastructure assets, announced that IIF's acquisition of SJI is closing today.[60]

Why was the company not included?
South Jersey Industries is no longer publicly traded.

Star Group L.P. (Formerly Star Gas Partners, L.P.)
Company Summary from Value Line:
Star Group, L.P. is specializing in the sale of home heating products and services to residential and commercial customers to heat their homes and buildings. The company's operations are conducted through Petro Holdings, Inc. and its subsidiaries. Petro is primarily a Northeast, Central, and Southeast region retail distributor of home heating oil and propane that at June 30, 2023, served approximately 403,900 full service residential and commercial home heating oil and propane customers and 77,200 customers on a delivery only basis. It also sells gasoline and diesel fuel to approximately 26,900 customers. The company installs, maintains, and repairs heating and air conditioning equipment and to a lesser extent provide these services outside its heating oil and propane customer base including approximately 21,100 service contracts. Star serves customers in the more northern and eastern states within the Northeast and Mid-Atlantic U.S. regions. Has 3,194 employees.

Additional Company Information from Website:
Star Group, L.P. is a full-service energy provider specializing in the sale of home heating and air conditioning products and services to residential and commercial customers. The Company also services and sells heating and air conditioning equipment and for certain areas, provides plumbing services. In addition, Star Group sells diesel fuel, gasoline and home heating oil on a delivery-only basis. Star Group is the nation's largest retail distributor of home heating oil, based upon sales volume, operating throughout the Northeast and Mid-Atlantic. Star Group is a limited partnership that has approved an election to be treated as a corporation for U.S. federal income tax purposes effective November 1, 2017. Common units, representing limited partner interests in the Company, are listed and trade on the New York Stock Exchange ("NYSE") under the symbol "SGU." For Company activity through October 31, 2017, our unitholders are required to report for U.S. federal income tax purposes their allocable share of our income, gains, losses, deductions and credits, regardless of whether we make cash distributions. This activity will be reported on final 2017 Schedules K-1.[61]

[59] https://www.sjindustries.com/about-sji/company-overview, accessed 2/2/2024
[60] https://www.sjindustries.com/investors/news-events/newsroom/south-jersey-industries/2023/infrastructure-investments-fund-completes-acquisit, accessed 2/2/2024
[61] http://www.stargrouplp.com/investor-relations, accessed 2/2/2024

Why was the company not included?
Star Group's business segments include sale of home heating and air conditioning products and services to residential and commercial home heating oil and propane customers. These business segments are different than the business segments of the companies that we are responsible for valuing.

UGI Corporation
Company Summary from Value Line:
UGI Corp. operates six business segments: AmeriGas Propane (accounted for 10.5% of net income in 2022), UGI International (16.3%), Gas Utility (19.1%), Midstream & Marketing (15.3%), and Corp. & Other (40.8%). UGI Utilities distributes natural gas and electricity to over 672,000 customers mainly in Pennsylvania; wholly-owned AmeriGas Ptrs. is the largest U.S. propane marketer, serving about 1.5 million users in 50 states. Acquired remaining 80% interest in Antargaz (3/04); Energy Transfer Partners (1/12). Vanguard Group owns 11.5% of stock; Blackrock, 14.2%; Officers/ directors, 2.3% (12/22 proxy). Has 10,000 empls.

Additional Company Information from Website:
International distributor and marketer of energy products and services, including natural gas, LPG, electricity and renewable solutions, with well-developed infrastructure in key markets. By operating as a best-in-class service provider, offering a great place to work, serving our communities and delivering value to investors, we aim to positively impact the lives of our shareholders, employees, customers and communities. UGI Corporation (NYSE: UGI) is a holding company that distributes and markets energy products and services through our subsidiaries and the company's common stock is a balanced growth and income investment. UGI Corporation has paid common dividends for more than 137 consecutive years.[62]

Why was the company not included?
UGI Corporation's non-gas utility segments accounted for most of their net income. Their gas utility segment only accounted for 19.1% of their net income. Unregulated business segments are different from the companies that we are responsible for valuing.

[62] https://www.ugicorp.com/company/corporate-information/about-ugi/default.aspx, accessed 2/2/2024

Market Segment: Gas Transmission Pipeline and Fluid Transportation Pipeline

Companies Included in the Gas Transmission Pipeline Market Segment

Enbridge Inc.
Company Summary from Value Line:
Enbridge Inc., is a leader in energy transportation and distribution in North America and int'l. As a transporter of energy, it operates the world's longest crude oil and liquids pipeline system. The company also has international operations and a growing involvement in natural gas transmission and midstream businesses. As a distributor of energy, it owns and operates Canada's largest natural gas distribution company, and provides services in Ontario, Quebec, New Brunswick, and New York State. Owns 38.9% of Noverco. In '17, Merged with Spectra Energy Corp. (SE). Employs. 11,300.

Additional Company Information from Website:
At Enbridge, our goal is to be the first-choice energy delivery company in North America and beyond—for customers, communities, investors, regulators and policymakers, and employees. As a diversified energy company, we are uniquely positioned to help accelerate the global transition to a cleaner energy future, and we're doing it in ways that are ethical, sustainable and socially responsible. We're advancing new low-carbon energy technologies—including hydrogen, renewable natural gas, and carbon capture and storage. We're committed to reducing the carbon footprint of the energy we deliver, and to achieving net zero emissions by 2050. We also recognize the importance of a secure, reliable and affordable supply of energy, which we deliver every day through our four core businesses: Liquids pipelines Natural gas pipelines Gas utilities and storage Renewable energy. The energy transition requires a practical approach. That's why we're committed to lowering emissions while meeting growing energy demand; supporting our customers today while anticipating their needs tomorrow; and developing new energy sources while keeping energy costs in check. We move about 30% of the crude oil produced in North America, we transport nearly 20% of the natural gas consumed in the U.S., and we operate North America's third-largest natural gas utility by consumer count. Enbridge was an early investor in renewable energy, and we have a growing offshore wind portfolio. We value safety, integrity, respect, inclusion and high performance. Above all else, we aim to make a difference, economically and socially—as an industry leader, as a responsible corporate citizen, as an exceptional employer. Enbridge was named to the Thomson Reuters Top 100 Global Energy Leaders in 2018; we've been selected to Bloomberg's Gender Equality Index five years running, most recently in 2023; and we have been ranked among Canada's Top 100 Employers 20 times, most recently in 2023. Enbridge Inc. is headquartered in Calgary, Canada. We have a workforce of more than 12,000 people, primarily in the United States and Canada. Enbridge (ENB) is traded on the New York and Toronto stock exchanges.[63]

At Enbridge, we connect people to the energy they need to fuel their quality of life. Enbridge operates the world's longest and most complex crude oil and liquids transportation system, with approximately 17,809 miles (28,661 kilometers) of active pipeline across North America—including 9,299 miles (14,965 km) of active pipe in the United States, and 8,510 miles (13,696 km) of active pipe in Canada.[64]

[63] https://www.enbridge.com/about-us, accessed 2/5/2024
[64] https://www.enbridge.com/About-Us/Liquids-Pipelines.aspx, accessed 2/5/2024

Enbridge Inc. ("Enbridge" or the "Company") (TSX: ENB) (NYSE: ENB) today announced that it has entered into three separate definitive agreements with Dominion Energy, Inc. to acquire EOG, Questar and PSNC for an aggregate purchase price of US$14.0 billion (CDN$19 billion), comprised of $US9.4 billion of cash consideration and US$4.6 billion of assumed debt, subject to customary closing adjustments. Upon the closings of the three transactions, Enbridge will add gas utility operations in Ohio, North Carolina, Utah, Idaho and Wyoming, representing a significant presence in the U.S. utility sector. The Gas utilities fit Enbridge's long held investor proposition of low-risk businesses with predictable cash flow growth and strong overall returns. Following the closings, the Acquisitions will double the scale of the Company's gas utility business to approximately 22% of Enbridge's total adjusted EBITDA and balance the Company's asset mix evenly between natural gas and renewables, and liquids. The Acquisitions will lower Enbridge's already industry-leading business risk and secure visible, low-risk, long-term rate base growth. Increased utility earnings enhance Enbridge's overall cash flow quality and further underpin the longevity of Enbridge's growing dividend profile. Following the closings of the Acquisitions, Enbridge's gas utility business will be the largest, by volume, in North America with a combined rate base of over CDN$27 billion and about 7,000 employees delivering over 9 Bcf/d of gas to approximately 7 million customers.[65]

Why was the company included?
Enbridge Inc. is similar to the gas transmission pipeline companies that we are responsible for valuing. Enbridge Inc. transports 20% of the natural gas consumed in the U.S. with 73,796 miles of gas transmission and midstream pipelines in 30 U.S. states, five Canadian provinces, and offshore in the Gulf of Mexico.[66] Enbridge Inc. has 17,809 miles of active crude pipelines across North America. In September 2023, Enbridge Inc. entered into a definitive agreement to acquire The East Ohio Gas Company, Questar Gas Company, and Public Service Company of North Carolina, Inc. for $14 billion. The company's mix of business operations will be similar to other companies included in the gas transmission market segment. The acquisitions are expected to close in 2024, subject to the satisfaction of customary closing conditions, including the receipt of certain required U.S. federal and state regulatory approvals.[67] Pending regulatory approvals, we will include Enbridge Inc. as a guideline company of the gas transmission pipeline market segment.

Kinder Morgan Inc.

Company Summary from Value Line:
Kinder Morgan, Inc. is one of the largest energy infrastructure companies in North America. It transports natural gas, refined petroleum products, crude oil, condensate and carbon dioxide among other products using its more than 83,000 miles of pipelines. Its 140 terminals handle various commodities, including gasoline, diesel fuel, chemicals, ethanol, metals and petroleum coke. The company employs more than 11,000 individuals. Sold Kinder Morgan Canada, 12/18.

Additional Company Information from Website:
Kinder Morgan is one of the largest energy infrastructure companies in North America. We own an interest in or operate approximately 82,000 miles of pipelines and 139 terminals. Our pipelines transport natural gas, gasoline, crude oil, carbon dioxide (CO2) and more. Our terminals store and handle renewable fuels, petroleum products, chemicals, vegetable oils and other products.[68]

With approximately 70,000 miles of natural gas pipelines, we own an interest in or operate the largest

[65] https://www.enbridge.com/media-center/news/details?id=123779&lang=en, accessed 2/14/2024
[66] https://www.enbridge.com/About-Us/Natural-Gas-Transmission-Midstream-and-LNG, accessed 2/5/2024
[67] https://www.enbridge.com/media-center/news/details?id=123779&lang=en, accessed 2/14/2024
[68] https://www.kindermorgan.com/, accessed 2/5/2024

natural gas network in North America. Our pipelines serve major consuming domestic markets and transport approximately 40 percent of the natural gas consumed in the United States. Our pipelines are also connected to every important natural gas resource play and supply area in the United States, including the Eagle Ford, Marcellus, Bakken, Utica, Uinta Permian, Haynesville, Fayetteville and Barnett.[69]

Kinder Morgan is the largest independent transporter of petroleum products in North America, transporting approximately 2.4 million barrels per day. The great majority of these products are transported through our Products Pipelines business, which moves gasoline, jet fuel, diesel, crude oil and condensate through about 9,500 miles of pipelines. We also have approximately 65 liquids terminals in this business segment that store fuels and offer blending services for ethanol and biofuels. Our Products Pipelines assets are strategically located in the West, Southeast and Midwestern United States and we have a number of exciting growth opportunities in this segment. [70]

Why was the company included?
Kinder Morgan Inc. owns an interest in or operates approximately 82,000 miles of natural gas pipelines and 140 terminals. Kinder Morgan Inc. has approximately 70,000 miles of natural gas pipelines and 9,500 miles of petroleum products pipelines. This company is similar to the gas transmission pipeline companies that we are responsible for valuing. The company is the parent company for one of the companies that we are responsible for valuing.

Pembina Pipeline Corporation
Company Summary from Value Line:
Pembina Pipeline Corp. gathers, processes, and transports oil and natural gas in Western Canada. It owns and operates an integrated system of pipelines, gas gathering and processing facilities, and an oil and NGL infrastructure and logistics line. Its pipelines manages transportation capacity of 3.1 mmboe/d. Acquired Veresen, ’17; Kinder Morgan Canada, ’19. 2022 net volumes (operating income): Conventional Pipelines: 63% (56%); Facilities 32% (44%). Daily 2022 liquids throughput: 2.593 billion barrels; Oil Transmission, 18%; Conventional Pipelines, 63%; Oil Sands, 19%. Has 1,539 employees.

Additional Company Information from Website:
Pembina Pipeline Corporation is a dynamic energy transportation and midstream provider, serving customers for more than 65 years. Chances are, we do more than you think. We own pipelines that transport hydrocarbon liquids and natural gas products produced primarily in Western Canada. We also own gas gathering and processing facilities and an oil and natural gas liquids infrastructure and logistics business. Our operations along the hydrocarbon value chain allow us to offer a full slate of midstream and marketing services to our customers in the energy industry. We’re always keeping an eye out for opportunities to connect hydrocarbon production to new demand locations. These developments help ensure that hydrocarbons produced in the Western Canadian Sedimentary Basin -- and the other basins where Pembina operates -- can reach the highest value markets throughout the world. We’re proud of our people and our more than 65 years of strong performance.[71]

Why was the company included?
Pembina Pipeline Corporation’s business segments include transporting oil and natural gas and operating an integrated system of pipelines. The company’s mix of business operations is similar to

[69] https://www.kindermorgan.com/Operations/Natural-Gas/Index, accessed 2/5/2024
[70] https://www.kindermorgan.com/Operations/Products/Index, accessed 2/5/2024
[71] https://www.pembina.com/about/, accessed 2/5/2024

other companies included in the gas transmission market segment.

TC Energy Corporation (Formerly TransCanada Corporation)
Company Summary from Value Line:
TC Energy Corp, formerly known as TransCanada Corp., is a premier energy infrastructure company, operating an extensive natural gas pipeline system in North America. It has 58,240 miles of natural gas pipelines, and gas storage facilities with a 650 billion cubic feet capacity. The company also has 2,987 miles of liquids pipelines. TC Energy's three major segments are natural gas pipelines (76% of '22 revenues), oil pipelines (18%), and power/storage (6%). Had 7,477 employees at 12/31/22.

Additional Company Information from Website:
We're more than a pipeline company. Approximately 7,300 people strong, TC Energy is a vital part of modern life. Thanks to a safe, stable network of natural gas and crude oil pipelines, along with nuclear power facilities, wherever life happens — we're there. For more than 70 years, TC Energy has proudly operated pipelines, storage facilities and power-generation plants that support life in Canada, the U.S. and Mexico. Our facilities operate safely, reliably and quietly. Explore our core operations below. Energy Solutions – Positioned to be the most trusted and reliable resource of carbon free energy for North America's industrial, oil and natural gas sectors. Natural Gas - 93,300 km (57,900 miles) of pipeline and more than 653 billion cubic feet (Bcf) of natural gas storage in Canada, the U.S. and Mexico. Oil and Liquids - 4,900 km (3,000 miles) pipeline network supplying Alberta crude oil to U.S. markets in Illinois, Oklahoma, Texas and the U.S. Gulf Coast. Power and Storage – Investments in seven power generation facilities with a capacity of 4,300 megawatts, enough to power more than four million homes.[72]

Why was the company included?
TC Energy Corporation's assets include 57,900 miles of natural gas pipelines. This company is similar to the gas transmission pipeline companies that we are responsible for valuing. The company is the parent company for one of the companies that we are responsible for valuing.

Williams Companies Inc.
Company Summary from Value Line:
The Williams Companies, Inc., gathers, processes, and transports natural gas throughout the United States. It also performs gas marketing services. Business segments include Transmission & Gulf of Mexico, Northeast G&P, West, and other. Acquired Access Midstream Partners, 7/14; WPX Energy, 1/12. I.P.O. for Williams Partners L.P., 8/05; Williams Pipeline Partners L.P., 1/08. Reacquired Williams Pipeline Partners L.P. 10/18. Has about 5,425 employees.

Additional Company Information from Website:
Williams handles approximately one third of the natural gas in the United States that is used every day to heat our homes, cook our food and generate our electricity. Williams works closely with customers to provide the necessary infrastructure to serve growing markets and safely deliver natural gas products to reliably fuel the clean energy economy. With interstate natural gas pipelines and gathering & processing operations throughout the country, we reliably deliver value to our employees, investors, customers and communities by running our business with authenticity and a safety-driven culture, leading our industry into the future. Williams common stock (WMB) is listed on the New York Stock Exchange.[73]

[72] https://www.tcenergy.com/about/, accessed 2/5/2024
[73] https://co.williams.com/our-company/, accessed 2/5/2024

Why was the company included?
Williams Companies Inc. handles one third of the natural gas in the United States. This company is similar to the gas transmission pipeline companies that we are responsible for valuing.

Companies Included in the Fluid Transportation Pipeline Market Segment

Enterprise Products Partners L.P.
Company Summary from Value Line:
Enterprise Products Partners, LP, is a leading integrated provider of natural gas and natural gas liquids (NGLs) processing, fractionation, transportation, and storage services in the U.S. and Canada. All management and operating functions are performed by EPCO and its 7,300 employees. Assets include about 50,000 miles of pipelines, 260 MMBbls of storage capacity for liquids and 14 Bcf for natural gas. Four segments: NGL Pipeline (42% of 2022 revenues); Crude Oil Pipelines, (32%); Petrochemical & Refined Products, (15%); Natural Gas Pipelines, (11%).

Additional Company Information from Website:
Enterprise Products Partners L.P. is a publicly traded partnership listed on the New York Stock Exchange (NYSE Ticker: EPD). Our origins began with Enterprise Products Company, formed in 1968 by Dan Duncan and two partners as a wholesale marketer of natural gas liquids. Today, our integrated energy infrastructure network provides midstream energy services to producers and consumers of natural gas, natural gas liquids, crude oil, refined products and petrochemicals. We link producers from some of the largest North American supply basins with domestic consumers and international markets.[74]

Why was the company included?
Enterprise Products Partners' mix of business operations is similar to other companies included in the fluid transportation market segment. Additionally, this company is similar to the fluid transportation pipeline companies we are responsible for valuing.

MPLX L.P.
Company Summary from Value Line:
MPLX LP is a diversified, growth-oriented master limited partnership (MLP) formed in 2012 by Marathon Petroleum Corporation to own, operate, develop and acquire midstream energy infrastructure assets. It is engaged in the gathering, processing, storage, marketing, and transportation of natural gas, crude oil, and other refined petroleum products. MPLX's assets consist of a network of common carrier crude oil and products pipelines located in the Midwest and Gulf Coast regions of the US. Has no direct employees.

Additional Company Information from Website:
MPLX is a diversified, growth-oriented master limited partnership formed in 2012 by MPC to own, operate, develop and acquire midstream energy infrastructure assets. We are engaged in the gathering, processing and transportation of natural gas; the gathering, transportation, fractionation, storage and marketing of NGLs; the transportation, storage and distribution of crude oil and refined petroleum products; as well as refining logistics and fuels distribution services. MPLX provides services in the midstream sector across the hydrocarbon value chain through our Logistics and Storage and Gathering and Processing segments.[75]

[74] http://www.enterpriseproducts.com/about-us, accessed 2/5/2024
[75] http://www.mplx.com/About_MPLX/, accessed 2/5/2024

MPLX transports, distributes, stores and markets crude oil, refined products and other hydrocarbon-based products throughout the U.S. These assets consist of a network of wholly and jointly-owned common carrier crude oil and refined product pipelines and associated storage assets, refined product terminals, storage caverns, refinery integrated tank farm assets including rail and truck racks, a marine business, export terminals, and wholesale and fuels distribution businesses.[76]

Why was the company included?
MPLX is similar to the fluid transportation pipeline companies that we are responsible for valuing. The company engages in the transports of refined petroleum products.

NuStar Energy L.P.
Company Summary from Value Line:
NuStar Energy L.P., is engaged in the transportation of petroleum products and anhydrous ammonia, as well as the terminalling, storage, and marketing of petroleum products. On 12/31/22 assets included 9,465 miles of pipeline and 63 terminal and storage facilities, providing 49 million barrels of storage capacity. Three reportable segments: Pipelines (49% of segment revs. in 2022), Storage (20%), and Fuels Marketing (31%). Employs 1,167.

Additional Company Information from Website:
Since it went public in 2001, NuStar Energy L.P. has grown from 160 employees to about 1,200 today; from $387 million in assets to $5 billion; and from $100 million in revenues to $1.7 billion. As a result of its growth, NuStar currently has approximately 9,500 miles of pipeline and 63 terminal and storage facilities that store and distribute crude oil, refined products, renewable fuels, ammonia and specialty liquids. The partnership's combined system has approximately 49 million barrels of storage capacity at its facilities, and operations in the United States and Mexico. Known for its special caring and sharing culture, NuStar has been ranked as one of FORTUNE's "100 Best Companies to Work For" 12 times, recognized with many national safety awards, and lauded for its tremendous commitment to community service.[77]

Why was the company included?
NuStar Energy L.P. transports petroleum products and anhydrous ammonia, as well as the terminal hauling, storage, and marketing of petroleum products. This company is similar to (and is one of) the fluid transportation pipeline companies that we are responsible for valuing.

Plains All American Pipeline L.P.
Company Summary from Value Line:
Plains All American Pipeline, L.P., is a publicly traded master limited partnership which operates through various subsidiaries. It engages in the transportation, storage, terminating, and marketing of crude oil, refined products, and liquefied petroleum gas. As of December 31, 2021, the company owned or leased 18,300 miles of active pipelines and gathering systems. Storage capacity 38 million barrels of natural gas liquids (NGL) storage facilities; About 74 millions barrels of crude oil and refined product. Also owns 815 trailers (primarily in Canada); 5 nat. gas processing plants, and 22 rail terminals. Employs 4,400.

Additional Company Information from Website:

[76] https://www.mplx.com/About_MPLX/Logistics_and_Storage/, accessed 2/5/2024
[77] http://www.nustarenergy.com/Company, accessed 2/5/2024

Plains is a publicly-traded master limited partnership that owns and operates midstream energy infrastructure and provides logistics services for crude oil, natural gas liquids (NGL) and natural gas. We own an extensive network of pipeline transportation, terminalling, storage and gathering assets in key crude oil and NGL producing basins and transportation corridors and at major market hubs in the United States and Canada. On average, PAA handles more than 6 million barrels per day of crude oil and NGL in its Transportation segment. The company is headquartered in Houston, Texas, with its Canadian operations based out of Calgary, Alberta.[78]

Why was the company included?
Plains All American Pipeline L.P. owns an extensive network of pipeline transportation, terminalling, storage, and gathering assets. This company is similar to the fluid transportation pipeline companies that we are responsible for valuing.

Companies Not Included in the Gas Transmission Pipeline or Fluid Transportation Pipeline Market Segments

Antero Midstream Corporation
Company Summary from Value Line:
Antero Midstream Corporation was created in March of 2019 when majority owner Antero Resources merged Antero Midstream Partners with AMGP, which was the General Partner and holder of the MLP's incentive distribution rights. The new entity owns and operates an integrated system of natural gas gathering pipelines, compression stations, processing and fractionation plants in the Marcellus and Utica Shales. Also owns water handling and treatment infrastructure that delivers fresh water and wastewater handling services for well completion operations.

Additional Company Information from Website:
Antero Midstream is a full-service midstream energy company with operations in the Appalachian Basin. Antero Midstream's assets include gathering pipelines, compression facilities, interests in processing and fractionation plants, and water handling systems in two of the premier North American Shale plays, the Marcellus and Utica Shales. We own and operate a highly customized, integrated system of midstream assets in West Virginia and Ohio. Through our gathering operations, we transport natural gas with a network of gathering pipelines and compressor stations. In addition, we have a joint venture to develop processing and fractionation assets with MPLX, LP (NYSE: MPLX). Our water handling operations include permanent and surface water pipelines, pump stations and storage facilities that source water from the Ohio River, local reservoirs, and several regional waterways to service well completions.[79]

Why was the company not included?
Antero Midstream was created in March 2019. We will consider this company after they have established financials.

Antero Resources Corporation
Company Summary from Value Line:
Antero Resources Corporation is an energy company engaged in the exploration and development of natural gas, NGLs, and oil properties in the Appalachian Basin. Holds 557,475 acres in parts of West

[78] https://www.plains.com/about-us, accessed 2/5/2024
[79] https://www.anteromidstream.com/about-us/, accessed 2/9/2024

Virginia, Ohio, and Pennsylvania. 2022 proved reserves: 17,759 bcfe consisting of 10,270 bcfe of natural gas, 1,248 mmbbl NGLs, and 31 mmbbl oil. Net daily production averaged 3,578 mmcfe per day in 2022. Employees: 586. Depreciation rate: 4.8%.

Additional Company Information from Website:
Antero Resources is an independent oil and gas company that acquires, explores, develops, and produces natural gas, natural gas liquids (“NGLs”), and oil in the Appalachian Basin. Headquartered in Denver, we focus on developing low-cost, repeatable, liquids-rich unconventional targets in the Marcellus and the Utica shales, two of the premier North American shale plays. With a long history in Appalachia, we prioritize the well-being of our employees and neighbors and make long-term investments to strengthen the communities where we operate. Antero Resources is a leading gas producer and a top liquids producer. Due to our leading transportation portfolio and partial ownership of Antero Midstream (NYSE: AM), Antero is the most integrated natural gas and NGL business in the U.S. and one of the largest suppliers to the U.S. liquefied natural gas (LNG) market. Our affiliate, Antero Midstream, operates gathering pipelines, compression, and processing assets also in the Appalachian Basin—making us one of the most integrated natural gas producers in the US.[80]

Why was the company not included?
Antero Resources is involved in exploration and development, which is not similar to the main business segments of the companies we are responsible for valuing.

Callon Petroleum Co.
Company Summary from Value Line:
Callon Petroleum Company is an independent oil and natural gas company focused on the acquisition, exploration, and development of assets in the Permian Basina and Eagle Ford in Texas. During 2022, the company produced 104,254 barrels of oil equivalent (boe, approximately 62% oil); and reported proved reserves of 479.5 million boe. Acquired Carrizo Oil & Gas, 12/19. Primexx, 10/21. Shell Trading Company accounted for 31% of ’22 revenues; Valero Energy, 23%.

Additional Company Information from Website:
Since 1950, Callon Petroleum has been focused on the exploration, development, acquisition, and production of unconventional oil and natural gas properties. In 2009, Callon made its first acquisition of oil and gas properties in the Permian Basin, acquiring 8,800 net acres. Since that time, Callon has continued to grow its presence in West Texas and currently has an acreage position of approximately 145,000 net acres in the core of the Permian Basin.[81]

Callon entered the Permian Basin in 2009 with the acquisition of approximately 8,800 net acres for $16 million. In 2019, we completed our merger with Carrizo Oil & Gas which expanded our core footprint across the Permian Basin. Today, through continued execution of our acquisition, delineation, and rationalization strategies, we focused our footprint on approximately 145,000 net acres in the Delaware and Midland Basins. Our size allows us to efficiently pivot our business and capitalize on new opportunities. As a company operating the majority of our acreage, we have the flexibility to modify development plans to appropriately address continuously changing industry conditions and commodity price cycles. We have also proven our ability to move quickly to capitalize on opportunities to acquire new acreage and integrate into our operations, positioning us for additional consolidation of assets in

[80] https://www.anteroresources.com/about-us, accessed 2/9/2024
[81] https://www.callon.com/about-callon, accessed 2/9/2024

the future.[82]

Why was the company not included?
Callon Petroleum's development of unconventional onshore oil and natural gas reserves is not similar to the main business segments of the companies we are responsible for valuing.

Cheniere Energy Inc.
Company Summary from Value Line:
Cheniere Energy, Inc. engages in the liquefied natural gas (LNG) business and related natural gas pipelines in the Gulf Coast of the U.S. It operates the Sabine Pass LNG terminal in western Louisiana on the Sabine Pass Channel, and is developing Corpus Christi LNG near Corpus Christi, Texas; and Creole Trail LNG at the Calcasieu Channel in Louisiana. It operates the Creole Trail Pipeline, consisting of 94 miles of pipeline connecting the Sabine Pass LNG terminal to various existing interstate natural gas pipelines in southwest Louisiana. Has 1,519 employees.

Additional Company Information from Website:
Cheniere Energy, Inc. (NYSE: LNG) (Cheniere), is a Houston-based energy company primarily engaged in LNG-related businesses. Through its subsidiaries, Cheniere owns and operates two natural gas liquefaction and export facilities located in Cameron Parish, Louisiana at Sabine Pass and near Corpus Christi, Texas (respectively, the "Sabine Pass LNG Terminal" and "Corpus Christi LNG Terminal"). Cheniere is also engaged in the LNG and natural gas marketing business through its subsidiary, Cheniere Marketing, LLC (together with its subsidiaries, "Cheniere Marketing"). Cheniere's subsidiary, Cheniere Energy Partners, L.P. (NYSE: CQP) (Cheniere Partners) owns the Sabine Pass LNG Terminal which has natural gas liquefaction facilities consisting of six operational Trains for a total production capacity of approximately 30 mtpa of LNG (the "SPL Project"). The Sabine Pass LNG Terminal also has operational regasification facilities that include five LNG storage tanks, vaporizers and three marine berths. Cheniere Partners also owns the Creole Trail Pipeline, a 94-mile pipeline that interconnects the Sabine Pass LNG Terminal with a number of large interstate pipelines. As of June 30, 2022, Cheniere owned 100% of the general partner interest and a 48.6% limited partner interest in Cheniere Partners. The Corpus Christi LNG Terminal currently has three operational Trains for a total production capacity of approximately 15 mtpa of LNG, three LNG storage tanks and two marine berths. Cheniere is constructing an expansion of the Corpus Christi LNG Terminal (the "Corpus Christi Stage 3 Project") for seven midscale Trains with an expected total production capacity of over 10 mtpa of LNG. Through our wholly-owned subsidiary Cheniere Corpus Christi Pipeline, L.P., Cheniere also owns a 21.5-mile natural gas supply pipeline that interconnects the Corpus Christi LNG Terminal with several interstate and intrastate natural gas pipelines (the "Corpus Christi Pipeline" and together with the existing operational Trains, midscale trains, storage tanks and marine berths, the "CCL Project"). Cheniere has increased available liquefaction capacity at the SPL Project and the CCL Project as a result of debottlenecking and other optimization projects. Cheniere and its subsidiaries hold significant land positions at both the Sabine Pass LNG Terminal and the Corpus Christi LNG Terminal, which provide opportunity for further liquefaction capacity expansion. The development of these sites or other projects, including infrastructure projects in support of natural gas supply and LNG demand, will require, among other things, acceptable commercial and financing arrangements before Cheniere makes a positive FID.[83]

Why was the company not included?

[82] https://www.callon.com/operations, accessed 2/9/2024
[83] https://lngir.cheniere.com/company-information, accessed 2/9/2024

Cheniere is mainly located on the Gulf Coast. The Gulf Coast is a different market than the market of the companies for which we are responsible for valuing.

Cheniere Energy Partners L.P.

Company Summary from Value Line:

Cheniere Energy Partners, L.P., through its subsidiary, Sabine Pass Liquefaction, LLC (SPL), is developing, constructing, and operating natural gas liquefaction (NGL) facilities at the Sabine Pass LNG terminal located in Cameron Parish, Louisiana. The company also owns a 94-mile pipeline that connects the Sabine Pass LNG terminal with a number of large interstate pipelines via its subsidiary, Cheniere Creole Trail Pipeline, L.P. (CTPL). Finally, through the Sabine Pass LNG, L.P. (SPLNG) subsidiary, Cheniere owns and operates regasification facilities at the Sabine Pass LNG terminal.

Additional Company Information from Website:

Cheniere Energy Partners, L.P. (NYSE: CQP) (Cheniere Partners) is a publicly traded Delaware limited partnership formed by Cheniere Energy, Inc. ("Cheniere"). Cheniere Partners provides clean, secure and affordable LNG to integrated energy companies, utilities and energy trading companies around the world. Cheniere Partners aspires to conduct business in a safe and responsible manner, delivering a reliable, competitive and integrated source of LNG to its global customers. Cheniere Partners owns the Sabine Pass LNG terminal located in Cameron Parish, Louisiana, which has natural gas liquefaction facilities consisting of six liquefaction Trains, with a total production capacity of approximately 30 mtpa of LNG. The Sabine Pass LNG terminal also has operational regasification facilities that include five LNG storage tanks, vaporizers, and three marine berths. Cheniere Partners also owns the Creole Trail Pipeline, which interconnects the Sabine Pass LNG terminal with a number of large interstate pipelines.[84]

Why was the company not included?

Cheniere is mainly located on the Gulf Coast. The Gulf Coast is a different market than the market of the companies for which we are responsible for valuing.

Clean Energy Fuels Corp

Company Summary from Value Line:

Clean Energy Fuels Corp. provides natural gas as an alternative fuel for vehicle fleets in the United States and Canada. It designs, builds, finances, and operates fueling stations and supplies compressed natural gas and liquefied natural gas. The company serves over 1,000 fleet customers operating over 50,000 natural gas vehicles in various markets, including public transit, refuse hauling, airports, taxis, and trucking. It owns, operates, and supplies about 569 natural gas fueling stations. Also constructs fueling stations and sells or leases the stations to customers. Has about 496 employees.

Additional Company Information from Website:

Renewable natural gas is the cleanest solution available today for heavy-duty trucks. It's accessible, affordable, and the fastest way to lower carbon emissions. By 2025, the renewable natural gas we provide at Clean Energy stations will be fully zero-carbon and it will be available at all of our stations across North America. That's 20 years ahead of California's own statewide goal. The potential for renewable natural gas doesn't just stop there. Renewable natural gas can also be used as the feedstock for alternative solutions still in development, like hydrogen and electric, which are only as green as the fuel that makes them possible. Should our customers decide to explore these alternatives in the future, we'll be able to continue to support them by providing a renewable natural gas feedstock that is rated

[84] https://cqpir.cheniere.com/company-information, accessed 2/9/2024

many times cleaner than most alternatives. We have experience building and operating hydrogen stations, and can even retrofit our current Clean Energy stations to add hydrogen.[85]

Why was the company not included?
Clean Energy Fuels Corp provides natural gas an alternative fuel for vehicle fleets. This business segment is not similar to the main business segments of the companies we are responsible for valuing.

CNX Resources Corp
Company Summary from Value Line:
CNX Resources Corp. is one of the largest independent natural gas exploration, development and production companies, with operations centered in the major shale formations of the Appalachian basin. It produced 580.2 bcfe of natural gas in 2022. Proved natural gas reserves: 9.3 trillion cubic feet at 12/31/22. Bought Dominion Resources' Appalachian gas operations, 4/10. Spun off CONSOL Energy 11/17. Has 466 employees.

Additional Company Information from Website:
CNX is a premier ultra-low carbon intensive natural gas development, production, midstream, and technology company in Appalachia – one of the most energy abundant regions in the world. Our low cost and low emission natural gas from the Marcellus and Utica shales is helping to meet the world's growing energy demand and catalyzing environmental progress. For 160 years we have been at the forefront of Appalachia's energy and economic evolution, and today, we continue to lead the industry and embrace our role as a regional innovator. From producing the energy that powers daily life, to providing sustainable fuel for mass transit, cargo, passenger vehicle, and other business purposes – CNX holds the keys to the energy future. Like few other companies can, we're drawing on our proud past and local workforce while embracing fresh thinking and leveraging the ingenuity of our people to, once again, forge a new energy future for the Appalachian region and beyond. CNX Resources Corporation is based in Pittsburgh and traded on the New York stock exchange (NYSE CNX).[86]

Why was the company not included?
CNX is an exploration, development, and production company. These exploration and production business segments are not similar to the main business segments of the companies we are responsible for valuing.

Crestwood Equity Partners L.P.
Company Summary from Value Line:
Value Line summary not available.

Additional Company Information from Website:
Energy Transfer LP (NYSE: ET) ("Energy Transfer") announced today the completion of its previously announced merger with Crestwood Equity Partners LP ("Crestwood"). The merger was approved by Crestwood unitholders at its special meeting of unitholders held on October 30, 2023. Effective with the opening of the market on November 3, 2023, Crestwood's common units and preferred units ceased trading on the New York Stock Exchange (NYSE).[87]

Why was the company not included?

[85] https://www.cleanenergyfuels.com/about-us/, accessed 2/9/2024
[86] https://www.cnx.com/about-us, accessed 2/9/2024
[87] https://ir.energytransfer.com/news-releases/news-release-details/energy-transfer-completes-acquisition-crestwood, accessed 2/9/2024

Crestwood is no longer publicly traded.

CrossAmerica Partners L.P.

Company Summary from Value Line:

CrossAmerica Partners, LP is a wholesale distributor of motor fuels and owner and lessee of real estate used in the retail distribution of motor fuels. Its general partner, CrossAmerica GP LLC, is a subsidiary of CST Brands, Inc., one of the largest independent retailers of motor fuels and convenience merchandise in North America. The company's wholesale segment includes the wholesale distribution of motor fuel to lessee dealers, independent dealers, commission agents, DMS, CST and company operated retail sites. The Retail segment includes the sale of convenience merchandise items, the retail sale of motor fuel at company operated retail sites and the retail sale of motor fuel at retail sites operated by commission agents. With a geographic footprint covering 34 states, the partnership has well-established relationships with several major oil brands, including ExxonMobil, BP, Shell, Chevron, Sunoco, Valero, Gulf, Citgo, Marathon and Phillips 66. Has 228 employees.

Additional Company Information from Website:

CrossAmerica Partners LP is a leading U.S. wholesale distributor of motor fuels, operator of convenience stores, and owner and lessee of real estate used in the retail distribution of motor fuels. With a geographic footprint of 34 states, CrossAmerica Partners distributes branded and unbranded petroleum for motor vehicles to approximately 1,800 locations and owns or leases approximately 1,100 sites. Our 7 convenience store brands offer food, essentials and car washes at more than 250 locations across 10 states. Formed in 2012, the Partnership has well-established relationships with several major oil brands, including Exxon, Mobil, BP, Shell, Valero, Citgo, Marathon and Phillips 66. CrossAmerica Partners ranks as one of ExxonMobil's largest U.S. distributors by fuel volume and in the top 10 for additional brands. Our convenience stores are also paired with prominent national brands, such as Dunkin', Subway and Arby's. Our general partner, CrossAmerica GP LLC, is indirectly owned and controlled by entities affiliated with Joseph V. Topper, Jr., the founder of CrossAmerica Partners and a member of the board of the general partner since 2012. Units of CrossAmerica Partners are traded on the New York Stock Exchange under the symbol "CAPL." CrossAmerica Partners is headquartered in Allentown, Pennsylvania. Our downtown location plays an integral part in the revitalization of the Lehigh Valley region's largest city.[88]

Why was the company not included?

CrossAmerica Partners is a wholesale distributor of motor fuels. They are also the owner and lessee of real estate used in the retail distribution of motor fuels. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

DCP Midstream L.P.

Company Summary from Value Line:

Value Line not available.

Additional Company Information from Website:

Phillips 66 (NYSE: PSX) and DCP Midstream, LP (NYSE: DCP) completed the previously announced acquisition by Phillips 66 of all the publicly held common units representing limited partner interests in DCP Midstream for $41.75 per common unit in cash at a total value of approximately $3.8 billion, increasing its economic interest in DCP Midstream to 86.8%. Effective with the opening of markets today [June 15, 2023], DCP Midstream's common units will no longer be listed on the New York Stock

[88] https://www.crossamericapartners.com/about/about-us, accessed 2/9/2024

Exchange.[89]

Why was the company not included?
DCP Midstream is no longer publicly traded.

Delek Logistics Partners L.P.
Company Summary from Value Line:
Delek Logistics Partners, LP was formed by Delek US Holdings, Inc. to own, operate, acquire and construct crude oil and refined products logistics and marketing assets. The assets and investments in its pipelines and transportation segment consist of pipelines, tanks, offloading facilities, trucks and ancillary assets, which provide crude oil gathering and crude oil, intermediate and refined products transportation and storage services primarily in support of Delek Holdings' refining operations in Tyler, TX, El Dorado, AR, Big Spring, TX, and the Big Spring Gathering Assets. Additionally, the assets in this segment provide crude oil transportation services to certain third parties. The assets in its wholesale marketing and terminalling segment consist of refined products terminals and pipelines in Arkansas, Tennessee, Texas, and Oklahoma.

Additional Company Information from Website:
Delek Logistics Partners LP (NYSE: DKL), headquartered in Brentwood, Tennessee, is a growth-oriented publicly traded master limited partnership (MLP) formed by Delek US Holdings, Inc. (NYSE:DK) ("Delek") in 2012 to own, operate, acquire, and construct crude oil and refined products logistics and marketing assets. A substantial majority of our existing assets are integral to the success of Delek's refining and marketing operations. We gather, transport and store crude oil and market, distribute, transport and store refined products in select regions of the southeastern United States and west Texas for Delek and third parties, primarily in support of Delek's refineries in Tyler, Texas and El Dorado, Arkansas.[90]

Why was the company not included?
Delek is mainly located in the Texas, Arkansas, and Tennessee area. This operating area is a different market than the market of the companies we are responsible for valuing.

Devon Energy Corp.
Company Summary from Value Line:
Devon Energy Corp. is a North American oil, NGL, and gas exploration and production company. It completed an all-stock merger with WPX Energy in January 2021; sold operations in Canada, 6/19; sold Barnett Shale assets, 10/20. 2022 production: 223 MMboe, including 356 Bcf gas and 163 Mbbls liquids. Proved reserves at 12/31/22: 1,815 mill. Bbls. of oil equiv., including 1,286 MMbls liquids and 3,175 bcf natural gas. Has about 1,800 emplys.

Additional Company Information from Website:
Devon Energy Corporation is a leading independent oil and natural gas exploration and production company. Devon's operations are focused onshore in the United States.
The company's portfolio of oil and gas properties provides stable, environmentally responsible production and a platform for future growth. Devon's fourth quarter 2022 daily production was approximately 315,000 barrels of oil, about 150,000 barrels of natural gas liquids and more than 1

[89] https://investor.phillips66.com/financial-information/news-releases/news-release-details/2023/Phillips-66-Completes-Acquisition-of-DCP-Midstream-LP-Common-Units/default.aspx, accessed 2/9/2024
[90] http://www.deleklogistics.com/investor-relations, accessed 2/9/2024

billion cubic feet of natural gas.[91]

Why was the company not included?
Devon is a gas exploration and production company. These exploration and production business segments are not similar to the main business segments of the companies we are responsible for valuing.

Energy Transfer L.P. (Formerly Energy Transfer Equity, L.P.)
Company Summary from Value Line:
Energy Transfer, LP (ET) is a master limited partnership that owns a diversified portfolio of energy assets in the U.S. Its core operations include complementary natural gas midstream, intrastate and interstate transportation and storage assets; crude oil, natural gas liquids and refined product transportation and terminaling assets. Energy Transfer also owns the Lake Charles LNG Company. On a consolidated basis, the ET family owns and operates approximately 89,800 miles of natural gas pipeline. Acquired Energy Transfer Partners, 10/18. Has about 12,570 employees.

Additional Company Information from Website:
Energy Transfer is one of the largest and most diversified midstream energy companies in North America with more than 125,000 miles of pipelines and associated energy infrastructure in 44 states transporting the oil and gas products that make our lives possible.[92]

Nov. 3, 2023-- Energy Transfer LP (NYSE: ET) ("Energy Transfer") announced today the completion of its previously announced merger with Crestwood Equity Partners LP ("Crestwood"). The merger was approved by Crestwood unitholders at its special meeting of unitholders held on October 30, 2023. Effective with the opening of the market on November 3, 2023, Crestwood's common units and preferred units ceased trading on the New York Stock Exchange (NYSE).

Holders of Crestwood common units received 2.07 Energy Transfer common units for each Crestwood common unit held by them (the "Common Unit Merger Consideration"). Additionally, each outstanding Crestwood preferred unit was, at the election of the holder of such Crestwood preferred unit, either, (i) converted into a new preferred unit of Energy Transfer that has substantially similar terms, including with respect to economics and structural protections, as the Crestwood preferred units; (ii) redeemed in exchange for $9.857484 in cash plus accrued and unpaid distributions to the date of such redemption; or (iii) converted into a Crestwood common unit at the then-applicable conversion ratio of one Crestwood common unit for ten Crestwood preferred units, and such Crestwood common units then received the Common Unit Merger Consideration. The new Energy Transfer preferred units will be Series I Fixed Rate Perpetual Preferred Units and will trade on the NYSE under the ticker symbol "ETprI". As a result of the acquisition, Energy Transfer now owns and operates more than 125,000 miles of pipelines and related assets in all the major U.S. producing regions and markets across 41 states, further enhancing its leadership position in the midstream sector. The transaction is immediately accretive to distributable cash flow per unit for Energy Transfer, and adds significant cash flows from firm, long-term contracts and significant acreage dedications. Additionally, the combined operations of the two companies are expected to generate initial annual run-rate cost and efficiency synergies of at least $40 million before additional anticipated benefits of financial and commercial synergies.[93]

[91] https://www.devonenergy.com/about-us, accessed 2/9/2024
[92] https://www.energytransfer.com/, accessed 2/5/2024
[93] https://ir.energytransfer.com/news-releases/news-release-details/energy-transfer-completes-acquisition-crestwood, accessed 2/14/2024

Why was the company not included?
Energy Transfer L.P. business segments include natural gas midstream, intrastate and interstate transportation and storage assets as well as crude oil, natural gas liquids and refined produce transportation and terminaling assets. This company is similar to the fluid transportation pipeline companies that we are responsible for valuing. The company recently completed a merger of Crestwood Equity Partners L.P.

Enerplus Corporation
Company Summary from Value Line:
Enerplus Corp. engages in the exploration and development of crude oil and natural gas in the U.S. (Montana, North Dakota, Pennsylvania, West Virginia, and Wyoming) and Canada. Average daily production in 2022: crude oil, 52,017 bbls; natural gas liquids, 9,681 bbls; natural gas, 231.770 mcf; total, 100,326 boe. At 12/31/22 proved plus probable reserves: 322.3 Mboe. 12/22 Exited Canadian business. Has 435 employees.

Additional Company Information from Website:
Enerplus is focused on the development of high-quality North American oil and natural gas assets. Today, our portfolio includes light oil assets in the Bakken (North Dakota) and a position in the Marcellus natural gas shale region (northeast Pennsylvania).

2022 Production

- 100,326 Barrels of Oil Equivalent/Day
- 61% Crude oil & Natural Gas Liquids
- 39% Natural Gas[94]

Why was the company not included?
Enerplus' main business segments are exploration and development of crude oil and natural gas. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

EnLink Midstream LLC
Company Summary from Value Line:
EnLink Midstream, LLC provides midstream energy services in the United States. It operates throughout Texas, Oklahoma, and Louisiana. The company gathers, compresses, treats, processes, transports, stores, and sells natural gas. It also fractionates, transports, stores, and sells natural gas liquids and crude oil. Midstream energy assets include about 12,000 miles of pipelines, 21 natural gas processing plants and seven fractionators. Has 1,132 employees.

Additional Company Information from Website:
EnLink Midstream provides integrated midstream services across natural gas, crude oil, and NGL commodities. Our purposely built, integrated asset platforms are in premier production basins and core demand centers, including the Permian Basin, Oklahoma, North Texas, and the Gulf Coast. EnLink operates gathering and transportation pipelines, processing plants, fractionators, barge and rail terminals, product storage facilities, and brine disposal wells. We also have purchase and marketing capabilities. Thanks to the breadth and diversity of our asset mix, we're both robust and agile. We

[94] https://www.enerplus.com/operations/overview-operations.cfm, accessed 2/12/2024

pursue strategic platform expansions and service offerings to create value for our customers.[95]

Why was the company not included?
EnLink Midstream is mainly located in the Gulf Coast. The Gulf Coast is a different market than the market of the companies we are responsible for valuing.

EOG Resources Inc.
Company Summary from Value Line:
EOG Resources, Inc. engages in the exploration, development, and production of natural gas and crude oil. Utilizes basins in the U.S., Canada, and offshore Trinidad. In 2022, net proved natural gas reserves were 8.6 trillion cubic feet equivalent, and net proved crude oil and natural gas liquids reserves were 2,806 million barrels. Estimated pretax present value of reserves: $95.0 billion. Has approx. 2,850 empls.

Additional Company Information from Website:
EOG Resources, Inc. (NYSE: EOG) is one of the largest crude oil and natural gas exploration and production companies in the United States. The company is focused on being among the lowest cost, highest return, and lowest emissions producers, playing a significant role in the long-term future of energy. EOG strives to maintain the lowest possible operating cost structure through continued innovation that drives down operating and capital costs while maximizing reserve recoveries and lowering finding and development costs.[96]

Why was the company not included?
EOG Resources Inc.'s main business segments include exploration and production of natural gas and crude oil. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

EQT Corporation
Company Summary from Value Line:
EQT Corporation is a natural gas producer focused in the Marcellus and Utica Shales. It is the largest producer of natural gas in the U.S., based on average daily volumes of 1.940 Bcfe in 2022. The company reported 25.0 trillion cubic feet equivalent of proved reserves across 2.0 million acres (including 1.7 million acres in the Marcellus play) at the end of 2022. Spunoff Equitrans Midstream, 11/18. Acquired Alta Resources, 7/21; Rice Energy, 11/17. Has 744 employees.

Additional Company Information from Website:
EQT Corporation is a leading independent natural gas producer with an evolutionary focus on our future. EQT has operations in Pennsylvania, West Virginia and Ohio and is dedicated to responsibly developing our world-class asset base in the core of the Appalachian Basin. While we are currently the largest producer of natural gas in the United States, we know being the biggest doesn't always mean being the best. With that in mind, EQT is making strides toward becoming the best producer by creating long-term value for all stakeholders, including employees, landowners, communities, industry partners and investors.[97]

[95] https://www.enlink.com/operations/, accessed 2/12/2024
[96] https://www.eogresources.com/documents/EOG%20Fact%20Sheet%20(April%202023).pdf, accessed 2/12/2024
[97] https://www.eqt.com/about/, accessed 2/12/2024

Why was the company not included?
EQT Corporation is a natural gas producer. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

Genesis Energy L.P.
Company Summary from Value Line:
Genesis Energy, LP is a growth-oriented limited partnership focused on the midstream segment of the crude oil and natural gas industry. Its segments consist of: offshore pipeline transportation and processing of crude oil and natural gas in the Gulf of Mexico; sodium minerals and sulfur services involving trona and trona-based exploring, processing, and selling activities, and processing of high sulfur gas streams for refineries to remove the sulfur, and selling the related by-product, sodium hydrosulfide (NaHS); onshore facilities and transportation, which include terminalling, storing, and transporting crude oil, petroleum products, and CO 2; and marine transportation to provide waterborne transportation of petroleum products and crude oil. The company owns four onshore crude oil pipeline systems, with approximately 450 miles of pipe located primarily in Alabama, Florida, Louisiana, Mississippi and Texas that are rate regulated by the Federal Energy Regulatory Commission. Has 2,109 employees.

Additional Company Information from Website:
Genesis Energy, L.P. is a publicly traded, master limited partnership headquartered in Houston, Texas. We provide critical pipeline infrastructure supporting long-lived, world-class developments in the Gulf of Mexico. Our business also includes the production and marketing of natural soda ash and other specialty chemicals with no known substitutes; a diversified suite of Jones Act compliant marine transportation equipment used to transport crude oil and intermediate refined products along the Gulf and East Coast, and major river systems; and an increasingly integrated portfolio of onshore crude oil pipelines and terminals along the Gulf Coast. We are steadfast in our resolution to continue to provide our stakeholders with long-term value while simultaneously operating in a safe, reliable, and environmentally friendly manner. This resolve is integrated into the very core of our culture, which transfers directly into our daily operations.[98]

Why was the company not included?
Genesis Energy’s main business segments are grouped in four divisions: offshore pipeline transportation, sodium minerals and sulfur services, marine transportation, and onshore facilities and transportation. These market segments are not similar enough to the market segments of the companies we are responsible for valuing.

Global Partners L.P.
Company Summary from Value Line:
Global Partners, LP is engaged in the purchasing, selling, and logistics of transporting petroleum and related products, including domestic and Canadian crude oil, gasoline and gasoline blendstocks (such as ethanol and naphtha), distillates (such as home heating oil, diesel, and kerosene), residual oil, renewable fuels, natural gas and propane. The company also receives revenue from convenience store sales and gasoline station rental income. Global owns, controls, or has access to one of the largest terminal networks of refined petroleum products and renewable fuels in the northeast. It owns transload and storage terminals in North Dakota and Oregon that extend its origin-to-destination capabilities from the mid-continent region of the United States and Canada to the east and west coasts. Global Partners has approximately 1,700 locations primarily in the Northeast. The company was incorporated in 2005 and is based in Waltham, Massachusetts. Has 2,860 employees.

[98] http://genesisenergy.com/about/, accessed 2/12/2024

Additional Company Information from Website:
As one of the Northeast's largest independent owners, suppliers, and operators of gasoline stations and convenience stores, reliability, quality, and community are key to everything we do. We are proud to support the communities where we live and work. Our efforts to be a good neighbor began more than 75 years ago, when our company began delivering heating oil – door to door – in the neighborhoods around Greater Boston. These efforts continue through our active giving program, which enhances good works in communities across the country. Today, Global owns, controls, or has access to one of the largest terminal networks in New England and New York. We source and transport petroleum products and renewable fuels through our vertically integrated, adaptive distribution network across the U.S. and Canada. In addition, we are a leading wholesale distributor of petroleum products in New England and New York. Through our network, approximately 1M automobile tanks are filled per day. Customers stop at one of our gasoline stations to fill their tanks, recharge with a fresh cup of coffee, or grab a snack. Our vertically integrated model gives us the unique ability to adapt when markets change, creating stability for our customers, all while conducting a business that's been guided by family, with integrity and respect, since 1933.[99]

Why was the company not included?
Global Partners is one of the largest distributors of gasoline, distillates, residual oil and renewable fuels to wholesalers, retailers, and commercial customers in New England and New York. This company also owns, supplies, and operates gasoline stations and convenience stores. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

Green Plains Partners L.P.
Company Summary from Value Line:

Value Line summary not available.

Additional Company Information from Website:
Green Plains Inc. (NASDAQ: GPRE) ("Green Plains") and Green Plains Partners LP (NASDAQ: GPP) (the "Partnership") today announced the completion of the transactions contemplated by the previously announced Agreement and Plan of Merger (the "Merger Agreement"), pursuant to which Green Plains acquired all of the publicly held common units of the Partnership not already owned by Green Plains and its affiliates in exchange for a combination of 0.405 shares of Green Plains common stock and $2.00 in cash, plus an amount of cash equal to unpaid distributions from the end of the last quarter for which a quarterly distribution was made to the closing date, as determined in accordance with the Merger Agreement, without interest, for each outstanding common unit representing a limited partner interest in the Partnership (the "Merger"). As a result of the Merger, the Partnership became an indirect wholly owned subsidiary of Green Plains and the Partnership's common units will no longer be listed on the NASDAQ, and will be deregistered under the Securities Exchange Act of 1934, as amended (the "Exchange Act").[100]

Why was the company not included?
Green Plains is no longer publicly traded.

Hess Midstream Partners L.P.

[99] https://www.globalp.com/about/the-global-partners-story/, accessed 2/12/2024
[100] https://investor.gpreinc.com/news/news-details/2024/Green-Plains-Inc.-Completes-Acquisition-of-Green-Plains-Partners-LP/default.aspx, accessed 2/12/2024

Company Summary from Value Line:
Hess Midstream LP is a limited partnership (not an MLP) that owns, operates, develops, and acquires midstream related assets in the energy industry. It is also involved in providing water handling equipment required for fracking process. Primarily located in the Bakken and Three Forks Shale plays in the Williston Basin in North Dakota. Hess Corp. is responsible for 100% of all revenues generated in 2019 to 2022.

Additional Company Information from Website:
Hess Midstream (NYSE: HESM) is a fee-based, growth-oriented midstream company that owns, operates and develops a diverse set of midstream assets to provide services to Hess and third-party customers. Hess Midstream, through its ownership interests in HESM, owns oil, gas and produced water handling assets that are primarily located in the Bakken and Three Forks Shale plays in the Williston Basin area of North Dakota, one of the most prolific crude oil gathering basins in North America. HESM conducts its business through three operating segments: gathering, processing and storage and terminaling and export.[101]

Why was the company not included?
Hess Midstream Partners L.P. focuses on processing natural gas and fractionating natural gas (NGLs). These business segments are not similar to the main business segments of the companies we are responsible for valuing.

Holly Energy Partners L.P.
Company Summary from Value Line:
Value Line summary not available.

Additional Company Information from Website:
On December 1, 2023, Holly Energy Partners, L.P. ("HEP") merged with, and is now, a wholly owned subsidiary of HF Sinclair Corporation and is headquartered in Dallas, Texas, doing business as HF Sinclair Midstream.[102]

Why was the company not included?
Holly Energy Partners is no longer publicly traded.

Magellan Midstream Partners L.P.
Company Summary from Value Line:
Value Line summary not available.

Additional Company Information from Website:
Sept. 25, 2023 – ONEOK, Inc. (NYSE: OKE) (ONEOK) today announced that it has completed its acquisition of Magellan Midstream Partners, L.P. (Magellan), creating a more diversified North American midstream infrastructure company focused on delivering essential energy products and services to its customers, and continued strong returns to investors. The transaction was approved by ONEOK shareholders and Magellan unitholders at their respective special meetings held on September 21, 2023. “This is a significant day for Tulsa and the industry as we bring together the talented ONEOK and Magellan teams and look to the future as one company,” said Pierce H. Norton II, ONEOK president and chief executive officer. “Our expanded products platform will present additional

[101] https://hessmidstream.gcs-web.com/investors, accessed 2/12/2024
[102] http://www.hollyenergy.com/Home/default.aspx, accessed 2/5/2024

opportunities in ONEOK's core businesses and further enhance the resiliency of our company. We are committed to ensuring a smooth transition aimed at delivering on the many benefits of this combination for our customers, employees and shareholders." Magellan unitholders received $25.00 in cash and 0.667 shares of ONEOK common stock for each outstanding Magellan common unit. Magellan common units will no longer be publicly traded on the New York Stock Exchange (NYSE). Shares of ONEOK common stock will continue to trade on the NYSE.[103]

Why was the company not included?
Magellan Midstream Partners is no longer publicly traded.

Martin Midstream Partners L.P.
Company Summary from Value Line:
Martin Midstream Partners, L.P. is a publicly traded limited partnership with a diverse set of operations focused primarily in the US Gulf Coast region. Its four primary business lines include: natural gas services, including liquids transportation and distribution services and natural gas storage; terminalling and storage services for petroleum products and by-products, including the refining of naphthenic crude oil, blending and packaging of finished lubricants; sulfur and sulfur-based products processing, manufacturing, marketing and distribution; and marine transportation services for petroleum products and byproducts. The petroleum products and by-products the company collects, transports, stores and markets are produced by oil and gas companies. It owns and operates: 14 marine shore-based terminal facilities and 13 specialty terminal facilities; 27 inland marine tank barges, 15 inland push boats and one offshore tug, and barge unit that transport petroleum products and by-products.

Additional Company Information from Website:
Martin Midstream Partners L.P. is a publicly traded limited partnership with a diverse set of operations focused primarily in the United States Gulf Coast region. Our four primary business lines include: terminalling, processing, and storage services for petroleum products and by-products; land and marine transportation services for petroleum products and by-products, chemicals, and specialty products; sulfur and sulfur-based products processing, marketing, manufacturing, and distribution; marketing, distribution, and transportation services for natural gas liquids and blending and packaging services for specialty lubricants and grease. The petroleum products and by-products we collect, transport, store, and market are produced primarily by major and independent oil and gas companies who often turn to third parties, such as us, for the transportation and disposition of these products. In addition to these major and independent oil and gas companies, our primary customers include independent refiners, large chemical companies, fertilizer manufacturers, and other wholesale purchasers of these products. We operate primarily in the U.S. Gulf Coast region, which is a major hub for petroleum refining, natural gas gathering and processing, and support services for the exploration and production industry.[104]

Why was the company not included?
Martin Midstream Partners is mainly located in the Gulf Coast. The Gulf Coast is a different market than the market of the companies for which we are responsible for valuing.

MDU Resources Group Inc.
Company Summary from Value Line:
MDU Resources Group, Inc. is a regulated energy delivery and construction materials and services

[103] https://www.magellanlp.com/magellannews.aspx?id=737C3A42-B6BF-4A01-835E-7104F32260FD, accessed 2/5/2024
[104] https://mmlp.com/about-us/default.aspx, accessed 2/12/2024

company. Segments: construction materials and contracting (36% of ’22 revs; 34% of ’22 op. inc.), construction services (39%, 29%), natural gas distribution (18%, 16%); electric (5%, 14%) and pipeline (2%, 7%). Utilities sell gas & electricity in northwest and upper midwest U.S. Construction materials has 1.1 billion tons of construction reserves. Has about 14,929 employees.

Additional Company Information from Website:
MDU Resources provides essential products and services through its regulated energy delivery and construction services businesses. Our company was founded in 1924 as a small electric utility serving a handful of farm communities on the border of Montana and North Dakota. We realized early the value of delivering a variety of services and grew our company by developing businesses around our expertise. Today, MDU Resources has operations, customers and employees across the country. We have more than 11,000 employees and conduct business in nearly every state. We are the largest publicly traded company headquartered in North Dakota. Our stock has traded since 1948 under the symbol MDU on the New York Stock Exchange.[105]

Why was the company not included?
MDU Resources Group Inc.’s largest business segment is construction materials and contracting, and their second largest business segment is construction services. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

National Fuel Gas Company
Company Summary from Value Line:
National Fuel Gas Company is engaged in the production, gathering, transportation, distribution, and marketing of natural gas & oil. Exploration/Production and other (46% of fiscal 2022 sales); Utility and Energy Marketing Revenues (41%), and Pipeline, Storage & Gathering (13%). NFG has a large position in the Marcellus Shale basin in western NY & PA and oil reserves in CA. Proved reserves as of 9/30/22: 1,934,795 MMcf of natural gas. Employs 2,132.

Additional Company Information from Website:
National Fuel Gas Company (NYSE: NFG) is a diversified, integrated energy company with a complementary mix of natural gas assets located in the heart of the prolific Appalachian basin. From the bottom of the wellbore to the customer’s burner tip, National Fuel has structured our collective group of businesses in a unique manner that leverages our vast upstream resources, valuable midstream footprint and reliable downstream operations to position us as a responsible player in America’s energy renaissance.[106]

Why was the company not included?
National Fuel Gas Company’s largest business segment is exploration and production. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

New Fortress Energy, Inc.
Company Summary from Value Line:
New Fortress Energy, Inc. is an integrated gas-to-power company that seeks to use ‘‘stranded’’ natural gas to satisfy the world’s large and growing power needs by delivering customized energy solutions to its customers. The company has expertise in power, infrastructure, transportation and liquefied natural gas (LNG) and operate liquefaction facilities, onshore and offshore regasification terminals, pipelines,

[105] https://www.mdu.com/our-company/overview/default.aspx, accessed 2/12/2024
[106] https://www.nationalfuel.com/corporate/an-integrated-energy-company/, accessed 2/12/2024

and power plants. The company also has an established logistics chain. NFE is majority owned by a fund managed by an affiliate of Fortress Investment Group. Has 577 employees.

Additional Company Information from Website:
We want to light the world. Billions of people around the planet lack access to affordable power. Electricity should not be a luxury good. As a liquefied natural gas (LNG) company, our mission is to provide capital, expertise and vision to address this problem while also making positive and meaningful impacts on communities and the environment. New Fortress Energy, a liquefied natural gas (LNG) company, was founded in 2014 by Wes Edens, with the belief that access to affordable, reliable, cleaner energy is not a privilege, but a human right. Universal access to energy can impact major world issues, from education to poverty reduction to gender equality. Creating that access – in an environmentally responsible way – is our fundamental mission. We identify places around the world where affordable, reliable, cleaner energy is in short supply. We build and operate liquefied natural gas (LNG) import facilities to supply natural gas locally, creating access to a better energy source.[107]

Why was the company not included?
New Fortress Energy seeks to use “stranded” natural gas to satisfy the world’s large and growing power needs by delivering customized energy solutions to its customers. The company has four operations in the Caribbean, one in Europe, six in Latin America, one in Asia, and two in the United States (developing liquefaction assets in Pennsylvania and Florida). The assets in the United States are not similar to the main business segments of the companies we are responsible for valuing.

NGL Energy Partners L.P.
Company Summary from Value Line:
NGL Energy Partners, LP, together with its subsidiaries, engages in the crude oil logistics, water solutions, liquids, retail propane, and refined products and renewables businesses. The company purchases crude oil from producers and transports it to refineries for resale at pipeline injection stations, storage terminals, barge loading facilities, rail facilities, refineries, and other trade hubs; and provides storage, terminaling, trucking, marine, and pipeline transportation services. It is involved in the treatment and disposal of wastewater generated from crude oil and natural gas production operations; disposal of solids, such as tank bottoms, drilling fluids, and drilling muds. It supplies natural gas liquids to retailers, wholesalers, refiners, and petrochemical plants in the United States and Canada through its 24 terminals. It sells propane, distillates, and equipment and supplies to end users consisting of residential, agricultural, commercial, and industrial customers. Has 638 employees.

Additional Company Information from Website:
We are a publicly traded Master Limited Partnership listed under the ticker symbol “NGL” on the New York Stock Exchange. NGL Energy Partners LP is a diversified midstream MLP that provides multiple services to producers and end-users, including transportation, storage, blending and marketing of crude oil, NGLs, refined products / renewables, and water solutions. Vertical integration enables NGL to be the full service provider: Transport crude oil from the wellhead to refiners. Wastewater from the wellhead to treatment for disposal, recycle or discharge, Natural Gas Liquids from fractionators / hubs to refineries and end users. Refined Products from refiners to customers.[108]

[107] https://www.newfortressenergy.com/about, accessed 2/12/2024
[108] http://www.nglenergypartners.com/about-ngl/, accessed 2/12/2024

Why was the company not included?
NGL Resources has several other business segments besides transportation, including blending and marketing of crude oil, water solutions, and settling propane, distillates, and equipment and supplies to end users. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

ONEOK Inc.
Company Summary from Value Line:
ONEOK, Inc. is a leading midstream service provider. It owns premier natural gas liquids systems connecting supply in the Mid-Continent, Permian, and Rocky Mountain regions with key market centers. Has three operating segments: natural gas liquids, natural gas gathering and processing, and natural gas pipelines. Completed separation of natural gas distribution business in February of 2014. Has 2,966 employees.

Additional Company Information from Website:
We are a leading midstream service provider and own one of the nation’s premier natural gas liquids systems, connecting NGL supply in the Rocky Mountain, Mid-Continent and Permian regions with key market centers and an extensive network of natural gas gathering, processing, storage and transportation assets. We apply our core capabilities of gathering, processing, fractionating, transporting, storing and marketing natural gas and NGLs through vertical integration across the midstream value chain to provide our customers with premium services while generating consistent and sustainable earnings growth. Our primary business strategy is to maintain prudent financial strength and flexibility while growing our profits, fee-based earnings and dividends per share with a focus on safe, reliable, environmentally responsible, legally compliant and sustainable operations for our customers, employees, contractors and the public through the following: Operate in a safe, reliable, environmentally responsible and sustainable manner – environmental, safety and health issues continue to be a primary focus for us, and our emphasis on personal and process safety has produced improvements in the key indicators we track. We also continue to look for ways to reduce our environmental impact by conserving resources and utilizing more efficient technologies. Maintain prudent financial strength and flexibility while growing our fee-based earnings, dividends per share and cash flows from operations in excess of dividends paid – we operate primarily fee-based businesses in each of our three reportable segments. We continue to invest in organic growth projects to expand in our existing operating regions and provide a broad range of services to crude oil and natural gas producers and end-use markets. Manage our balance sheet and maintain investment-grade credit ratings – we seek to maintain investment-grade credit ratings. Attract, select, develop, motivate, challenge and retain a diverse group of employees to support strategy execution – we continue to execute on our recruiting strategy that targets professional and field personnel in our operating areas. We also continue to focus on employee development efforts with our current employees and monitor our benefits and compensation package to remain competitive.[109]

ONEOK, Inc. (NYSE: OKE) (ONEOK) today announced that it has completed its acquisition of Magellan Midstream Partners, L.P. (Magellan), creating a more diversified North American midstream infrastructure company focused on delivering essential energy products and services to its customers, and continued strong returns to investors. The transaction was approved by ONEOK shareholders and Magellan unitholders at their respective special meetings held on September 21, 2023.[110]

[109] http://www.oneok.com/about-us/what-we-do, accessed 2/5/2024
[110] https://ir.oneok.com/news-and-events/press-releases/2023/09-25-2023-134815200, accessed 2/14/2024

Why was the company not included?
ONEOK Inc. is the parent company for one of the companies that we are responsible for valuing. However, ONEOK Inc. recently completed the acquisition of Magellan Midstream Partners, L.P. ONEOK, Inc. (NYSE: OKE) ("ONEOK") and Magellan Midstream Partners, L.P. (NYSE: MMP) ("Magellan") today announced that they have executed a definitive merger agreement under which ONEOK will acquire all outstanding units of Magellan in a cash-and-stock transaction valued at approximately $18.8 billion including assumed debt, resulting in a combined company with a total enterprise value of $60.0 billion.[111]

Ovintiv Inc. (Formerly Encana Corporation)
Company Summary from Value Line:
Ovintiv Inc. (formerly Encana Corporation) is a North American energy producer focused on developing natural gas, oil, and NGL resource plays. Its core holdings are in the Permian (Texas), Anadarko (Oklahoma), and Montney (British Columbia, Canada) basins. Total proved reserves ('22 10-K), 1,993 million barrels of oil equivalent. 2022 Production; 510.9 million barrels of oil equivalent per day, including 546 million cubic feet equivalent of natural gas, 47,200 barrels of NGL, and 48,000 barrels of oil. Has 1,744 employees.

Additional Company Information from Website:
Ovintiv is a leading North American energy producer focused on developing its multi-basin portfolio of oil, natural gas liquids and natural gas producing plays.[112]

Why was the company not included?
Ovintiv Inc. is an energy producer focused on developing natural gas, oil, and natural gas liquid plays. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

PDC Energy Inc.
Company Summary from Value Line:
Value Line not available.

Additional Company Information from Website:
SAN RAMON, Calif., Aug. 7, 2023 — Chevron Corporation (NYSE: CVX) announced today that its acquisition of PDC Energy, Inc. (NASDAQ: PDCE) has been completed following approval by PDC Energy shareholders. "We're pleased to welcome PDC Energy into Chevron," said Bruce Niemeyer, Chevron's president for Americas Exploration & Production. "Our companies have similar cultures, with a focus on safe and reliable operations, teaming to deliver results, and benefiting the communities where we operate. PDC's high-quality assets open up even greater opportunities in important U.S. basins where Chevron already has a strong presence." The assets acquired include 275,000 net acres in the Denver-Julesburg (DJ) Basin adjacent to Chevron's existing operations, which add more than 1 billion barrels of oil equivalent proved reserves, and 25,000 net acres in the Permian Basin that are held by production.[113]

Why was the company not included?
PDC Energy is no longer publicly traded.

[111] https://ir.oneok.com/news-and-events/press-releases/2023/05-14-2023-232007760, accessed 2/20/2024
[112] https://investor.ovintiv.com/overview, accessed 2/12/2024
[113] https://www.chevron.com/newsroom/2023/q3/chevron-completes-acquisition-of-pdc-energy, accessed 2/13/2024

Plains GP Holdings L.P.

Company Summary from Value Line:

Plains GP Holdings, L.P., a limited partnership, does not directly own any operating assets. Its principal source of cash flow is from its indirect investment in Plains All American Pipeline, L.P. (PAA) and an approximate 55% limited partnership of Plains AAP, L.P. PAA is a publicly traded master limited partnership that owns and operates midstream energy infrastructure and provides logistics services for crude oil, natural gas liquids, and natural gas. PAA owns an extensive network of pipeline, terminals, storage facilities, and gathering assets. PAA has 4,000 employees.

Additional Company Information from Website:

Plains GP Holdings (NASDAQ: PAGP) is a publicly traded entity that owns a non-economic controlling general partner interest in PAA and an indirect limited partner interest in PAA, one of the largest energy infrastructure and logistics companies in North America.[114]

Why was the company not included?

This company was not included because we used Plains All American Pipeline L.P. as a guideline company. Plains GP Holdings L.P. does not own any operating assets.

San Juan Basin Royalty Trust

Company Summary from Value Line:

San Juan Basin Royalty Trust operates as an express trust. The principal asset of the trust is the royalty, which consists of a 75% net overriding royalty interest that burdens the subject interests located in the San Juan Basin. The trust does not operate the underlying properties and does not carry on any business activity. The trust is a widely held fixed investment trust and is classified as a nonmortgage widely held fixed investment trust for tax purposes. Hilcorp San Juan L.P. is the operator of the majority of the subject interests. The function of the trustee is to collect the net proceeds attributable to the royalty, to pay all expenses and charges of the trust, and distribute the remaining available income to the unit holders. The revenues derived from the subject interests depend substantially on prevailing natural gas prices and, to a lesser extent, oil prices. As a result, commodity prices also affect the amount of distributable Income to the unit holders.

Additional Company Information from Website:

The Trust was established in November 1980 by Trust indenture between Southland Royalty and The Fort Worth National Bank. Pursuant to the indenture, Southland Royalty conveyed to the Trust a 75% net overriding royalty interest (equivalent to a net profit interest) carved out of Southland Royalty's oil and gas leasehold and royalty interest in the San Juan Basin of northwestern New Mexico. This net overriding royalty interest (the "Royalty") is the principal asset of the Trust. Under the Trust indenture, PNC Bank, N.A as Trustee, has the primary function of collecting monthly net proceeds ("Royalty Income") attributable to the Royalty and making the monthly distributions to the Unit Holders after deducting administrative expenses and any amounts necessary for cash reserves. The San Juan Basin Royalty Trust is a New York Stock Exchange-listed entity, with Units trading under the symbol "SJT".[115]

Why was the company not included?

San Juan Basin Royalty Trust's principal asset is a royalty. The underlying properties include the

[114] https://www.plainsallamerican.com/, accessed 2/13/2024

[115] http://www.sjbrt.com/Home/default.aspx, accessed 2/15/2023

working, royalty, and other oil and natural gas interests. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

Southwestern Energy Company

Company Summary from Value Line:

Southwestern Energy Company is primarily engaged in the exploration & production of natural gas and oil. Exploration & production property locations include the Marcellus Shale. Also has E&P activities in Colorado. At 12/22, the company owned 21,625 billion cubic feet equivalent of total proven natural gas and oil reserves. Sold utility Arkansas Western Gas Co., 7/08. Had 1,118 employees at 12/31/22.

Additional Company Information from Website:

We are energy. For more than 90 years, Southwestern Energy has thrived because of a deep commitment to providing the energy that powers our world. Our success continues to be dependent upon the dedication of our employees to the company and to the communities in which we operate. Currently, SWN is among the largest natural gas and natural gas liquids producers in the United States. SWN is a growing independent energy company primarily engaged in the production and development of natural gas, natural gas liquids and crude oil within the nation's most prolific shale gas basins. We are explorers and producers. Every day, our people work to discover innovative new ways to fuel the future. Though we search far beyond our current operating footprint, our work is principally focused on the development of natural gas and natural gas liquids in the Marcellus and Utica Shales in Pennsylvania, Ohio and West Virginia and Louisiana's Haynesville and Bossier formations. We market and transport our products. Southwestern Energy markets and transports natural gas, natural gas liquids (NGLs) and oil. Our expertise, commercial support, market intelligence and a combination of transportation assets and relationships help move hydrocarbons to market at optimal valuations. Our gas team provides commercial and asset management services to our E&P operations. We secure, manage, and optimize the transport necessary to support large-scale production and sales of natural gas. Both teams collaborate to identify, lock in and drive value from production. SWN supports oil, condensate and NGL production sales, transport and related contracts. While much of SWN's production is gas, liquids contribute significant returns. The team negotiates optimal pricing and the transportation to take them to market. SWN contracts transportation services on a range of third party pipelines.[116]

Why was the company not included?

Southwestern Energy Company's main business segments include exploration and production of natural gas and oil. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

Suburban Propane Partners L.P.

Company Summary from Value Line:

Suburban Propane Partners, L.P., is a master limited partnership (MLP) that markets and distributes propane, fuel oil, and other refined fuels in the U.S., operating in Propane; Fuel Oil and Refined Fuels; Natural Gas and Electricity; and Heating, Ventilation, and Air Conditioning (HVAC). As of 9/24/22, serves about 1.0 million active propane customers through roughly 700 locations in 42 states, concentrated on the east and west coasts of the United States. Sold approximately 400 million gallons of propane and 22.8 million gallons of fuel oil in fiscal 2022. Has 3,174 employees.

Additional Company Information from Website:

[116] https://www.swn.com/about/, accessed 2/13/2024

Headquartered in Whippany, New Jersey, Suburban Propane is a nationwide marketer and distributor of a diverse array of products to meet the energy needs of our customers. Specializing in propane, heating oil and refined fuels, as well as the marketing of natural gas and electricity in deregulated markets. With nearly 3,300 full-time employees, Suburban Propane maintains business operations in 41 states, providing prompt, reliable service to approximately 1 million residential, commercial, industrial and agricultural customers through 700 locations.[117]

Why was the company not included?
Suburban Propane specializes in marketing and distributing fuel oil and refined fuels as well as the marketing of natural gas and electricity in deregulated markets. These specializations are not the same market segments as the companies we are responsible for valuing.

Summit Midstream Partners L.P.
Company Summary from Value Line:
Summit Midstream Partners, LP focuses on developing and operating midstream energy infrastructure assets primarily shale formations in the continental United States. The company provides natural gas gathering, compression, treating, and processing services, as well as crude oil and produced water gathering services. Its unconventional resource basins include the Appalachian Basin, which comprise the Utica and Point Pleasant shale formations in Ohio, and the Marcellus Shale formation in West Virginia; the Williston Basin that consists of the Bakken and Three Forks shale formations in northwestern North Dakota; the Denver-Julesburg Basin, which include the Niobrara and Codell shale formations in northeastern Colorado and southeastern Wyoming; the northern Delaware Basin that comprise the Wolfcamp and Bone Spring formations in southeastern New Mexico; and the Piceance Basin, which include the Mesaverde formation, and the Mancos and Niobrara shale formations in Colorado. Has 252 employees.

Additional Company Information from Website:
Headquartered in Houston, Texas, Summit Midstream Partners, LP (NYSE: SMLP) is a value-driven master limited partnership focused on developing, owning and operating midstream energy infrastructure assets that are strategically located in unconventional resource basins, primarily shale formations, in the continental United States.

We currently operate natural gas, crude oil and produced water gathering systems in five unconventional resource basins:

- the Appalachian Basin, which includes the Marcellus and Utica shale formations in West Virginia and Ohio;
- the Williston Basin in North Dakota, which includes the Bakken and Three Forks shale formations;
- the Denver-Julesburg Basin, which includes the Niobrara and Codell shale formations in Colorado and Wyoming;
- the Fort Worth Basin in Texas, which includes the Barnett Shale formation; and
- the Piceance Basin in Colorado, which includes the liquids-rich Mesaverde formation as well as the emerging Mancos and Niobrara Shale formations.

Our systems and the basins they serve are as follows:

- the Mountaineer Midstream system, which serves the Appalachian Basin;
- the Bison Midstream system, which serves the Williston Basin;

[117] https://www.suburbanpropane.com/about/, accessed 2/13/2024

- the Polar & Divide system, which serves the Williston Basin;
- the DFW Midstream system, which serves the Fort Worth Basin;
- the Grand River system, which serves the Piceance Basin;
- the Summit Utica system, which serves the Appalachian Basin; and
- the Niobrara G&P system, which serves the DJ Basin.

SMLP has an equity investment in and operates Double E Pipeline, LLC, which is natural gas transmission infrastructure that provides transportation service from multiple receipt points in the Delaware Basin to various delivery points in and around the Waha Hub in Texas. SMLP also has an equity investment in Ohio Gathering, which operates extensive natural gas gathering and condensate stabilization infrastructure in the Utica Shale in Ohio. We generate a substantial majority of our revenue under primarily long-term and fee-based gathering agreements with our customers. The majority of our gathering agreements are underpinned by areas of mutual interest ("AMIs") and minimum volume commitments ("MVCs"). Our AMIs provide that any production drilled by our customers within the AMIs will be shipped on our gathering systems. The MVCs are designed to ensure that we will generate a minimum amount of gathering revenue over the life of each respective gathering agreement. The fee-based nature of the majority of the gathering agreements enhances the stability of our cash flows and limits our direct commodity price exposure. Since our formation in 2009, our management team has established a track record of executing this strategy through the acquisition and subsequent development of DFW Midstream, Grand River, Bison Midstream, Polar & Divide, Mountaineer Midstream, Summit Utica, Niobrara G&P, and Double E Pipeline.[118]

Why was the company not included?
Summit Midstream Partners' main business segments are natural gas gathering, treating, and compression services. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

Targa Resources Corporation
Company Summary from Value Line:
Targa Resources is a leading provider of midstream services. It operates a diversified portfolio of midstream energy assets. Targa is engaged in the business of gathering, compressing, treating, processing, and selling natural gas, along with storing, fractionating, treating, transporting, and selling NGLs. Plant natural gas inlet 5,511.2 MMcf/d; Gross NGL production, 678.3 MBbl/d; Crude oil gathered 147.1 MBbl/d (as of 12/31/22). 2022 depr. rate: 4.6%. Has 2,850 employees.

Additional Company Information from Website:
We own, operate, acquire, and develop a diversified portfolio of complementary midstream infrastructure assets that allow us to efficiently supply natural gas and natural gas liquids (NGLs) to domestic and international markets to meet the increasing demand for cleaner, affordable fuel and feedstocks. As a predominately natural gas and NGL-focused energy infrastructure company, we are proud to help deliver safe, reliable products that fuel the low-carbon economy, and improve economic mobility and quality of life domestically and around the world.[119]

Why was the company not included?
Targa Resources Corporation has several other main business segments besides common carrier transportation of gas or fluids. These include, selling, gathering, compressing, treating, processing,

[118] http://www.summitmidstream.com/about, accessed 2/13/2024
[119] https://www.targaresources.com/about-us, accessed 2/14/2024

fractionating, etc. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

Western Midstream Partners L.P. (Formerly Western Gas Equity Partners, L.P.)

Company Summary from Value Line:

Western Midstream Partners, LP (formed by the merger between Western Gas Partners and its general partner Western Gas Equity in 2/19) is a growth-oriented master limited partnership. It is engaged in the acquisition, ownership, development, and operation of midstream pipeline assets. Has 14,712 miles of pipeline located in the Rocky Mountains, Texas/NM, and North-central, PA (146). Also owns, operates, or has equity interests in gathering systems, treating facilities, and natural gas processing plants.

Additional Company Information from Website:

Our core assets provide services for customers in the Delaware Basin in West Texas and New Mexico, and the DJ Basin in northeastern Colorado. Additional assets and investments are located in South Texas, Utah, Wyoming, and north-central Pennsylvania. We're engaged in the business of gathering, compressing, treating, processing, and transporting natural gas; gathering, stabilizing and transporting condensate, natural gas liquids (NGLs) and crude oil; and gathering and disposing of produced water for our customers. As a natural gas processor, we also buy and sell natural gas, NGLs, and condensate on our behalf and as an agent for our customers under certain contracts. In December 2019, we executed several agreements with Occidental that enabled us to operate as a standalone business. As a result of these agreements, our employee workforce and management team is employed directly by Western Midstream, rather than Occidental, facilitating independent managerial control of our strategic initiatives and day-to-day operations. Additionally, we expanded unitholder voting rights through revisions to our limited partnership agreement and to ensure that Occidental, as General Partner, is aligned with our public unitholders' interests. Western Midstream (WES) is publicly traded on the New York Stock Exchange under the symbol, WES.[120]

Why was the company not included?

Western Midstream Partners' main business segments include gathering and treating. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

World Kinect Corp. (Formerly World Fuel Services Corp.)

Company Summary from Value Line:

World Kinect Corp., formerly known as World Fuel Services Corp., a leading global fuel logistics company, is engaged in the worldwide marketing and sale of marine, aviation, and land fuel products and related services. Its Marine segment offers fuel and related services to maritime customers, including international container and tanker fleets among others. The Aviation segment provides aviation fuel to commercial airlines, and others. The Land segment provides fuel and related services to petroleum distributors among others. Has more than 4,300 employees.

Additional Company Information from Website:

To continue serving you in these dynamic markets, we have adopted a new parent company name: World Kinect Corporation. This change is intended to better reflect our ongoing transformation into a more resilient, diversified energy and solutions provider. Beyond this, customers will experience "business as usual" from our committed, connected experts. Learn more about what's driving this change and what to expect from World Kinect in the future.[121]

[120] http://www.westernmidstream.com/About/, accessed 2/14/2024
[121] https://www.wfscorp.com/, accessed 2/14/2024

World Kinect (NYSE: WKC) is a leading global energy management company, offering a broad suite of energy advisory, management and fulfillment services, digital and other technology solutions, as well as sustainability products and services across the energy product spectrum.[122]

Why was the company not included?
World Kinect is a global fuel distributor. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

[122] https://ir.worldkinect.com/, accessed 2/14/2024

Market Segment: Railroads

Companies Included in the Railroad Market Segment

Canadian National Railway Company

Company Summary from Value Line:

Canadian National Railway operates Canada's largest railroad system with 20,000 route miles spanning East-West across Canada and North-South to the Gulf of Mexico through the U.S. Midwest. Acquired BC Rail and GLT mid-'04; EJ&E 1/09. Petroleum & Chemicals, 19% of '22 revenues; Metals & Minerals, 12%; Forest Products, 12%; Intermodal, 30%; Coal, 5%; Grain & Fertilizer, 17%; Automotive, 5%. 2022 labor costs: 17% of revenue. 2022 operating ratio: 59.9%. Has about 24,000 employees.

Additional Company Information from Website:

A Leading North American Transportation and Logistics Company. Essential to the economy, the CN team of approximately 23,000 railroaders transports more than C$250 billion worth of goods annually for a wide range of business sectors, ranging from resource products to manufactured products to consumer goods, across a rail network of approximately 20,000 route-miles spanning Canada and mid-America. Spanning Canada and Mid-America as well as connecting ports on three coasts, the CN network penetrates deep into resource-rich and manufacturing-intensive regions, to move raw materials, intermediate goods and finished goods to market. Our reach extends beyond rail to offer fully integrated transportation and logistics services.[123]

Why was the company included?

Canadian National Railway is similar to (and is the parent of) the railroad companies that we are responsible for valuing. The company engages in railroad transportation services.

CSX Corporation

Company Summary from Value Line:

CSX Corporation provides rail, intermodal transportation, and rail-to-truck transload services. Has about 21,000 route miles in 23 states and two Canadian provinces, with links to more than 240 short-line railroads. Connects the Northeast, Midwest, and Canada with the Southeast. Principal freight: coal, fertilizer, chemicals, automobiles & parts, and intermodal cargo. Sold CSX World Terminals 2/05. 2022 rail operating ratio: 60.5%. Had about 22,600 employees, as of 12/31/22.

Additional Company Information from Website:

CSX Corporation, together with its subsidiaries based in Jacksonville, Fla., is one of the nation's leading transportation suppliers. The company's rail and intermodal businesses provide rail-based transportation services including traditional rail service and the transport of intermodal containers and trailers. Overall, the CSX Transportation network encompasses about 20,000 route miles of track in 23 states, the District of Columbia and the Canadian provinces of Ontario and Quebec. Our transportation network serves some of the largest population centers in the nation. Nearly two-thirds of Americans live within CSX's service territory. Our transportation network serves some of the largest population centers in the nation. Nearly two-thirds of Americans live within CSX's service territory. CSX serves major markets in the eastern United States and has access to over 70 ocean, river and lake port terminals along the Atlantic

[123] https://www.cn.ca/en/about-cn/, accessed 2/6/2024

and Gulf Coasts, the Mississippi River, the Great Lakes and the St. Lawrence Seaway. The company also has access to Pacific ports through alliances with western railroads. CSX moves a broad portfolio of products across the country in a way that minimizes the effect on the environment, takes traffic off an already congested highway system, and minimizes fuel consumption and transportation costs.[124]

Why was the company included?
CSX is similar to the railroad companies that we are responsible for valuing. The company engages in railroad transportation services.

Norfolk Southern Corporation
Company Summary from Value Line:
Norfolk Southern Corp. is the holding company formed by the merger of Norfolk & Western Railway and Southern Railway on 6/1/82. Its Norfolk Southern Railway subsidiary operates approximately 19,420 route miles of track in 22 eastern and southern states, plus the District of Columbia. Also owns a 58% stake in Conrail. ’22 freight revenue mix: coal, 12%; intermodal, 29%; agriculture/consumer prod./gov’t, 19%; metals/construction, 13%; other, 25%. Labor costs: about 21% of revenue. Operating ratio: 62.3%. Has 18,500 employees.

Additional Company Information from Website:
Since 1827, we've been moving the goods and materials that power the U.S. economy. Customer-centric and operations-driven, we are dedicated to advancing safety, serving communities, and driving innovation for tomorrow's rail. 19,500 + Route miles across 22 states and the District of Columbia, connecting 800 industrial sites, 175 warehouses, and 43 ports. 20,000 Talented conductors, engineers, and employees committed to safe, efficient rail transport. $1.5 Billion In capital investments including locomotives, freight cars, tracks, and bridges in one year.[125]

Why was the company included?
Norfolk Southern is similar to the railroad companies that we are responsible for valuing. The company engages in railroad transportation services.

Union Pacific Corporation
Company Summary from Value Line:
Union Pacific Corporation owns Union Pacific Railroad, the largest railroad in the United States in both track miles and total revenues, with nearly 32,236 route miles serving the western two-thirds of the United States. ’22 railroad revenue mix: Premium 32%; Industrial, 35%; Bulk, 33%. Roughly 10% of its sales from Mexico. Divested Overnite Transportation in 11/03. ’22 RR operating ratio: 60.1%. Has about 34,000 employees.

Additional Company Information from Website:
Union Pacific Railroad is the principal operating company of Union Pacific Corporation (NYSE: UNP). One of America's most recognized companies, Union Pacific Railroad connects 23 states in the western two-thirds of the country by rail, providing a critical link in the global supply chain. From 2013 to 2022, Union Pacific invested approximately $34 billion in its network and operations to support America's transportation infrastructure. The railroad's diversified business mix includes its Bulk, Industrial and Premium business groups. Union Pacific serves many of the fastest-growing U.S. population centers, operates from all major West Coast and Gulf Coast ports to eastern gateways, connects with Canada's rail

[124] https://www.csx.com/index.cfm/about-us/company-overview/, accessed 2/6/2024
[125] https://www.norfolksouthern.com/en/about-us/company-overview, accessed 2/6/2024

systems and is the only railroad serving all six major Mexico gateways. Union Pacific provides value to its roughly 10,000 customers by delivering products in a safe, reliable, fuel-efficient and environmentally responsible manner.[126]

Why was the company included?
Union Pacific is one of the railroad companies that we are responsible for valuing. The company engages in railroad transportation services.

Companies Not Included in the Railroad Market Segment

Canadian Pacific Kansas City

Company Summary from Value Line:
Canadian Pacific Kansas City Limited (CPKC) provides rail and intermodal freight transportation services over a 12,500-mile network from Montreal to Vancouver. It extends into the U.S. midwest and northeast via Soo Line, Delaware & Hudson, and DM&E (purchased 10/4/07) subsidiaries. The railroad operates in Mexico following ’21 purchase of Kansas City Southern, merger approved in ‘23. Grain shipments 21%, of 2022 freight revenue; intermodal, 26%; chemicals/plastics, 16%; coal, 7%; other, 30%. Operating ratio in ‘22: 61.4%. Employs 12,754 as of 12/31/22.

Additional Company Information from Website:
CPKC is the combination of two historic railways – Canadian Pacific (CP) and Kansas City Southern (KCS). Today, we are CPKC and have created the first and only transnational rail network in North America. Drawing on our strong foundations and heritage, CPKC moves essential goods across our 20,000-mile network to support economic growth throughout Canada, the U.S. and Mexico. Canadian Pacific (CP) and Kansas City Southern (KCS) were founded in the 1800's. CPKC was established on April 14, 2023, and with the same entrepreneurial spirit that guided these two iconic railways, we continue to create innovative transportation solutions that connect our customers with markets in North America and the world.[127]

Why was the company not included?
Canadian Pacific Railway completed the $31 billion acquisition of Kansas City Southern in 2021. Kansas City Southern shares were placed into a voting trust, ensuring independent operations between Kansas City Southern and Canadian Pacific Railway during the regulatory review process.[128] The merger was approved in 2023. We used Canadian Pacific Railway Limited as a guideline company for the 2023 Capitalization Rate Study before the merger with Kansas City Southern. We are not using Canadian Pacific Kansas City for the 2024 Capitalization Rate Study.

GATX Corporation

Company Summary from Value Line:
GATX Corp. specializes in tank car, freight car, and locomotive leasing. The company owns or has an interest in 143,874 railcars, and manages 295 railcars for third-party owners. Specialty unit finances marine and industrial equipment. The company sold in February of 2020 the American Steamship unit, which provided waterborne transportation of dry bulk commodities. Invests in joint ventures that complement existing businesses. Has about 1,900 employees.

Additional Company Information from Website:

[126] https://www.up.com/aboutup/corporate_info/uprrover/index.htm, accessed 2/6/2024
[127] https://www.cpkcr.com/en/about-cpkc, accessed 2/6/2024
[128] https://www.cpkcr.com/en/media/canadian-pacific-and-kansas-city-southern-combine-to-create-cpkc, accessed 2/14/2024

We are the leading global provider of railcar leasing and service to customers throughout North America, Europe, and India. Through Trifleet, we own, lease, and manage a global fleet of tank containers. Jointly with Rolls-Royce plc, we also own one of the largest aircraft spare engine leasing portfolios in the world. Across all our businesses, we provide innovative, unparalleled service that enables our customers to transport what matters safely and sustainably, while championing the well-being of our employees and communities. GATX has been headquartered in Chicago since our founding in 1898. [129]

Why was the company not included?
GATX Corporation specializes in tank car, freight car, and locomotive leasing. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

Greenbrier Companies Inc.
Company Summary from Value Line:
The Greenbrier Companies, Inc. designs, manufactures, repairs, and markets railroad freight cars and related equipment in North America, South America, and Europe. It also manufactures ocean-going marine barges. The company operates in three business segments: Manufacturing (85% of 2023 revenues); Maintenance Services (10%); Leasing & Services (5%). Inc.: OR. At 8/31/23, its backlog consisted of 30,900 railcars. Has about 13,800 employees.

Additional Company Information from Website:
We are one of the leading designers, manufacturers and marketers of railroad freight car equipment in North America, Europe, South America and other geographies as opportunities arise. We offer railcar management, regulatory compliance services and leasing services to railcar owners or other users of railcars in North America. We are a leading provider of freight railcar wheel services, maintenance and parts in North America. Through unconsolidated affiliates we produce rail and industrial components and have an ownership stake in a railcar manufacturer in Brazil. We operate an integrated business model in North America that combines freight car manufacturing, wheel services, railcar maintenance, component parts, leasing and fleet management services. Our model is designed to provide customers with a comprehensive set of freight car product and service solutions by utilizing our substantial engineering, mechanical and technical capabilities as well as our experienced commercial personnel. Our integrated model allows us to develop cross-selling opportunities and synergies among our various operating segments thereby enhancing our margins. We believe our integrated model is difficult to duplicate and provides greater value for our customers and investors.[130]

Why was the company not included?
Greenbrier Companies designs, manufactures, repairs, and markets railroad freight cars and related equipment. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

USD Partners L.P.
Company Summary from Value Line:
USD Partners, LP is a fee-based, growth-oriented master limited partnership formed by US Development Group LLC, to acquire, develop and operate midstream infrastructure and complementary logistics solutions for crude oil, biofuels and other energy-related products. It generates substantially all of its operating cash flows from multi-year, take-or-pay contracts with primarily investment grade

[129] https://www.gatx.com/about-us/, accessed 2/7/2024
[130] Greenbrier Companies 2023 Annual Report, page 4. https://investors.gbrx.com/annual-reports-proxies, accessed 2/7/2024

customers, including major integrated oil companies, refiners and marketers. The company's network of crude oil terminals facilitates the transportation of heavy crude oil from Western Canada to key demand centers across North America. USD's operations include railcar loading and unloading, storage and blending in onsite tanks, inbound and outbound pipeline connectivity, truck transloading, as well as other related logistics services. It also provides its customers with leased railcars and fleet services to facilitate the transportation of liquid hydrocarbons and biofuels by rail. Has 85 employees.

Additional Company Information from Website:
USD Partners LP is a fee-based, growth oriented master limited partnership formed in 2014 by US Development Group LLC to acquire, develop and operate energy-related logistics assets, including rail terminals and other high-quality and complementary midstream infrastructure. In addition, we provide our customers with railcars and fleet services related to the transportation of liquid hydrocarbons and biofuels by rail. We generate substantially all of our operating cash flow from multi-year, take-or-pay contracts. Rail transportation of energy-related products provides flexible access to key demand centers on a relatively low fixed-cost basis with faster physical delivery, while preserving the specific quality of customer products over long distances.[131]

Why was the company not included?
USD Partners L.P.'s operations include railcar loading and unloading, storage and blending in onsite tanks, inbound and outbound pipeline connectivity, truck transloading, and other logistic services. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

Wabtec Corporation
Company Summary from Value Line:
Wabtec provides equipment and services to the global rail industry. Products include brakes, air compressors, heat exchangers, cooling systems, door assemblies, and event recorders. The Freight division (71% of 2022 revs) manufactures and services components used in freight trains; the Transit division (29%) makes products for passenger vehicles, e.g., subways and buses. Acquired GE transportation assets (2/19). Foreign revenues: 50%. Officers and directors own 1.2% of common stock outstanding; Vanguard, 10.9%; BlackRock, 6.5% (4/23 proxy). Has about 25,000 employees.

Additional Company Information from Website:
Wabtec is a leading global provider of equipment, systems, digital solutions, and value-added services for the freight and transit rail sectors. Drawing on over 150 years of experience, we are leading the way in safety, efficiency, reliability, innovation, and productivity. Whether its freight, transit, mining, industrial or marine, our expertise, technologies, and people – together – are accelerating the future of transportation. Our people, with their extraordinary collective talent, vision and experience are our biggest asset. Our dynamic leadership team has a proven strategy to empower over 27,000 employees in over 50 countries around the world.[132]

Why was the company not included?
Wabtec Corporation provides equipment and services to the global rail industry. These business segments are not similar to the main business segments of the companies we are responsible for valuing.

[131] https://investor.usdpartners.com/investors/investor-center-home/default.aspx, accessed 2/7/2024
[132] https://www.wabteccorp.com/about-wabtec, accessed 2/7/2024