

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

IN THE MATTER OF THE)
APPLICATION OF CORIX UTAH CITY)
HEATING AND COOLING LLC TO) Docket No. 26-2666-01
ESTABLISH A THERMAL TARIFF WITH)
RATES AND TERMS OF SERVICE)

DIRECT TESTIMONY OF

David Garrett

FOR THE

OFFICE OF CONSUMER SERVICES

September 3, 2026

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I. INTRODUCTION

Q. STATE YOUR NAME AND OCCUPATION.

A. My name is David J. Garrett. I am a consultant specializing in public utility regulation. I am the managing member of Resolve Utility Consulting PLLC.

Q. SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I received a B.B.A. with a major in Finance, an M.B.A., and a Juris Doctor from the University of Oklahoma. I worked in private legal practice for several years before accepting a position as assistant general counsel at the Oklahoma Corporation Commission in 2011. At the commission, I worked in the Office of General Counsel in regulatory proceedings. In 2012, I began working for the Public Utility Division as a regulatory analyst providing testimony in regulatory proceedings. After leaving the Oklahoma Commission, I formed Resolve Utility Consulting, PLLC, where I have represented various consumer groups and state agencies in numerous utility regulatory proceedings. I am a Certified Rate of Return Analyst with the Society of Utility and Regulatory Financial Analysts and a Certified Depreciation Professional with the Society of Depreciation Professionals. A more complete description of my qualifications and regulatory experience is included in my curriculum vitae.¹

Q. ON WHOSE BEHALF ARE YOU SUBMITTING TESTIMONY IN THIS PROCEEDING?

A. I am submitting testimony on behalf of the Office of Consumer Services ("OCS").

¹ Exhibit OCS-2.1D.

23 **Q. PLEASE DESCRIBE THE SCOPE AND PURPOSE OF YOUR TESTIMONY.**

24 A. My testimony presents my cost of capital estimate and authorized rate of return
25 recommendation for Corix Utah City Heating and Cooling LLC ("Corix" or the
26 "Company") and other related issues, and I respond to the direct testimony of
27 Company witness Josh Figueroa regarding these issues.

28 **Q. ARE YOU SPONSORING ANY EXHIBITS IN SUPPORT OF YOUR DIRECT**
29 **TESTIMONY?**

30 A. Yes, I am sponsoring Exhibits OCS-2.1D through OCS-2.16D, as outlined in the
31 list of exhibits above.

II. EXECUTIVE SUMMARY

32 **Q. PLEASE SUMMARIZE THE COMPANY'S POSITION REGARDING THE**
33 **AWARDED RATE OF RETURN IN THIS CASE.**

34 A. Corix is proposing an authorized Return on Equity ("ROE") of 10.5% and a
35 ratemaking capital structure consisting of 50% debt and 50% equity. In Mr.
36 Figueroa's testimony he evaluates these Company proposals and concludes they
37 are reasonable. Mr. Figueroa relies on the Discounted Cash Flow ("DCF") Model,
38 the Capital Asset Pricing Model ("CAPM"), and other models to estimate Corix's
39 cost of equity.

40 **Q. PLEASE SUMMARIZE YOUR COST OF EQUITY ESTIMATE FOR CORIX.**

41 A. A utility's authorized ROE should be based on (though not necessarily equal to) a
42 reasonable estimate of its cost of equity. To estimate Corix's cost of equity, I
43 performed the CAPM and DCF Model on a proxy group of utility companies with

relatively similar risk profiles. I conducted two variations of both the CAPM and DCF Model. The results are shown in the figure below.

**Figure 1:
Cost of Equity Model Results**

Model	Cost of Equity
CAPM (at Proxy Debt Ratio)	8.3%
Hamada CAPM (at Company-Proposed Debt Ratio)	8.4%
DCF Model (Analyst Growth)	7.8%
DCF Model (Sustainable Growth)	6.8%
Model Average	7.8%
Model Range	6.8% -- 8.4%
Recommended ROE	9.0%

As shown in this figure, the range of cost of equity indicated from the financial models is 6.8% - 8.4%.²

Q. PLEASE EXPLAIN WHY THE RESULT OF YOUR HAMADA VARIATION OF THE CAPM IS HIGHER THAN THE RESULTS OF THE UNADJUSTED CAPM.

A. Corix is proposing a ratemaking capital structure consisting of 50% debt. However, the average capital structure of the proxy group contains less debt, at 48%. This means that Corix's proposed capital structure (if adopted) would suggest the Company has slightly more financial risk than the proxy group based on a comparison of the debt ratios. The CAPM result of the proxy group of 8.3% is

² See also Exhibit OCS-2.12D.

necessarily and mathematically connected to the capital structure of the proxy group. When using a proxy group to estimate the cost of equity of a non-publicly traded company, the capital structure of that company can be mathematically aligned with the proxy group and impact the indicated cost of equity under the CAPM for the Company being studied. This adjustment is applied through the Hamada Model. Since Corix has slightly more debt in its proposed capital structure than the proxy group, its indicated cost of equity under the Hamada-adjusted CAPM is slightly higher than the base model results. Thus, I estimate Corix's CAPM cost of equity to be 8.4% rather than 8.3%.

Q. WHAT AUTHORIZED RETURN ON EQUITY DO YOU RECOMMEND FOR CORIX IN THIS PROCEEDING?

A. I recommend that the Commission authorize an ROE of 9.0% for Corix. As discussed previously, my market-based cost of equity analysis produces an estimate of approximately 8.4%, based primarily on the results of my CAPM analysis. Accordingly, my recommended authorized ROE includes a reasonable margin above my estimate of Corix's current market-based cost of equity.

Q. WHY DO YOU RECOMMEND AN AUTHORIZED ROE THAT IS HIGHER THAN YOUR ESTIMATED COST OF EQUITY?

A. Cost of equity models are useful tools for estimating the return currently required by investors, but the authorized ROE is ultimately a regulatory determination. The standards established in *Hope* and *Bluefield* focus on whether the end result provides a fair return that is commensurate with returns available from investments of comparable risk, supports the utility's financial integrity, and permits access to

capital on reasonable terms. Those standards do not require a commission to adopt the precise numerical result produced by any particular financial model. In this case, I consider my 8.4% cost of equity estimate to be an important benchmark, but not necessarily the precise ROE that the Commission must authorize. A 9.0% authorized ROE provides a reasonable regulatory margin above the modeled cost of equity while remaining consistent with current capital-market evidence.

Q. DID YOU CONSIDER ANY CHARACTERISTICS OF CORIX SPECIFICALLY IN DEVELOPING YOUR RECOMMENDATION?

A. Yes. Corix is somewhat different from the traditional investor-owned electric and natural gas utilities typically regulated in Utah. It operates a district heating and cooling system and therefore does not fit perfectly within any single conventional utility proxy group. That circumstance does not justify disregarding the market evidence, but it does support some degree of regulatory judgment in translating the results of the cost-of-equity models into an authorized ROE. In particular, because no publicly traded company precisely replicates Corix's operations and because Corix does not presently have an established authorized ROE that provides a direct regulatory benchmark, I believe it is reasonable to recommend an ROE modestly above my 8.4% cost of equity estimate rather than mechanically adopting that estimate as the authorized return.

Q. WHY DO YOU CONSIDER 9.0% A REASONABLE RESULT FOR CUSTOMERS AND INVESTORS?

102 A. A 9.0% authorized ROE provides Corix with a return that is approximately 60 basis
103 points above my estimate of its market-based cost of equity. In my opinion, that
104 margin is sufficient to provide a reasonable regulatory cushion while avoiding an
105 unnecessarily high return that would increase customer rates without
106 corresponding evidence of a higher investor-required return. Accordingly, I believe
107 9.0% reasonably balances the interests of customers and investors and satisfies
108 the applicable fair-return standards.

109 **Q. IS YOUR 9.0% RECOMMENDATION SUPPORTED BY THE OVERALL COST-**
110 **OF-EQUITY EVIDENCE IN THIS CASE EVEN THOUGH IT IS ABOVE THE**
111 **HIGHEST RESULT OF YOUR OWN MODELS?**

112 A. Yes. My financial models are intended to estimate Corix's current market-based
113 cost of equity, while the authorized ROE is ultimately a regulatory determination
114 based on the entire evidentiary record. My highest modeled cost-of-equity estimate
115 is approximately 8.4%, and my 9.0% recommendation is only 60 basis points
116 above that benchmark. I believe that modest margin is reasonable in light of Corix's
117 status as a developing district-energy utility, the absence of a publicly traded
118 company that precisely replicates its operations, and the lack of an established
119 authorized ROE for Corix that would provide a direct regulatory benchmark. In
120 addition, Mr. Figueroa's own multi-stage DCF analysis - under which short-term
121 growth rates are ultimately constrained toward sustainable economic growth -
122 produces results of approximately 9.0%. Thus, although 9.0% is above the
123 numerical results of my own market-based models, it is supported by the broader
124 cost-of-equity evidence in this record.

Q. WHAT IS THE COMPANY'S PROPOSED COST OF DEBT FOR RATEMAKING PURPOSES?

A. Corix proposes a cost of debt of 7.49%. This is based on an intercompany loan from an affiliated entity. Because that rate was not established through an arm's-length market transaction, it does not provide reliable evidence of the market cost of debt that customers should bear. I compared the Company's proposed cost of debt with the estimated average cost of debt of the utilities in the proxy group. The proxy group's average cost of debt is 5.5%. Thus, Corix's proposed rate is about 200 basis points above the market-based proxy-group benchmark. In my opinion, the Commission should use 5.5% as the cost of debt for purposes of calculating a fair authorized rate of return for the Company.

Q. PLEASE SUMMARIZE YOUR RATE OF RETURN RECOMMENDATION.

A. My authorized ROE and capital structure recommendations would result in a weighted average authorized rate of return of 7.25% for Corix, as shown in the following figure.³

**Figure 2:
Rate of Return Recommendation**

Capital Component	Proposed Ratio	Cost Rate	Weighted Cost
Long-Term Debt	50.0%	5.50%	2.75%
Common Equity	50.0%	9.00%	4.50%
Total	100.0%		7.25%

³ See also Exhibit OCS-2.15D.

My proposed adjustments are discussed in more detail in my testimony.

III. REGULATORY STANDARDS

Q. PLEASE DISCUSS THE LEGAL STANDARDS GOVERNING THE AWARDED RATE OF RETURN ON CAPITAL INVESTMENTS FOR REGULATED UTILITIES.

A. In *Wilcox v. Consolidated Gas Co. of New York*, the U.S. Supreme Court first addressed the meaning of a fair rate of return for public utilities.⁴ The Court found that “the amount of risk in the business is a most important factor” in determining the appropriate allowed rate of return.⁵ In the two landmark cases that followed, the Court set forth the standards by which public utilities are allowed to earn a return on capital investments. First, in *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, the Court held:

A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public. . . but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.⁶

Second, in *Federal Power Commission v. Hope Natural Gas Company*, the Court expanded on the guidelines set forth in *Bluefield* and stated:

⁴ *Wilcox v. Consolidated Gas Co. of New York*, 212 U.S. 19 (1909).

⁵ *Id.* at 48.

⁶ *Bluefield Water Works & Improvement Co. v. Public Service Comm’n of West Virginia*, 262 U.S. 679, 692-93 (1923).

From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.⁷

I believe the cost of capital models I have employed in this case are in accordance with the foregoing legal standards.

Q. WHAT ROLE SHOULD THE COMPANY'S MARKET-BASED COST OF CAPITAL PLAY IN DETERMINING THE AUTHORIZED RATE OF RETURN?

A. The market-based cost of capital provides the essential economic benchmark for determining a fair authorized return. From the investor's perspective, the required return represents the return necessary to attract capital to an investment of comparable risk. From the utility's perspective, which required return represents its cost of capital. Accordingly, the financial models used to estimate the cost of equity provide important evidence regarding the return necessary to satisfy the comparable-risk and capital-attraction principles established in *Hope* and *Bluefield*.

The authorized ROE, however, is ultimately a regulatory determination and need not mechanically equal a particular numerical result produced by a financial model. Cost of equity models necessarily involve estimates and assumptions, and a commission may reasonably consider the totality of the evidence in translating those estimates into an authorized return. In this case, my market-based analyses

⁷ *Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944) (emphasis added) (internal citations omitted).

190 produce a range of approximately 6.8% to 8.4%, with approximately 8.4%
191 providing an important benchmark. My recommended 9.0% ROE is grounded in
192 that market evidence while providing a reasonable regulatory margin above the
193 modeled cost of equity

194 **Q. WHAT DOES THIS LEGAL STANDARD MEAN FOR DETERMINING THE**
195 **AWARDED RETURN AND THE COST OF CAPITAL?**

196 A. It is important to understand that the *awarded* return and the *cost* of capital are
197 related but different concepts. The two concepts are related in that the legal and
198 technical standards encompassing this issue require that the awarded return be
199 grounded in the market-based cost of capital. On the other hand, the two concepts
200 are different in that the legal standards do not mandate that awarded returns
201 exactly match the cost of capital. Awarded returns are set through the regulatory
202 process and may be influenced by factors other than objective market drivers. The
203 cost of capital, on the other hand, should be evaluated objectively and be closely
204 tied to economic realities. In other words, the cost of capital is driven by stock
205 prices, dividends, growth rates, and — most importantly — it is driven by risk. The
206 cost of capital can be estimated by financial models used by firms, investors, and
207 academics around the world for decades. The problem is, with respect to
208 regulated utilities, there has been a trend in which awarded returns fail to closely
209 track with actual market-based cost of capital, as further discussed below.⁸ To the

⁸ See *Application of Rocky Mountain Power for Authority to Increase its Retail Electric Utility Service Rates in Utah and for Approval of its Proposed Electric Service Schedules and Electric Service Regulations*, Docket No. 24-035-04, Order issued April 25, 2025 at 28 (stating that “authorized ROEs nationwide have likely overstated the actual cost of capital in recent years,” and citing studies identified by OCS showing that the “gap between authorized ROEs and [certain] benchmarks suggest that regulators have been

210 extent this occurs, the results are detrimental to ratepayers and the state's
211 economy.

212 **Q. DESCRIBE THE ECONOMIC IMPACT THAT OCCURS WHEN THE AWARDED**
213 **RETURN STRAYS TOO FAR FROM THE U.S. SUPREME COURT'S COST OF**
214 **EQUITY STANDARD.**

215 A. When an authorized ROE is set materially above the market-based cost of equity
216 without evidence supporting the additional premium, it can overcompensate
217 investors and unnecessarily increase customer rates. If the Commission were to
218 adopt the Company's position in this case, it would be permitting an excess
219 transfer of wealth from customers to shareholders. Moreover, establishing an
220 awarded return that significantly exceeds the true cost of capital effectively
221 prevents the awarded returns from changing along with economic conditions. This
222 is especially true given the fact that regulators tend to be influenced by the awarded
223 returns in other jurisdictions, regardless of the various unknown factors influencing
224 those awarded returns. This is yet another reason why it is crucial for regulators
225 to focus on the target utility's actual *cost* of equity, rather than awarded returns
226 from other jurisdictions. Awarded returns may be influenced by settlements and
227 other political factors not based on true market conditions. In contrast, the market-
228 based cost of equity as estimated through objective models is not influenced by
229 these factors but is instead driven by market-based factors. If regulators rely too

approving ROEs that are [higher than] the cost of equity benchmarks." (quoting Karl Dunkle Werner and Stephen Jarvis, "Rate of Return Regulation Revisited," Working Paper, Energy Institute, University of California at Berkeley, 2022 and 2024. See Exhibit OCS 2.16D for Werner Jarvis study.) (alterations in original)).

heavily on the awarded returns from other jurisdictions, it can create a cycle over time that bears little relation to the market-based cost of equity.

IV. COST OF DEBT

Q. WHAT IS THE COMPANY'S PROPOSED COST OF DEBT FOR RATEMAKING PURPOSES?

A. Corix proposes a cost of debt of 7.49%. This rate is substantially higher than the cost of debt I observe for the publicly traded utilities included in the proxy group, as well as their operating subsidiaries. More importantly, the Company's proposed cost of debt is not based on debt issued through an arm's-length transaction in the capital markets. Rather, it is based on an intercompany loan from an affiliated entity.

Q. WHY IS THE AFFILIATED NATURE OF THE DEBT RELEVANT?

A. Transactions between affiliated entities present an inherent conflict of interest because the interest rate is established between entities under common ownership rather than through a competitive market transaction between independent parties. An intercompany interest rate may be appropriate for internal corporate purposes, but that fact does not establish that the rate represents the market cost of debt that should be borne by regulated customers. In arm's-length financing, an independent lender evaluates the borrower's credit risk and competes with other providers of capital. The resulting interest rate therefore provides observable market evidence regarding the borrower's cost of debt. An affiliate loan does not provide the same market discipline. Accordingly, the relevant regulatory question is not simply what interest rate the parent or affiliate chose to charge the regulated

utility, but what rate the utility would reasonably incur if the financing were obtained on competitive, arm's-length terms.

Q. WHAT COST OF DEBT DO YOU RECOMMEND FOR ESTABLISHING THE AUTHORIZED RATE OF RETURN IN THIS CASE?

A. I recommend using the average cost of debt of the proxy group. In my opinion, this provides a more objective and market-based estimate of the cost of debt reasonably associated with a utility of comparable risk. The same basic reason that supports the use of a proxy group to estimate the cost of equity applies here. When the target utility does not have reliable market-based financing data, information from comparable utilities can provide an objective benchmark. In this case, that approach is preferable to relying on an interest rate established through a non-arm's-length transaction between affiliated entities.

Q. WOULD REJECTING THE COMPANY'S PROPOSED COST OF DEBT INTERFERE WITH CORIX'S FINANCING ARRANGEMENTS?

A. No. As with capital structure, a utility's actual debt financing is within the discretion of company management. The Company and its affiliates are free to structure their internal financing arrangements as they consider appropriate. However, it is incumbent on the Commission to determine what financing costs should reasonably be recovered from customers through regulated rates. The Commission's ultimate objective is not to set a fair ROE (though that is a critical component), but a fair, weighted average rate of return. The cost of debt is also a component of the rate of return. Thus, establishing a fair cost of debt is a necessary part of establishing a fair rate of return. If an affiliate elects to charge

the regulated utility a rate above the market cost reasonably available to comparable utilities, customers should not automatically be required to absorb that difference. Otherwise, an affiliated corporate group could increase regulated revenue requirements simply by establishing an above-market interest rate between entities under common control. The use of an affiliated loan should not permit a regulated utility to substitute an internally established transfer price for a market price. In ratemaking, the relevant cost is the reasonable economic cost of obtaining capital, not necessarily the accounting charge selected by affiliated entities. Where reliable market evidence indicates that comparable utilities finance debt at materially lower rates, that market evidence should receive greater weight.

Q. WHAT IS THE ESTIMATED AVERAGE COST OF DEBT OF THE PROXY GROUP?

A. The estimated average cost of debt for the proxy group is 5.5%⁹. This figure is rounded up to the nearest one-half percent in the interest of being conservative. Corix's proposed 7.49% cost of debt is approximately 200 basis points higher than my already-conservative 5.5% market benchmark. In my opinion, customers should not be required to bear such a substantial premium merely because affiliated companies elected to establish an intercompany borrowing rate at that level. If the Company contends that its market-based borrowing cost would actually be materially higher than that of comparable utilities, it should demonstrate that proposition with objective market evidence.

⁹ See Exhibit OCS-2.13D.

V. COST OF EQUITY METHODOLOGY

Q. DISCUSS YOUR APPROACH TO ESTIMATING THE COST OF EQUITY IN THIS CASE.

A. While a competitive firm must estimate its own cost of capital to assess the profitability of competing capital projects, regulators determine a utility's cost of capital to establish a fair rate of return. The legal standards set forth above do not include specific guidelines regarding the models that must be used to estimate the cost of equity. Over the years, however, regulatory commissions have consistently relied on several models. The models I have employed in this case (DCF and CAPM) have been the two most widely used and accepted in regulatory proceedings for many years. The specific inputs and calculations for these models are described in more detail below.

Q. PLEASE EXPLAIN WHY YOU USED MULTIPLE MODELS TO ESTIMATE THE COST OF EQUITY.

A. The models used to estimate the cost of equity attempt to measure the ROE required by investors by estimating several different inputs. It is preferable to use multiple models because the results of any one model may contain a degree of imprecision, especially depending on the reliability of the inputs used at the time of conducting the model. By using multiple models, the analyst can compare the results of the models and look for outlying results and inconsistencies. Likewise, if multiple models produce a similar result, it may indicate a narrower range for the cost of equity estimate.

319 **Q. PLEASE DISCUSS THE BENEFITS OF CHOOSING A PROXY GROUP OF**
320 **COMPARABLE COMPANIES IN CONDUCTING COST OF CAPITAL**
321 **ANALYSES.**

322 A. The cost of equity models in this case can be used to estimate the cost of capital
323 of any individual, publicly traded company. There are advantages, however, to
324 conducting cost of capital analysis on a “proxy group” of companies that are
325 comparable to the target company. First, it is better to assess the financial
326 soundness of a utility by comparing it to a group of other financially sound utilities.
327 Second, using a proxy group provides more reliability and confidence in the overall
328 results because there is a larger sample size. Finally, the use of a proxy group is
329 often a pure necessity when the target company is a subsidiary that is not publicly
330 traded. This is because the financial models used to estimate the cost of equity
331 require information from publicly traded firms, such as stock prices and dividends.

332 **Q. DESCRIBE THE PROXY GROUP YOU SELECTED IN THIS CASE.**

333 A. In this case, I chose to use the same proxy group used by Corix’s cost of equity
334 witness, Mr. Figueroa.¹⁰ In his testimony, Mr. Figueroa presents a thorough
335 discussion of his proxy group selection. He selected both a group of natural gas
336 companies and a group of water utilities. According to Mr. Figueroa, “Natural Gas
337 utilities operate a network of distribution pipes to serve end-users. A significant
338 portion of natural gas utility demand is to serve heating demand, similar to services
339 provided by UCDEU. However, the sample is relatively small due to the limited

¹⁰ Exhibit OCS-2.2D.

number of publicly traded natural gas utility companies in the U.S.”¹¹ While I do not think it would be unreasonable to use the proxy group comprised of natural gas companies, I also think Mr. Figueroa’s approach to the proxy group has merit in that it can be beneficial to have a larger sample size for the cost of equity analysis. Moreover, the risk profiles of the companies in the water group are relatively similar to those of the gas group. By using the same proxy group of 12 companies, the Commission can see a direct comparison of our cost of equity modeling results.

Q. PLEASE DISCUSS THE GENERAL RELATIONSHIP BETWEEN RISK AND RETURN.

A. Risk is among the most important factors for the Commission to consider when determining the allowed return. Thus, it is necessary to understand the direct relationship between risk and return: the more (or less) risk an investor assumes, the larger (or smaller) return the investor will demand. There are two primary types of risk: firm-specific risk and market risk.

Q. DISCUSS THE DIFFERENCES BETWEEN FIRM-SPECIFIC RISK AND MARKET RISK.

A. Firm-specific risk affects individual companies, rather than the entire market. For example, a competitive firm might overestimate customer demand for a new product, resulting in reduced sales revenue. This is an example of a firm-specific risk called “project risk.”¹² There are several other types of firm-specific risks, including (1) “financial risk,” the risk that equity investors of leveraged firms face

¹¹ Direct Testimony of Josh Figueroa, p. 41, lines 736-739.

¹² Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*, 3rd ed., John Wiley & Sons, Inc., pp. 62-63 (2012).

361 as residual claimants on earnings; (2) “default risk,” the risk that a firm will default
362 on its debt securities; and (3) “business risk,” which encompasses all other
363 operating and managerial factors that may result in investors realizing less than
364 their expected return in that particular company. While firm-specific risk affects
365 individual companies, market risk affects all companies in the market to varying
366 degrees. Examples of market risk include interest rate risk, inflation risk, and the
367 risk of major socio-economic events. When there are changes in these risk factors,
368 they affect all firms in the market to some extent.¹³

369 Analysis of the U.S. market in 2001 provides a good example for contrasting
370 firm-specific risk and market risk. During that year, Enron Corporation’s stock fell
371 from \$80 per share to a point where the company filed bankruptcy at the end of
372 the year. If an investor’s portfolio had held only Enron stock at the beginning of
373 2001, this irrational investor would have lost the entire investment by the end of
374 the year due to assuming the full exposure of Enron’s firm-specific risk (in that
375 case, imprudent management). On the other hand, a rational, diversified investor
376 who invested the same amount of capital in a portfolio holding every stock in the
377 S&P 500 would have had a much different result that year. The rational investor
378 would have been relatively unaffected by the fall of Enron because his portfolio
379 included about 499 other stocks. Each of those stocks, however, would have been
380 affected by various *market* risk factors that occurred that year. Thus, the rational
381 investor would have incurred a relatively minor loss due to market risk factors,

¹³ Zvi Bodie, Alex Kane & Alan J. Marcus, *Essentials of Investments*, 9th ed., McGraw-Hill/Irwin, p. 149 (2013).

while the irrational investor would have lost everything due to firm-specific risk factors.

Q. CAN INVESTORS MINIMIZE FIRM-SPECIFIC RISK?

A. Yes. A fundamental concept in finance is that firm-specific risk can be substantially reduced through diversification.¹⁴ If someone irrationally invested all their funds in one firm, they would be exposed to all the firm-specific risk *and* the market risk inherent in that single firm. Rational investors, however, are risk-averse and seek to eliminate risk they can control. The easiest way to eliminate firm-specific risk is by adding more stocks to their portfolio, *i.e.*, diversifying. There are two reasons why diversification eliminates firm-specific risk. First, each stock in a diversified portfolio represents a much smaller percentage of the overall portfolio than it would in a portfolio of just one or a few stocks. Thus, any firm-specific action that changes the price of one stock in the diversified portfolio will have only a small impact on the entire portfolio.¹⁵

The second reason why diversification substantially reduces firm-specific risk is that the effects of firm-specific actions on stock prices can be either positive or negative for each stock. Thus, in large, diversified portfolios, the net effect of these positive and negative firm-specific risk factors will be essentially zero and will not affect the value of the overall portfolio.¹⁶ Firm-specific risk is also called “diversifiable risk” because it can be easily reduced through diversification.

¹⁴ John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do*, 3rd ed., South Western Cengage Learning, pp. 179-80 (2010).

¹⁵ *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*, p. 64.

¹⁶ *Id.*

Q. BECAUSE FIRM-SPECIFIC RISK CAN BE SUBSTANTIALLY REDUCED THROUGH DIVERSIFICATION, DOES THE MARKET REWARD SUCH RISK THROUGH HIGHER RETURNS?

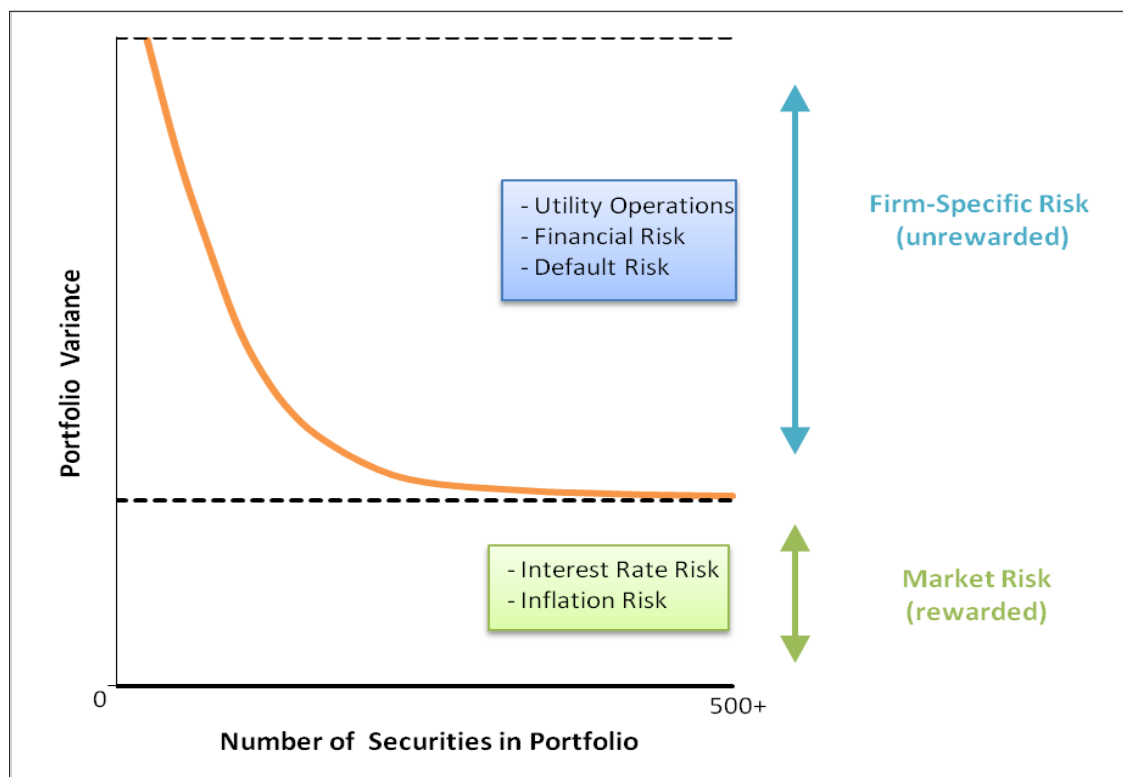
A. No. It is well known and accepted that, because investors reduce firm-specific risk through diversification, they know they cannot expect a higher return for assuming the firm-specific risk in any one company. Thus, the risks associated with an individual firm's operations are not rewarded by the market. In fact, firm-specific risk is also called "unrewarded" risk for this reason. Market risk, on the other hand, cannot be eliminated through diversification. Because market risk cannot be eliminated through diversification, investors expect a return for assuming this type of risk. Market risk is also called "systematic risk." Scholars recognize the fact that market risk, or "systematic risk," is the only type of risk for which investors expect a return for bearing:

If investors can cheaply eliminate some risks through diversification, then we should not expect a security to earn higher returns for risks that can be eliminated through diversification. Investors can expect compensation only for bearing systematic risk (i.e., risk that cannot be diversified away).¹⁷

These important concepts are illustrated in the figure below.

¹⁷ *Corporate Finance: Linking Theory to What Companies Do*, p. 180 (emphasis added).

**Figure 3:
Effects of Portfolio Diversification**



This figure shows that as stocks are added to a portfolio, the amount of firm-specific risk is reduced until it is essentially eliminated. No matter how many stocks are added, however, there remains a certain level of fixed market risk. And market risk is the only type of risk that is rewarded by the market. However, this does not mean that all companies are exposed to the same level of market risk. Rather, the market risk to which a company is exposed must be measured individually—in this case, for Corix—and it is Corix's market risk that the Commission should consider when determining the allowed return.

Q. DESCRIBE HOW MARKET RISK IS MEASURED.

A. Investors who want to eliminate firm-specific risk must hold a fully diversified portfolio. To determine the amount of risk that a single stock adds to the overall

market portfolio, investors measure the covariance between a single stock and the market portfolio. The result of this calculation is called “beta.”¹⁸ Beta represents the sensitivity of a given security to the market as a whole. The market portfolio of all stocks has a beta equal to one. Stocks with betas greater than 1.0 are relatively more sensitive to market risk than the average stock. For example, if the market increases (or decreases) by 1.0%, a stock with a beta of 1.5 will, on average, increase (or decrease) by 1.5%. In contrast, stocks with betas of less than 1.0 are less sensitive to market risk, such that if the market increases (or decreases) by 1.0%, a stock with a beta of 0.5 will, on average, only increase (or decrease) by 0.5%. Thus, stocks with low betas are relatively insulated from market conditions. The beta term is used in the CAPM to estimate the cost of equity, which is discussed in more detail later in my testimony.

Q. ARE PUBLIC UTILITIES CHARACTERIZED AS DEFENSIVE FIRMS THAT HAVE LOW BETAS, LOW MARKET RISK, AND ARE RELATIVELY INSULATED FROM OVERALL MARKET CONDITIONS?

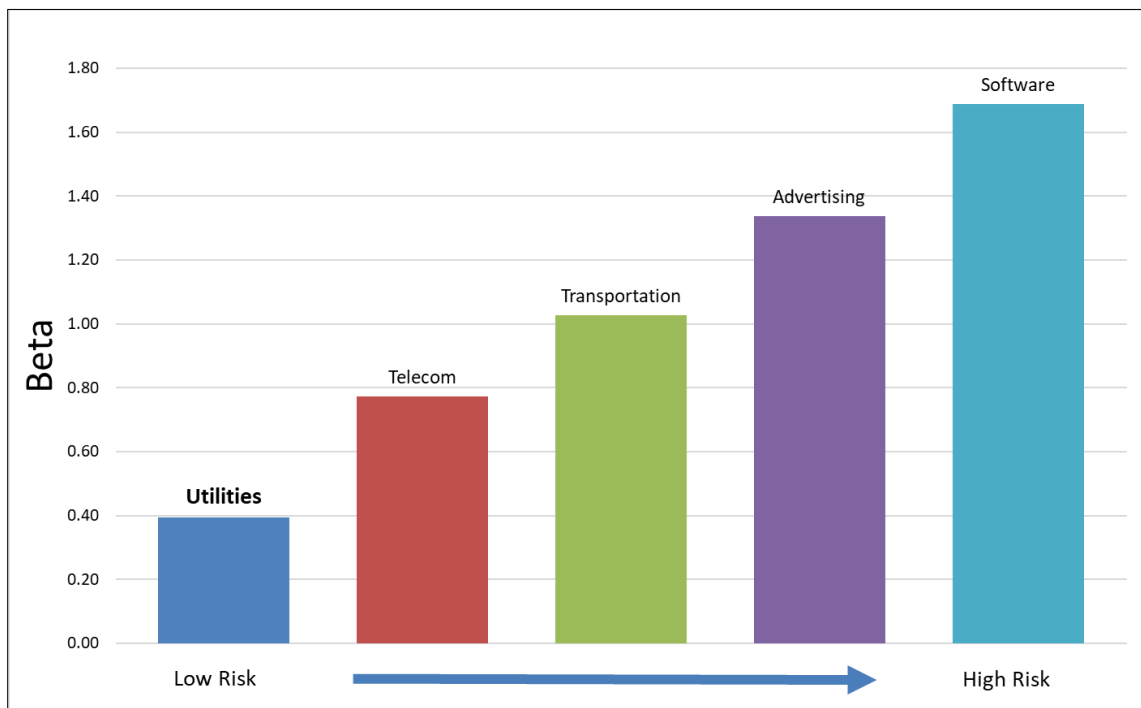
A. Yes. Stocks with betas greater than one are generally known as “cyclical stocks.” Firms in cyclical industries are sensitive to recurring patterns of recession and recovery known as the “business cycle.”¹⁹ Thus, cyclical firms are exposed to a greater level of market risk. Securities with betas less than one, on the other hand, are known as “defensive stocks.” Companies in defensive industries, such as public utility companies, “will have low betas and performance that is comparatively

¹⁸ *Id.* at pp. 180-81.

¹⁹ *Essentials of Investments*, p. 382.

unaffected by overall market conditions.”²⁰ In fact, financial textbooks often use utility companies as prime examples of low-risk, defensive firms. The figure below compares the betas of several industries and illustrates that the utility industry is one of the least risky industries in the U.S. market.²¹

**Figure 4:
Beta by Industry**



The fact that Corix, like other utilities, is a relatively low-risk company means that its cost of equity will be lower than the higher-beta firms in other industries.

²⁰ *Id.* at p. 383.

²¹ Betas by Sector (US), <http://pages.stern.nyu.edu/~adamodar/>. The exact beta calculations are not as important as illustrating the well-known fact that utilities are very low-risk companies. The fact that the utility industry is one of the lowest risk industries in the country should not change from year to year.

VI. DISCOUNTED CASH FLOW ANALYSIS**Q. DESCRIBE THE DCF MODEL.**

A. The DCF Model is based on a fundamental financial model called the “dividend discount model,” which maintains that the value of a security is equal to the present value of the future cash flows it generates. Cash flows from common stock are paid to investors in the form of dividends. The various assumptions, theories, and equations involved in the DCF Model are discussed further in the supplemental material provided in Appendix A.

Q. DESCRIBE THE INPUTS TO THE DCF MODEL.

A. There are three primary inputs in the DCF Model: (1) stock price; (2) dividend; and (3) the long-term growth rate. The stock prices and dividends are known inputs based on recorded data, while the growth rate projection must be estimated. I discuss each of these inputs separately below.

A. Stock Price**Q. HOW DID YOU DETERMINE THE STOCK PRICE INPUT OF THE DCF MODEL?**

A. For the stock price (P_0), I used 30-day averages of adjusted closing stock prices for each company in the proxy group.²² Analysts sometimes rely on average stock prices for longer periods (e.g., 60, 90, or 180 days). According to the efficient market hypothesis, however, markets reflect all relevant information available at a particular time, and prices adjust instantaneously to the arrival of new information.²³ Past stock prices, in essence, reflect outdated information. The

²² Exhibit OCS- 2.3D.

²³ Eugene F. Fama, *Efficient Capital Markets: A Review of Theory and Empirical Work*, Vol. 25, No. 2 The Journal of Finance 383 (1970); see also *Corporate Finance: Linking Theory to What Companies Do*, p. 357.

DCF Model used in utility rate cases is a derivation of the dividend discount model, which is used to determine the current value of an asset. Thus, according to the dividend discount model and the efficient market hypothesis, the value for the “ P_0 ” term in the DCF Model should technically be the current stock price, rather than an average.

Q. WHY DID YOU USE A 30-DAY AVERAGE FOR THE CURRENT STOCK PRICE INPUT?

A. Using a short-term average of stock prices for the current stock price input adheres to market efficiency principles while avoiding any irregularities that may arise from using a single current stock price. In the context of a utility rate proceeding there is a significant length of time from when an application or advice letter is filed and testimony is due. Choosing a current stock price for one particular day could raise a separate issue concerning which day was chosen to be used in the analysis. In addition, a single stock price on a particular day may be unusually high or low. It is arguably ill-advised to use a single stock price in a model that is ultimately used to set rates for several years, especially if a stock is experiencing some volatility. Thus, it is preferable to use a short-term average of stock prices, which represents a good balance between adhering to well-established principles of market efficiency while avoiding any unnecessary fluxuations that may arise from using a single stock price on a given day. The stock prices I used in my DCF analysis are

The efficient market hypothesis was formally presented by Eugene Fama in 1970 and is a cornerstone of modern financial theory and practice.

based on 30-day averages of adjusted closing stock prices for each company in the proxy group.²⁴

Q. WHY DID YOU USE ADJUSTED CLOSING STOCK PRICES FOR YOUR DCF ANALYSIS?

A. Adjusted closing prices, rather than actual closing prices, are ideal for analyzing historical stock prices. The adjusted closing price is a stock's closing price modified to account for corporate actions such as stock splits and dividends. Thus, it provides a more accurate representation of the firm's equity value beyond the mere market price.

B. Dividend

Q. DESCRIBE HOW YOU DETERMINED THE DIVIDEND INPUT OF THE DCF MODEL.

A. The dividend term in the DCF Model represents dividends per share (d_0). I used forward-looking annualized dividends published by Yahoo! Finance for the dividend input to my constant growth DCF Model.²⁵ Dividing these dividends by the stock prices for each proxy company results in the dividend yield for each company.

Q. ARE THE STOCK PRICE AND DIVIDEND INPUTS FOR EACH PROXY COMPANY A SIGNIFICANT ISSUE IN THIS CASE?

A. No. Although my stock price and dividend inputs are more recent than those used by Mr. Figueroa, there is not a statistically significant difference between them

²⁴ Exhibit OCS- 2.3D.

²⁵ Exhibit OCS- 2.4D.

because utility stock prices and dividends are generally quite stable because of their low-risk nature. This is another reason that cost of capital models such as the CAPM and the DCF Model are well-suited to be conducted on utilities. The differences between the DCF Model results in this case are primarily affected by the difference in growth rate estimates.

C. Growth Rate

Q. PLEASE SUMMARIZE THE GROWTH RATE INPUT IN THE DCF MODEL.

A. The most critical input in the DCF Model is the growth rate. Unlike the stock price and dividend inputs, the growth rate input (g) must be estimated. As a result, the growth rate is often the most contentious issue related to DCF model inputs in utility rate cases. The DCF model used in this case is based on the sustainable growth valuation model. Under this model, a stock is valued by the present value of its future cash flows in the form of dividends. Before future cash flows are discounted by the cost of equity, however, they must be “grown” into the future by a sustainable growth rate. As stated above, one of the inherent assumptions of this model is that these cash flows in the form of dividends grow at a sustainable rate forever. For young, high-growth firms, estimating the growth rate to be used in the model can be especially difficult, and may require the use of multi-stage growth models. For mature, low-growth firms such as utilities, however, estimating the sustainable growth rate is more transparent. The growth term of the DCF Model is one of the most important, yet least understood, aspects of cost of equity estimations in utility regulatory proceedings. I provide a more detailed explanation on the various determinants of growth below.

547 **Q. DESCRIBE THE VARIOUS DETERMINANTS OF GROWTH THAT CAN BE**
548 **CONSIDERED FOR THE GROWTH RATE INPUT IN THE DCF MODEL.**

549 A. Although the DCF Model directly considers the growth of dividends, there are a
550 variety of growth determinants that should be considered when estimating growth
551 rates. It should be noted that these various growth determinants are used primarily
552 to determine the short-term growth rates in multi-stage DCF models. For utility
553 companies, it is necessary to focus primarily on a long-term growth rate in
554 dividends. This is also known as a “sustainable” growth rate, since this is the
555 growth rate assumed for the company’s dividends in perpetuity. That is not to say
556 that these growth determinants cannot be considered when estimating sustainable
557 growth; however, as discussed below, sustainable growth must be constrained
558 much more than short-term growth, especially for young firms with high growth
559 opportunities. Additionally, I briefly discuss these growth determinants here
560 because it may reveal some of the sources of confusion in this area.

561 (1) Historical Growth

562 Looking at a firm’s actual historical experience may theoretically provide a
563 good starting point for estimating short-term growth. However, past growth is not
564 always a good indicator of future growth. Some metrics that might be considered
565 here are a historical growth in revenues, operating income, and net income. Since
566 dividends are paid from earnings, historical earnings growth may provide an
567 indication of future earnings and dividend growth.

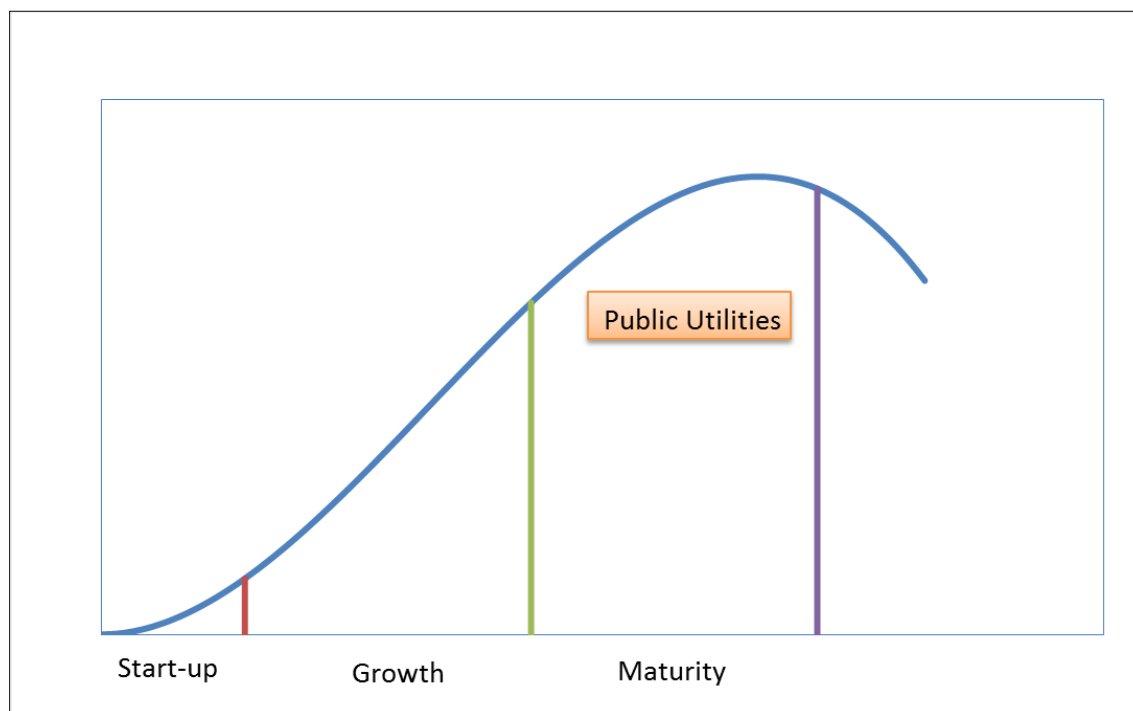
(2) Analyst Growth Rates

Analyst growth rates refer to short-term projections of earnings growth published by institutional research analysts such as Value Line and Bloomberg. Analyst growth rates, including the limitations with using them in the DCF Model to estimate utility cost of equity, are discussed in more detail below.

(3) Sustainable Growth Rates

In order to make the DCF Model a viable, practical model, an infinite stream of future cash flows must be estimated and then discounted back to the present. Otherwise, each annual cash flow would have to be estimated separately. Some analysts use “multi-stage” DCF Models to estimate the value of high-growth firms through two or more stages of growth, with the final stage of growth being sustainable. However, it is not necessary to use multi-stage DCF Models to analyze the cost of equity of regulated utility companies. This is because regulated utilities are already in their “sustainable,” low growth stage. Unlike most competitive firms, the growth of regulated utilities is constrained by physical service territories and limited primarily by ratepayer and load growth within those territories. The figure below illustrates the well-known business/industry life-cycle pattern.

**Figure 5:
Industry Life Cycle**



In an industry's early stages, there are ample opportunities for growth and profitable reinvestment. In the maturity stage however, growth opportunities diminish, and firms choose to pay out a larger portion of their earnings in the form of dividends instead of reinvesting them in operations to pursue further growth opportunities. Once a firm is in the maturity stage, it is not necessary to consider higher short-term growth metrics in multi-stage DCF Models; rather, it is sufficient to analyze the cost of equity using a stable growth DCF Model with one sustainable growth rate.

Q. DOES CORIX'S STATUS AS A GREENFIELD, IN-DEVELOPMENT UTILITY INVALIDATE YOUR SUSTAINABLE-GROWTH DCF ANALYSIS?

A. No. My DCF analysis is necessarily performed on the publicly traded proxy companies because Corix itself does not have publicly traded stock, dividends, or

the other market data required to perform a DCF analysis directly on the Company. The sustainable-growth limitation therefore applies to the perpetual growth assumptions used to value those proxy companies. Corix may experience substantial customer, load, and rate-base growth during the development of Utah City, but finite near-term growth in Corix's operations does not justify assuming that the publicly traded proxy companies can grow their earnings or dividends faster than the overall economy forever.

However, I recognize that Corix is a greenfield utility and that no publicly traded proxy company perfectly replicates its circumstances. That is one reason I have not recommended simply adopting my 8.4% market-based cost-of-equity estimate as the authorized ROE. My 9.0% recommendation is approximately 60 basis points above that benchmark and approximately 120 basis points above my analyst-growth DCF result of 7.8%. In my opinion, which provides a reasonable margin for regulatory judgment without disregarding the market evidence.

Q. SHOULD THE ANNUAL SUSTAINABLE GROWTH RATE USED IN THE DCF MODEL EXCEED THE ANNUAL GROWTH RATE OF THE AGGREGATE ECONOMY?

A. No. A fundamental concept in finance is that no firm can grow forever at a rate higher than the growth rate of the economy in which it operates.²⁶ Thus, the sustainable growth rate used in the DCF Model should not exceed the aggregate economic growth rate. This is especially true when the DCF Model is conducted

²⁶ See Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*, 306 (3rd ed., John Wiley & Sons, Inc. 2012).

on public utilities because these firms have defined service territories. As stated by Dr. Damodaran: “[i]f a firm is a purely domestic company, either because of internal constraints . . . or external constraints (such as those imposed by a government), the growth rate in the domestic economy will be the limiting value.”²⁷

In fact, it is reasonable to assume that a regulated utility would grow at a rate that is less than the U.S. economic growth rate. Unlike competitive firms, which might increase their growth by launching a new product line, franchising, or expanding into new and developing markets, utility operating companies with defined service territories are comparatively limited in their growth opportunities. Gross Domestic Product (“GDP”) is one of the most widely used measures of economic production and is used to measure aggregate economic growth. According to the Congressional Budget Office’s 2026 Long-Term Budget Outlook, the long-term forecast for nominal U.S. GDP growth is 3.8%.²⁸ This is the growth rate I used in the sustainable growth variation of my DCF Model.

Q. DID YOU CONSIDER ANY OTHER TYPES OF GROWTH RATES OTHER THAN THE SUSTAINABLE GROWTH RATES DETAILED ABOVE?

A. Yes. I also conducted the “analyst growth” variation of the DCF Model. To do so, I considered projected short-term dividend growth rate estimates published by Value Line. Despite the shortcomings of this approach, I show this variation of the DCF Model because it is often presented in rate cases by ROE witnesses and considered by regulators when assessing the awarded ROE.

²⁷ *Id.*

²⁸ Congressional Budget Office, The Long-Term Budget Outlook 2026 to 2056, <https://www.cbo.gov/publication/62044> .

642 **Q. WHAT ARE THE FINAL RESULTS OF YOUR DCF MODELS?**

643 A. For my DCF Models, I considered two variations: one using a sustainable growth
644 rate and one using analysts' growth rates. The sustainable growth rate DCF Model
645 indicates a cost of equity for Corix of 6.8%. The analyst growth variation of the
646 DCF produced a result of 7.8%.²⁹

647 **D. Response to Mr. Figueroa's DCF Model**

648 **Q. PLEASE SUMMARIZE THE RESULTS OF MR. FIGUEROA'S DCF MODELS.**

649 A. Mr. Figueroa conducted several variations of the DCF Model, which produced
650 results ranging as high as 12.75%.³⁰

651 **Q. DO THE RESULTS OF MR. FIGUEROA'S DCF MODEL INDICATE A**
652 **REASONABLE COST OF EQUITY FOR CORIX?**

653 A. In my opinion, the majority of Mr. Figueroa's DCF results are unreasonably high in
654 terms of estimating an accurate cost of equity estimate for Corix. This is because
655 Mr. Figueroa used long-term growth rates in his proxy group that are generally
656 unsustainably high, including growth rates that are more than three times the rate
657 of projected U.S. GDP growth.³¹ Even his average growth rate of the proxy group
658 is more than two times projected long-term U.S. GDP growth. This means Mr.
659 Figueroa's growth rate assumption violates the basic principle that no company
660 can grow at a greater rate than the economy in which it operates over the long
661 term, especially a regulated utility company with a defined service territory.
662 Furthermore, Mr. Figueroa used short-term growth estimates published by

²⁹ Exhibit OCS-2.6D.

³⁰ Direct Testimony of Josh Figueroa, p. 58.

³¹ CONFIDENTIAL Corix Exhibit 5.4, Sch. No. JF-5.

analysts. These analysts' estimates are inappropriate to use in the DCF Model as long-term growth rates because they are estimates for *short-term* growth. For example, Mr. Figueroa used a short-term growth rate for Southwest Gas Corporation ("SWX"). As reported by S&P Capital IQ, that is more than three times the rate of annual long-term U.S. GDP growth. Mr. Figueroa labeling this growth rate as a "long-term" growth rate is not the opinion of the commercial analyst, but rather Mr. Figueroa's opinion. Thus, Mr. Figueroa is extrapolating the S&P analyst's conclusions well beyond what the analyst actually published, because the published growth rates are meant to apply to the next few years. Furthermore, this assumption is simply not realistic, and it contradicts fundamental concepts of long-term growth. Many of Mr. Figueroa's other short-term growth rate estimates also exceed projected GDP growth. For these reasons, his DCF Model results overstate a reasonable cost of equity estimate for Corix.

Q. DO MR. FIGUEROA'S OWN MULTI-STAGE DCF RESULTS PROVIDE ADDITIONAL INFORMATION REGARDING THE EFFECT OF HIS GROWTH-RATE ASSUMPTIONS?

A. Yes. Mr. Figueroa's results illustrate the importance of using economically sustainable long-term growth assumptions. His simple DCF produces a result of approximately 12.7% for both the natural gas and water proxy groups. In that model, analyst growth rates are effectively extended into perpetuity. In his multi-stage DCF, however, Mr. Figueroa allows the higher company-specific growth rates during an initial period and then gradually reduces growth toward the long-term rate of GDP growth. When he does so, his DCF results fall substantially to

approximately 9.3% for the natural gas proxy group and 9.0% for the water proxy group. Those results reinforce my primary criticism of his DCF Model application. A utility may certainly grow faster than the economy for a finite period, but that does not mean a short-term analyst growth rate can reasonably be assumed to continue forever. Mr. Figueroa's own multi-stage results demonstrate the material effect of imposing a sustainable long-term growth constraint

Q. HAS THE COMMISSION ALSO FOUND THAT ANALYST GROWTH RATES USED IN THE DCF MODEL CAN BE UNREASONABLY HIGH?

A. Yes. In Rocky Mountain Power Company's ("RMP") recent rate case, the Commission found:

Specifically, RMP relies exclusively on the three- to five-year earnings per share ("EPS") projections from Value Line and Wall Street analysts to model long-term growth. The evidence strongly shows these data produce an improper upward ROE bias. For example, applying these growth rate and EPS projections in RMP's DCF, CAPM, and ECAPM modeling produce long-term growth rates that are significantly greater than the growth of the overall economy, which is both a logical and mathematical impossibility.³²

In this case, Mr. Figueroa's growth rates suffer from the same logical and mathematical problems, in that they assume the earnings of the proxy companies will grow at a greater rate than U.S. GDP in perpetuity.

Q. WHY IS YOUR ANALYST-GROWTH DCF RESULT LOWER THAN MR. FIGUEROA'S SIMPLE DCF RESULTS?

A. The analyses do not use identical growth-rate inputs. My analyst-growth variation uses projected dividend growth rates reported by Value Line for the proxy

³² Docket Nos 24-035-04, et seq, Order, p. 25 (Issued April 25, 2025).

711 companies. Mr. Figueroa relies on analyst earnings-growth estimates from Value
712 Line and S&P Capital IQ, including several growth rates that are materially higher.
713 Because the growth rate is added directly to the dividend yield in a constant-growth
714 DCF model, higher assumed perpetual growth rates directly produce higher
715 indicated costs of equity. I present my analyst-growth variation to show the
716 difference between a more reasonable application of the model (i.e., using
717 projected dividend growth rates that are closer to a sustainable level), but not
718 because I believe short-term analyst projections should necessarily be extended
719 into perpetuity. In fact, the Commission has previously recognized the upward-
720 bias concern created by doing so. It is nevertheless noteworthy that this alternative
721 produces an indicated cost of equity of only 7.8%, well below my ultimate 9.0%
722 ROE recommendation.

723 **VII. CAPITAL ASSET PRICING MODEL ANALYSIS**

724 **Q. DESCRIBE THE CAPM.**

725 A. The CAPM is a market-based model founded on the principle that investors expect
726 higher returns for incurring additional risk.³³ The CAPM estimates this expected
727 return. The various assumptions, theories, and equations involved in the CAPM
728 are discussed further in the supplemental material provided in Appendix B. Using
729 the CAPM to estimate the cost of equity of a regulated utility is consistent with the
730 legal standards governing the fair rate of return. The U.S. Supreme Court
731 recognized that “the amount of *risk* in the business is a most important factor” in

³³ William F. Sharpe, *A Simplified Model for Portfolio Analysis*, Management Science IX, pp. 277-93 (1963); see also *Corporate Finance: Linking Theory to What Companies Do*, p. 208.

determining the allowed rate of return,³⁴ and that “the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding *risks*.”³⁵ The CAPM is a useful model because it directly considers the amount of risk inherent in a business. It is arguably the strongest of the models usually presented in rate cases because, unlike the DCF Model, the CAPM directly measures the most important component of a fair rate of return analysis: *risk*. Moreover, the creators of the CAPM won the Nobel Prize in Economics for their work on this model.

Q. DESCRIBE THE INPUTS FOR THE CAPM.

A. The basic CAPM equation requires only three inputs to estimate the cost of equity: (1) the risk-free rate; (2) the beta coefficient; and (3) the equity risk premium. Each input is discussed separately below.

A. The Risk-Free Rate

Q. EXPLAIN THE RISK-FREE RATE.

A. The first term in the CAPM is the risk-free rate. The risk-free rate is simply the level of return investors can achieve without assuming any risk. The risk-free rate represents the bare minimum return that any investor would require on a risky asset. Even though no investment is technically free of risk, investors often use U.S. Treasury securities to represent the risk-free rate because they accept that those securities essentially contain no default risk. The Treasury issues securities

³⁴ *Wilcox*, 212 U.S. at 48 (emphasis added).

³⁵ *Hope Natural Gas Co.*, 320 U.S. at 603 (emphasis added).

with different maturities, including short-term Treasury Bills, intermediate-term Treasury Notes, and long-term Treasury Bonds.

Q. PLEASE DESCRIBE HOW YOU ESTIMATED THE RISK-FREE RATE FOR YOUR CAPM APPLICATION IN THIS CASE.

A. To estimate the current risk-free rate, I calculated a recent 30-day average of daily spot yield rates on 10-year U.S. Treasury notes. Using 10-year Treasury notes is a standard and widely accepted practice for estimating the risk-free rate. All else held constant, using a longer or shorter term would lead to higher and lower CAPM results, respectively. Analysts generally prefer 10-year notes to 30-year bonds for several reasons. First, 10-year notes are more actively traded than 30-year bonds, which provides a more accurate indication of investors' market expectations. Second, a 10-year time frame more closely aligns with actual investment timeframes compared with a 30-year time frame. Finally, the lower yield of the 10-year notes relative to the 30-year bond represents a less risky investment. If Treasury bonds are to represent the rate on a true riskless investment, then the less risky (i.e., lower yield) security should be preferred for that reason. The longer maturity of 30-year bonds means its price is more sensitive to changes in interest rates. In addition, the default risk (albeit low under both securities) would be higher for a 30-year bond relative to a 10-year bond. In that regard, a 10-year term represents a less risky investment than a longer term while avoiding the more volatile reinvestment risk and relatively short time horizons of

short-term Treasury bills. For my CAPM application in this case, I used a 4.59% risk-free rate based on a recent 30-day average of 10-year Treasury note yields.³⁶

B. The Beta Coefficient

Q. HOW IS THE BETA COEFFICIENT USED IN THIS MODEL?

A. As discussed above, beta represents the sensitivity of a given security to movements in the overall market. The CAPM states that in efficient capital markets, the expected risk premium on each investment is proportional to its beta. Recall that a security with a beta greater (or less) than one is more (or less) risky than the market portfolio. An index such as the S&P 500 Index is used as a proxy for the market portfolio. The historical betas for publicly traded firms are published by various institutional analysts. Beta may also be calculated through a linear regression analysis, which provides additional statistical information about the relationship between a single stock and the market portfolio. As discussed above, beta also represents the sensitivity of a given security to the market as a whole.

Q. DESCRIBE THE SOURCE FOR THE BETAS YOU USED IN YOUR CAPM ANALYSIS.

A. I used betas recently published by Value Line Investment Survey. The beta for each proxy company is less than 1.0. This provides an objective basis to conclude that the proxy group (and thereby Corix) is less risky than the market average. While there are some theories suggesting that betas published by sources such as Value Line may actually *overestimate* the risk of low-beta securities such as

³⁶ Exhibit OCS-2.7D.

utility stocks (and thus overestimate the CAPM), I used the betas published by Value Line in the interest of reasonableness.³⁷

C. The Equity Risk Premium

Q. DESCRIBE THE EQUITY RISK PREMIUM.

A. The final term of the CAPM is the equity risk premium (“ERP”), which is the required return on the market portfolio less the risk-free rate.³⁸ In other words, the ERP is the level of return investors expect above the risk-free rate in exchange for investing in risky securities. Many experts would agree that “the single most important variable for making investment decisions is the equity risk premium.”³⁹ Likewise, the ERP is arguably the single most important factor in estimating the cost of capital in this matter. There are three basic methods that can be used to estimate the ERP: (1) calculating a historical average; (2) taking a survey of experts; and (3) calculating the implied ERP. In addition, some reputable corporate analysts publish their opinion regarding the current ERP. I will discuss each method in turn, noting advantages and disadvantages of these methods.

(1) Historical Average

Q. DESCRIBE THE HISTORICAL ERP.

A. The historical ERP may be calculated by simply taking the difference between returns on stocks and returns on government bonds over a certain period of time. Many practitioners rely on the historical ERP as an estimate for the forward-looking

³⁷ Exhibit OCS- 2.8D; *see also* the supplemental material provided in Appendix B for a more detailed discussion of raw beta calculations and adjustments.

³⁸ The “equity risk premium” is synonymous with the “market risk premium.”

³⁹ Elroy Dimson, Paul Marsh & Mike Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton University Press, p. 4 (2002).

ERP because it is easy to obtain. However, there are disadvantages to relying on the historical ERP.

Q. WHAT ARE THE LIMITATIONS OF RELYING SOLELY ON A HISTORICAL AVERAGE TO ESTIMATE THE CURRENT OR FORWARD-LOOKING ERP?

A. Many investors use the historic ERP because it is convenient and easy to calculate. But what matters in the CAPM model is the *current* and *forward-looking* risk premium, not the actual risk premium from the past.⁴⁰ And there is empirical evidence to suggest the forward-looking ERP is actually *lower* than the historical ERP.

In *Triumph of the Optimists*, a landmark publication on risk premiums around the world, the authors suggest through extensive empirical research that the prospective ERP is lower than the historical ERP.⁴¹ This is due in large part to what is known as “survivorship bias,” or “success bias,” a tendency for failed companies to be excluded from historical indices.⁴² From their extensive analysis, the authors make the following conclusion regarding the prospective ERP:

The result is a forward-looking, geometric mean risk premium for the United States . . . of around 2½ to 4 percent and an arithmetic mean risk premium . . . that falls within a range from a little below 4 to a little above 5 percent.⁴³

Indeed, these results are lower than many reported historical risk premiums. Other noted experts agree:

⁴⁰ *Corporate Finance: Linking Theory to What Companies Do*, p. 330.

⁴¹ *Triumph of the Optimists: 101 Years of Global Investment Returns*, p. 194.

⁴² *Id.* at 34.

⁴³ *Id.* at 194.

835 The historical risk premium obtained by looking at U.S. data is biased
836 upwards because of survivor bias. . . . The true premium, it is argued,
837 is much lower. This view is backed up by a study of large equity
838 markets over the twentieth century (*Triumph of the Optimists*), which
839 concluded that the historical risk premium is closer to 4%.⁴⁴

840 Regardless of the variations in historic ERP estimates, many scholars and
841 practitioners agree that simply relying on a historic ERP to estimate the risk
842 premium going forward is not ideal.

843 **Q. DID YOU RELY ON THE HISTORICAL ERP AS PART OF YOUR CAPM**
844 **ANALYSIS IN THIS CASE?**

845 A. No. Due to the limitations of this approach, I relied on the ERP reported in expert
846 surveys and the implied ERP method, both of which are discussed below.

847 (2) *Expert Surveys*

848 **Q. DESCRIBE THE EXPERT SURVEY APPROACH TO ESTIMATING THE ERP.**

849 A. As its name implies, the expert survey approach to estimating the ERP involves
850 conducting a survey of experts including professors, analysts, chief financial
851 officers, and other executives around the country and asking them what they think
852 the ERP is. The IESE Business School regularly conducts a survey of experts
853 regarding the ERP. IESE is consistently ranked among the leading business
854 schools in the world. Its 2026 expert survey reported an average ERP of 5.3%.⁴⁵

⁴⁴ Aswath Damodaran, *Equity Risk Premiums: Determinants, Estimation and Implications – The 2015 Edition*, New York University, p. 17 (2015).

⁴⁵ Pablo Fernandez, et al., Survey: Market Risk Premium and Risk-Free Rate used for 97 countries in 2026), copy available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6570342

IESE Business School is the graduate business school of the University of Navarra. IESE offers Master of Business Administration (MBA), Executive MBA and Executive Education programs.

(3) *Implied Equity Risk Premium*

Q. DESCRIBE THE IMPLIED ERP APPROACH.

A. The third method of estimating the ERP is arguably the best. The implied ERP relies on the stable growth model proposed by American Economist Myron J. Gordon, often called the “Gordon Growth Model,” which is a basic stock valuation model widely used in finance for many years.⁴⁶ This model is a mathematical derivation of the DCF Model. In fact, the underlying concept in both models is the same: the current value of an asset is equal to the present value of its future cash flows. Instead of using this model to determine the discount rate of one company, we can use it to determine the discount rate for the entire market by substituting the inputs of the model. Specifically, instead of using the current stock price (P_0), we will use the current value of the S&P 500 (V_{500}). Rather than using the dividends of a single firm, we will consider the dividends paid by the entire market.

Additionally, we should consider potential dividends. In other words, stock buybacks should be considered in addition to paid dividends, as stock buybacks represent another way for the firm to transfer free cash flow to shareholders. Focusing on dividends alone without considering stock buybacks could understate the cash flow component of the model and ultimately understate the implied ERP. The market dividend yield plus the market buyback yield gives us the gross cash yield to use as our cash flow in the numerator of the discount model. This gross cash yield is increased each year over the next five years by the growth rate.

⁴⁶ Myron J. Gordon and Eli Shapiro, *Capital Equipment Analysis: The Required Rate of Profit*, Management Science Vol. 3, No. 1, pp. 102-10 (Oct. 1956).

These cash flows must be discounted to determine their present value. The discount rate in each denominator is the risk-free rate (R_F) plus the discount rate (K). The following formula shows how the implied return is calculated. Since the current value of the S&P is known, we can solve for K : the implied market return.⁴⁷

Implied Market Return

$$V_{500} = \frac{CY_1(1+g)^1}{(1+R_F+K)^1} + \frac{CY_2(1+g)^2}{(1+R_F+K)^2} + \dots + \frac{CY_5(1+g)^5 + TV}{(1+R_F+K)^5}$$

where: V_{500} = current value of index (S&P 500)
 CY_{1-5} = average cash yield over last five years (includes dividends and buybacks)
 g = compound growth rate in earnings over last five years
 R_F = risk-free rate
 K = implied market return (this is what we are solving for)
 TV = terminal value = $CY_5 (1+R_F) / K$

The discount rate is called the “implied” return here because it is based on the current value of the index as well as the value of free cash flow to investors projected over the next five years. Thus, based on these inputs, the market is “implying” the expected return; or in other words, based on the current value of all stocks (the index price) and the projected value of future cash flows, the market is telling us the return expected by investors for investing in the market portfolio. After solving for the implied market return (K), we simply subtract from it the risk-free rate to arrive at the implied ERP.

Q. DISCUSS THE RESULTS OF YOUR IMPLIED ERP CALCULATION.

A. After collecting data for the index value, operating earnings, dividends, and buybacks for the S&P 500 over the past six years, I calculated the dividend yield,

⁴⁷ See Exhibit OCS- 2.9D for detailed calculation.

buyback yield, and gross cash yield for each year. I also calculated the compound annual growth rate (g) from operating earnings. I used these inputs, along with the risk-free rate and current value of the index, to calculate a current expected return on the entire market of 9.6%. I subtracted the risk-free rate to arrive at the implied equity risk premium of 5.0%.⁴⁸ Dr. Aswath Damodaran, one of the world's leading experts on the ERP,⁴⁹ promotes the implied ERP method discussed above. He calculates monthly and annual implied ERPs with this method and publishes his results. Dr. Damodaran's average ERP estimate for August 2026 using several implied ERP variations was 4.5%.⁵⁰

Q. DID YOU ALSO CONSIDER THE ERP PUBLISHED BY ANY CORPORATE ANALYSTS?

A. Yes. Kroll (formerly Duff & Phelps) is an international financial and risk advisory company. Kroll regularly reviews fluctuations in global economic and financial market conditions that may warrant changes to the ERP. Earlier this year, Kroll published an estimate of 5.0% for the ERP.⁵¹

⁴⁸ *Id.*

⁴⁹ Damodaran Online, New York University, <http://pages.stern.nyu.edu/~adamodar/>.

⁵⁰ Dr. Damodaran conducts several variations of the implied ERP analysis using various assumptions. The figure I incorporated into my analysis is based on an average of the results of his several implied ERP variations.

⁵¹ Kroll, *Kroll Recommended U.S. Equity Risk Premium and Corresponding Risk-Free Rates to be Used in Computing Cost of Capital: January 2008 – Present* (April 30, 2026).

908 **Q. WHAT ARE THE RESULTS OF YOUR FINAL ERP ESTIMATE?**

909 A. For the final ERP estimate I used in my CAPM analysis, I considered the results
910 of the ERP surveys along with the implied ERP calculations and the ERP reported
911 by Kroll.⁵² The results are presented in the following figure.

912 **Figure 6:**
913 **Equity Risk Premium Results**

IESE Business School Survey	5.3%
Kroll (Duff & Phelps) Report	5.0%
Damodaran (average)	4.5%
Garrett	5.0%
Average	5.0%

914 The average ERP from these sources is 5.0%, which is the ERP I used in my
915 CAPM analysis.

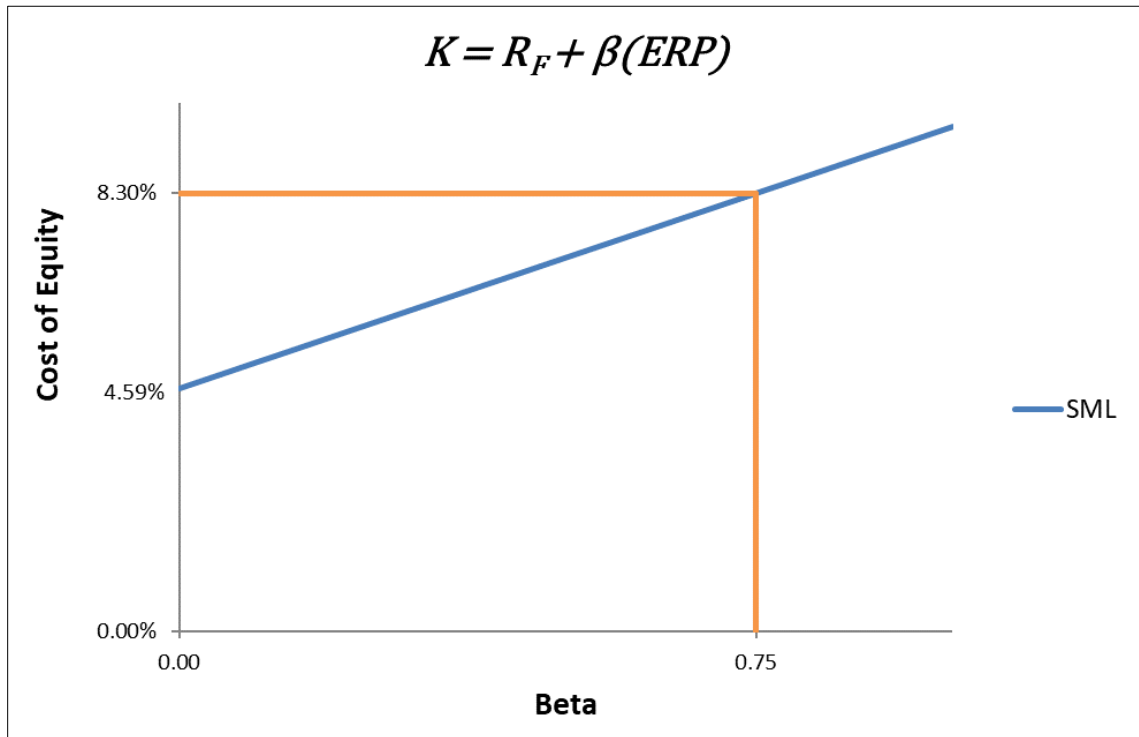
916 **Q. PLEASE EXPLAIN THE FINAL RESULTS OF YOUR CAPM ANALYSIS.**

917 A. Using the inputs for the risk-free rate, beta, and ERP discussed above, I estimate
918 Corix's CAPM cost of equity is 8.3%.⁵³ The CAPM may be displayed graphically
919 through what is known as the Security Market Line ("SML"). The following figure
920 shows the expected return (or cost of equity) on the y-axis, and the average beta
921 for the proxy group on the x-axis. The SML intercepts the y-axis at the level of the
922 risk-free rate. The slope of the SML is the equity risk premium.

⁵² See Exhibit OCS- 2.10D.

⁵³ Exhibit OCS- 2.11D.

**Figure 7:
CAPM Graph**



The SML provides the rate of return that will compensate investors for the beta risk of that investment. Thus, at an average beta of 0.75 for the proxy group, the estimated CAPM cost of equity for Corix is 8.3%.

D. Response to Mr. Figueroa's CAPM Analysis

Q. PLEASE SUMMARIZE THE RESULTS OF MR. FIGUEROA'S CAPM ANALYSIS AND RELATED ISSUES.

A. Mr. Figueroa conducted a traditional CAPM application, which produced results ranging as high as 12.0%.⁵⁴ Mr. Figueroa also conducted an "empirical" CAPM ("ECAPM"), which increased his CAPM results even higher. Finally, in addition to

⁵⁴ Direct Testimony of Josh Figueroa, p. 54.

the CAPM, Mr. Figueroa conducted another type of risk premium model (an “Implied Risk Premium Model”), which produced results as high as 10.4%⁵⁵

Q. DO THE RESULTS OF MR. FIGUEROA’S CAPM ANALYSIS INDICATE A REASONABLE COST OF EQUITY FOR CORIX?

A. No. The primary problem with Mr. Figueroa’s CAPM cost of equity result stems from his ERP estimate.

(1) *Equity Risk Premium*

Q. DID MR. FIGUEROA RELY ON A REASONABLE MEASURE FOR THE ERP?

A. No. Mr. Figueroa considers two primary MRP inputs in his CAPM analysis: a 7.31% historical average and a 6.17% Bloomberg forward-looking estimate. Both are higher than the approximately 5.0% ERP supported by the evidence I reviewed, although I have a particular concern with his reliance on the 7.31% historical average.⁵⁶ This estimate is significantly higher than the ERP estimates I reviewed and incorporated into my modeling. The ERP is one of only three inputs in the CAPM equation, and it is one of the single most important factors for estimating the cost of equity in this case. As discussed above, I used three widely accepted methods for estimating the ERP, including consulting expert surveys, calculating the implied ERP based on aggregate market data, and considering the ERPs published by reputable analysts. The average ERP calculated from my sources is 5.0%. This means that Mr. Figueroa’s ERP is significantly higher than

⁵⁵ *Id.* at p. 61.

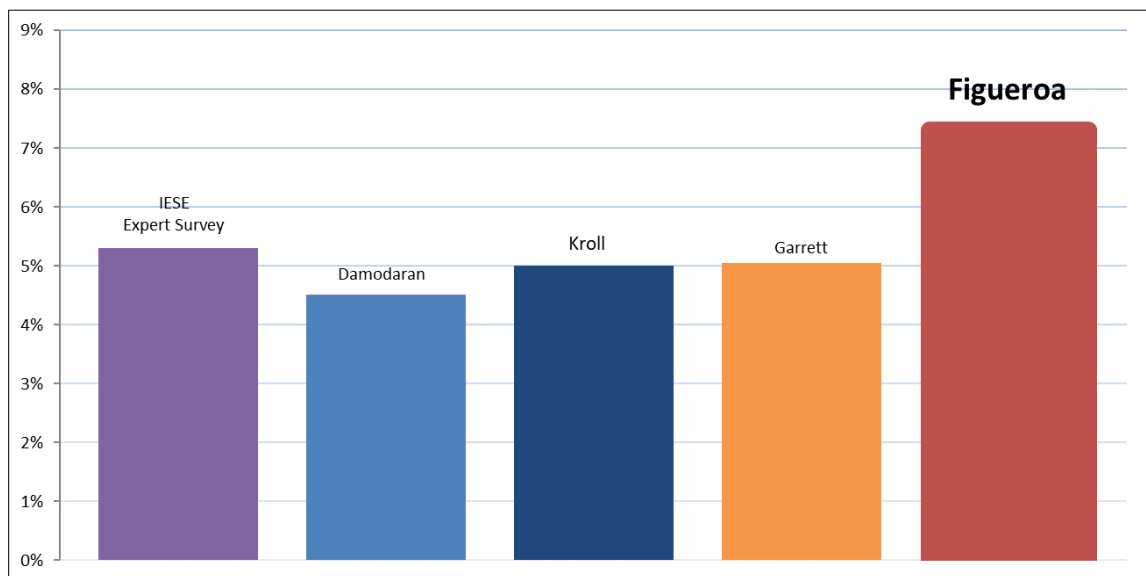
⁵⁶ *Id.* at p. 33.

the ERP estimate reported by thousands of expert survey respondents and other sources.

Q. PLEASE DISCUSS AND ILLUSTRATE HOW MR. FIGUEROA'S ERP COMPARES WITH OTHER ESTIMATES FOR THE ERP.

A. As discussed above, the 2026 IESE Business School expert survey reports an average ERP of 5.3%. Similarly, Kroll (formerly Duff & Phelps) recently estimated an ERP of 5.0%. Dr. Damodaran, one of the leading experts on the ERP, recently estimated an average ERP of only 4.5%. The following figure illustrates that Mr. Figueroa's ERP estimate is far out of line with other reasonable, objective estimates for the ERP.

**Figure 8:
Equity Risk Premium Comparison**



When compared with other independent sources for the ERP (as well as my estimate), Mr. Figueroa's ERP estimate is clearly not within the range of reasonableness. As a result, his CAPM cost of equity estimate is overstated.

969 **Q. IS MR. FIGUEROA'S 7.31% ERP ACTUALLY KROLL'S CURRENT**
970 **RECOMMENDED ERP?**

971 A. No. Mr. Figueroa uses historical market-return data published by Kroll to calculate
972 an average historical equity risk premium of 7.31%. That is materially different from
973 Kroll's current recommended U.S. equity risk premium for use in estimating the
974 cost of capital. Kroll's most recent recommendation available to me is 5.0%. Thus,
975 while Mr. Figueroa relies on Kroll as the source of the historical data underlying his
976 7.31% calculation, Kroll itself does not recommend using 7.31% as the current
977 forward-looking ERP.

978 **Q. WHY IS THAT DISTINCTION IMPORTANT?**

979 A. The ERP used in the CAPM is intended to represent the prospective return
980 investors currently require for bearing market risk, not simply the average excess
981 return that stocks happened to realize over a long historical period. Mr. Figueroa
982 recognizes this point in his own testimony, stating that the "market risk premium is
983 a forward-looking concept" that must be inferred or forecasted from available
984 market information.⁵⁷ Nevertheless, his first CAPM scenario relies on the 7.31%
985 historical average. In contrast, Kroll's current 5.0% recommended ERP is much
986 more consistent with other independent forward-looking evidence. As discussed
987 above, the 2026 IESE Business School survey reports an average ERP of 5.3%,
988 Dr. Damodaran's recent implied ERP estimates average approximately 4.5%, and
989 my own implied-market analysis produces an ERP of approximately 5.0%.

⁵⁷ Direct Testimony of Josh Figueroa, p. 47, lines 839-840.

Accordingly, the weight of the current evidence supports an ERP near 5.0%, rather than Mr. Figueroa's 7.31% historical figure.

Q. DOES THE FACT THAT THE 7.31% FIGURE IS BASED ON A LONG HISTORICAL PERIOD MAKE IT A MORE RELIABLE ESTIMATE OF THE CURRENT ERP?

A. No. A long historical average does not represent investors' current required risk premium. Historical realized returns reflect market conditions that existed over many different economic regimes, including periods with substantially different interest rates, inflation, valuations, and investor expectations. The relevant issue in this proceeding is the return investors require today. For that purpose, current forward-looking estimates, expert surveys, and implied-market measures are more directly relevant than a mechanical average of realized returns dating back 100 years ago to 1926.

(2) Empirical CAPM

Q. PLEASE DESCRIBE MR. FIGUEROA'S ECAPM RESULTS.

A. According to Mr. Figueroa, empirical research has long shown that the CAPM tends to overstate the actual sensitivity of the cost of capital to beta: low-beta stocks tend to have higher risk premiums than predicted by the CAPM and high-beta stocks tend to have lower risk premiums than predicted. Mr. Figueroa uses this premise to justify an application of the CAPM that produces even higher results than his traditional CAPM by effectively using higher betas than those published by Value Line.

1012 **Q. DO THE RESULTS OF MR. FIGUEROA'S ECAPM INDICATE A REASONABLE**
1013 **COST OF EQUITY FOR CORIX?**

1014 A. No. First, Mr. Figueroa's ECAPM results rely on the same unreasonably high ERP
1015 input as does his traditional CAPM. For that reason alone, the Commission should
1016 reject the results of his ECAPM analysis. Furthermore, the premise of Mr.
1017 Figueroa's ECAPM is that the real CAPM underestimates the return required from
1018 low-beta securities, such as those of the proxy group. There are several problems
1019 with this concept, however. First, the betas both Mr. Figueroa and I used in the
1020 CAPM already account for the theory that low-beta stocks might tend to be
1021 underestimated. In other words, the raw betas for each of the utility stocks in the
1022 proxy groups have already been adjusted by Value Line to be higher. Second,
1023 there is empirical evidence suggesting that the type of beta-adjustment method
1024 used by Value Line actually overstates betas from consistently low-beta industries
1025 like utilities.⁵⁸ Regardless, Mr. Figueroa's ECAPM results should be rejected for
1026 his very inflated ERP input alone.

1027 (3) *Other Risk Premium Analysis*

1028 **Q. PLEASE SUMMARIZE THE RESULTS MR. FIGUEROA'S OTHER RISK**
1029 **PREMIUM ANALYSIS.**

1030 A. In addition to the CAPM and ECAPM, Mr. Figueroa conducted an additional risk
1031 premium analysis, which produced a result ranging as high as 10.4%.⁵⁹

⁵⁸ See Appendix B. The Blume adjustment method used by Value Line is arguably arbitrary when applied to industries with consistently low betas, such as the utility industry. For industries with consistently low betas, it is arguably more accurate to use an adjustment method that adjusts raw betas toward an industry average, rather than the market average.

⁵⁹ Direct Testimony of Josh Figueroa, p. 61.

1032 **Q. DO THE RESULTS OF MR. FIGUEROA'S RISK PREMIUM ANALYSIS**
1033 **INDICATE A REASONABLE COST OF EQUITY FOR CORIX?**

1034 A. No. I disagree with the premise of the analysis itself, in that this model does not
1035 actually estimate cost of equity (like the CAPM and DCF Model do). As part of his
1036 risk premium analysis, Mr. Figueroa considered authorized ROEs from other
1037 jurisdictions. Unlike the CAPM, Mr. Figueroa's risk premium model is not market-
1038 based. Rather, his model compares the discrepancy between bond yields and
1039 awarded ROEs. Authorized ROEs should be based primarily on the market-based
1040 cost of equity, not on ROEs previously authorized for other utilities. Historical
1041 authorized ROEs reflect regulatory decisions made for different utilities, in different
1042 jurisdictions, and under different market and case-specific circumstances.
1043 Accordingly, they do not provide a direct measure of Corix's current cost of equity.
1044 Authorized ROEs are often influenced by non-market-based factors such as
1045 settlements. The cost of equity for a utility should be estimated using the same
1046 models used to estimate the cost of equity for any company, such as the CAPM
1047 and DCF Model.

1048 **Q. HOW MUCH WEIGHT SHOULD THE COMMISSION PLACE ON MR.**
1049 **FIGUEROA'S RISK PREMIUM MODEL?**

1050 A. None. Importantly, Mr. Figueroa himself states that he relies on the Risk Premium
1051 Model only as a check on the reasonableness of his CAPM and DCF results and
1052 does not rely on the model to determine his recommended ROE for Corix. Thus,
1053 while I disagree with aspects of his Risk Premium Model, the model is not a primary
1054 basis for his 10.5% ROE.

1055 **Q. DOES THAT AFFECT THE SIGNIFICANCE OF YOUR CRITICISMS OF THE**
1056 **MODEL?**

1057 A. Yes. My criticisms remain relevant because the model is presented as
1058 corroborating evidence for Mr. Figueroa's overall conclusions. However, because
1059 Mr. Figueroa expressly disclaims reliance on the Risk Premium Model in
1060 developing his recommended ROE, the primary analytical differences between us
1061 concern the CAPM and DCF models, particularly the inputs and assumptions used
1062 in those analyses

1063 **Q. HAS THE COMMISSION PREVIOUSLY ADDRESSED THE USE OF**
1064 **HISTORICAL AUTHORIZED ROES IN A RISK PREMIUM ANALYSIS LIKE THE**
1065 **ONE PRESENTED BY MR. FIGUEROA?**

1066 A. Yes. In RMP's recent rate case, the Commission found as follows:

1067 RMP's bond yield plus risk premium ("BYRP") modeling was also
1068 discredited because of, among other reasons, the degree of
1069 influence of authorized ROEs from other state commissions in that
1070 analysis. As persuasively argued by OCS, and not disputed by RMP,
1071 a fundamental component of the BYRP model is commission
1072 behavior (i.e., the authorized ROEs set by commissions over a
1073 historical period), and not investor behavior. However, our purpose
1074 in this GRC is to identify a reasonable estimate of RMP's market-
1075 based cost of capital, not past ROE decisions by other
1076 commissions.⁶⁰

1077 Mr. Figueroa's Risk Premium Model relies on the same basic type of information.
1078 He compares historical authorized ROEs for natural gas and water utilities with
1079 prevailing bond yields to derive an implied equity risk premium. Although he refers
1080 to the analysis as a "Risk Premium Model," the same fundamental concern applies:

⁶⁰ Docket Nos 24-035-04, et seq, Order, p. 26 (Issued April 25, 2025).

historical regulatory decisions are being used as a substitute for direct evidence of investors' current required return. For the same reasons identified by the Commission in the Rocky Mountain Power case, I believe Mr. Figueroa's Risk Premium Model should receive no consideration.

VIII. CAPITAL STRUCTURE

Q. PLEASE SUMMARIZE CORIX'S PROPOSAL REGARDING ITS CAPITAL STRUCTURE.

A. Corix proposes a ratemaking capital structure consisting of 50% debt and 50% equity.

Q. DESCRIBE IN GENERAL THE CONCEPT OF A COMPANY'S "CAPITAL STRUCTURE."

A. "Capital structure" refers to the way a company finances its overall operations through external financing. The primary sources of long-term, external financing are debt capital and equity capital. Debt capital usually comes in the form of contractual bond issues that require the firm to make payments, while equity capital represents an ownership interest in the form of stock. Because a firm cannot pay dividends on common stock until it satisfies its debt obligations to bondholders, stockholders are referred to as "residual claimants." The fact that stockholders have a lower priority on claims on company assets increases their risk and the required higher returns relative to bondholders. Thus, equity capital has a higher cost than debt capital. Firms can reduce their weighted average cost of capital ("WACC") by recapitalizing and increasing their debt financing. In

1103 addition, because interest expense is deductible, increasing debt also adds value
1104 to the firm by reducing the firm's tax obligation.

1105 **Q. PLEASE EXPLAIN THE CONCEPT OF THE “WEIGHTED AVERAGE COST OF**
1106 **CAPITAL.”**

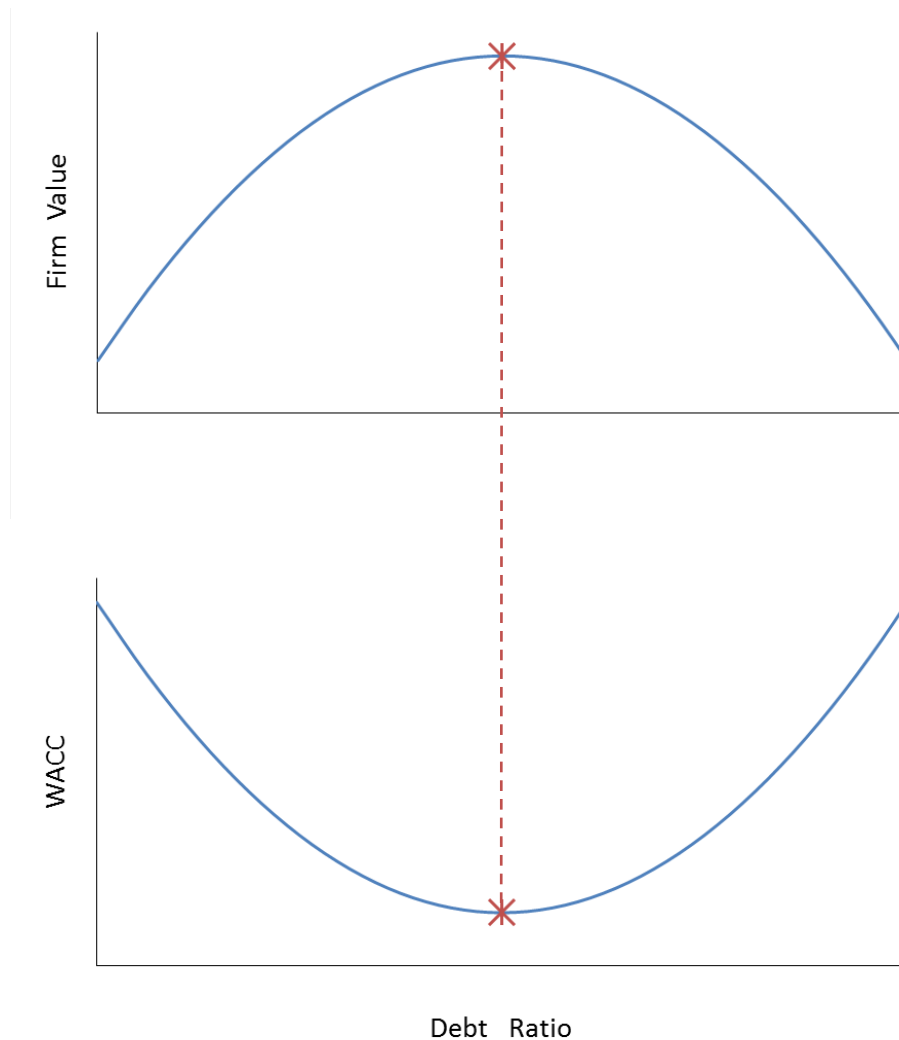
1107 A. The term “cost of capital” refers to the weighted average cost of all the components
1108 of a company's capital structure, including debt and equity. Determining the cost
1109 of debt is relatively straightforward. Interest payments on bonds are contractual,
1110 “embedded costs” that are generally calculated by dividing total interest payments
1111 by the book value of outstanding debt. Determining the cost of equity, on the other
1112 hand, is more complex. Unlike the known, contractual cost of debt, there is no
1113 explicit “cost” of equity; the cost of equity must be estimated through various
1114 financial models. Thus, the overall WACC includes the cost of debt and the
1115 estimated cost of equity. It is a “weighted average” because it is based upon the
1116 Company's relative levels of debt and equity, or “capital structure.” Companies in
1117 the competitive market often use their WACC as the discount rate to determine the
1118 value of capital projects, so it is important that this figure be closely estimated.

1119 **Q. CAN COMPETITIVE FIRMS ADD VALUE BY INCREASING THE AMOUNT OF**
1120 **DEBT IN THEIR CAPITAL STRUCTURE?**

1121 A. Yes. A competitive firm can add value by increasing debt. After a certain point,
1122 however, the marginal cost of additional debt outweighs its marginal benefit. This
1123 is because the more debt the firm uses, the higher interest expense it must pay,
1124 and the likelihood of loss increases. This also increases the risk of non-recovery
1125 for both bondholders and shareholders, causing both groups of investors to

demand a greater return on their investment. Thus, if debt financing is too high, the firm's WACC will increase instead of decrease. The following figure illustrates these concepts.

**Figure 9:
Optimal Debt Ratio**



As shown in this figure, a competitive firm's value is maximized when the WACC is minimized. In both graphs, the debt ratio is shown on the x-axis. By increasing its debt ratio, a competitive firm can minimize its WACC and maximize its value. At a certain point, however, the benefits of increasing debt do not outweigh the costs.

1136 **Q. DOES THE RATE BASE RATE OF RETURN MODEL EFFECTIVELY**
1137 **INCENTIVIZE UTILITIES TO OPERATE AT THE OPTIMAL CAPITAL**
1138 **STRUCTURE?**

1139 A. No. While it is true that competitive firms maximize their value by minimizing their
1140 WACC, this is not the case for regulated utilities. Under the rate base rate of return
1141 model, a higher WACC results in higher rates, all else held constant. The basic
1142 revenue requirement equation is as follows:

1143 **Revenue Requirement for Regulated Utilities**

1144
$$RR = O + d + T + r(A - D)$$

where: RR = revenue requirement
 O = operating expenses
 d = depreciation expense
 T = corporate tax
 r = **weighted average cost of capital (WACC)**
 A = plant investments
 D = accumulated depreciation

1145 As shown in this equation, utilities can increase their revenue requirement by
1146 *increasing* their WACC, not by minimizing it. Thus, because there is no incentive
1147 for a regulated utility to minimize its WACC, a commission standing in the place of
1148 competition must ensure that the regulated utility is operating at the lowest
1149 reasonable WACC.

1150 **Q. CAN UTILITIES GENERALLY AFFORD TO HAVE HIGHER DEBT LEVELS**
1151 **THAN OTHER INDUSTRIES?**

1152 A. Yes. Because regulated utilities have large amounts of fixed assets, stable
1153 earnings, and low risk relative to other industries, they can afford to have relatively
1154 higher debt ratios (or “leverage”). As aptly stated by Dr. Damodaran:

1155 Since financial leverage multiplies the underlying business risk, it
1156 stands to reason that firms that have high business risk should be
1157 reluctant to take on financial leverage. It also stands to reason that
1158 firms that operate in stable businesses should be much more willing
1159 to take on financial leverage. *Utilities*, for instance, have historically
1160 had high debt ratios but have not had high betas, mostly because
1161 their underlying businesses have been stable and fairly
1162 predictable.⁶¹

1163 Note that Dr. Damodaran explicitly contrasts utilities with firms that have high
1164 underlying business risk. Because utilities have low levels of risk and operate a
1165 stable business, they should generally operate with relatively high levels of debt to
1166 achieve their optimal capital structure.

1167 **Q. PLEASE DESCRIBE THE DEBT RATIOS OF THE PROXY GROUP.**

1168 A. According to the debt ratios recently reported in Value Line for the utility proxy
1169 group, the average debt ratio of the proxy group is 48%.⁶² This is slightly lower
1170 than Corix's proposed debt ratio of 50%.

1171 **Q. SINCE THE PROXY GROUP HAS AN AVERAGE DEBT RATIO OF 48%, HAVE**
1172 **YOU EVALUATED THE IMPACT OF THE COMPANY'S PROPOSED 50% DEBT**
1173 **RATIO ON ITS INDICATED COST OF EQUITY?**

1174 A. Yes. I assessed the impact of the Company's proposed capital structure on the
1175 indicated cost of equity by using the Hamada model.

1176 **Q. WHAT IS THE PREMISE OF THE HAMADA MODEL?**

1177 A. The Hamada formula can be used to analyze changes in a firm's cost of capital as
1178 it adds or reduces financial leverage, or debt, in its capital structure by starting with

⁶¹ *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*, p. 196 (emphasis added).

⁶² Exhibit OCS- 2.13D.

an “unlevered” beta and then “relevering” the beta at different debt ratios. As leverage increases, equity investors bear increasing amounts of risk, leading to higher betas. Before the effects of financial leverage can be accounted for, however, the effects of leverage must first be removed, which is accomplished through the Hamada formula. The Hamada formula for unlevering beta is stated as follows:

Hamada Formula

$$\beta_U = \frac{\beta_L}{\left[1 + (1 - T_c) \left(\frac{D}{E}\right)\right]}$$

where: β_U = unlevered beta (or “asset” beta)
 β_L = average levered beta of proxy group
 T_c = corporate tax rate
 D = book value of debt
 E = book value of equity

Using this equation, the beta for the firm can be unlevered, and then “relevered” based on various debt ratios (by rearranging this equation to solve for β_L).

Q. PLEASE SUMMARIZE THE RESULTS OF THE HAMADA FORMULA BASED ON THE COMPANY’S PROPOSED CAPITAL STRUCTURE.

A. The average capital structure of the proxy group consists of approximately 48% debt and 52% equity. I first use the Hamada formula to remove the financial leverage reflected in the proxy-group beta and then relever the resulting beta at Corix's proposed ratemaking capital structure of 50% debt and 50% equity. Because Corix's proposed debt ratio is slightly higher than the proxy-group average, the proposed ratemaking capital structure implies slightly greater financial leverage. The Hamada-adjusted CAPM therefore produces an indicated cost of equity of approximately 8.4%, compared with approximately 8.3% under

the unadjusted proxy-group CAPM. This adjustment reflects the financial risk associated with the proposed ratemaking capital structure; it does not assume that Corix currently maintains an actual 50% debt capital structure. The following figure summarizes the results of the Hamada Model.

**Figure 10:
Hamada Model ROE**

Unlevering Beta			
Proxy Debt Ratio		48%	
Proxy Equity Ratio		52%	
Proxy Debt / Equity Ratio		0.9	
Tax Rate		21%	
Equity Risk Premium		5.0%	
Risk-free Rate		4.6%	
Proxy Group Beta		0.75	
Unlevered Beta		0.43	
Relevered Betas and Cost of Equity Estimates			
Debt Ratio	D/E Ratio	Levered Beta	Cost of Equity
0%	0.0	0.43	6.7%
20%	0.3	0.52	7.2%
25%	0.3	0.54	7.3%
30%	0.4	0.58	7.5%
48%	0.9	0.75	8.3%
50%	1.0	0.77	8.4%
60%	1.5	0.94	9.3%

Based on these results, Corix's proposed capital structure would align with a cost of equity estimate of 8.4% rather than 8.3%.

1206 **Q. DOES MR. FIGUEROA ALSO CONSIDER THE EFFECT OF CAPITAL**
1207 **STRUCTURE ON HIS COST OF EQUITY ESTIMATES?**

1208 A. Yes. Like my analysis, Mr. Figueroa uses the Hamada methodology to adjust the
1209 proxy-group betas for differences between the financial leverage reflected in the
1210 proxy-company market data and Corix's proposed 50% debt capital structure.
1211 Thus, we generally agree that differences in financial leverage can appropriately
1212 be reflected in the CAPM. Our materially different CAPM results are driven
1213 primarily by other model inputs and assumptions, particularly the ERPs.

1214 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

1215 A. Yes.