

**BLACK HILLS ENERGY
NEBRASKA PSC DOCKET NO. NG-0061**

ADVISORY REPORT: COST OF CAPITAL

PREPARED BY



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IN THE MATER OF BLACK HILLS/NEBRASKA GAS)
UTILITY COMPANY, LLC. D/B/A BLACK HILLS)
ENERGY, OMAHA, SEEKING A GENERAL RATE) APPLICATION NO. NG -0061
INCREASE FOR BLACK HILLS ENERGY'S RATE)
AREAS ONE, TWO, AND THREE (CONSOLIDATED))

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Advisory Report: Cost of Capital

I. INTRODUCTION

Dr. Avera begins his fundamental analysis by describing Black Hills Energy (BHE). He writes that BHE “is primarily engaged in the procurement, transmission, and distribution of natural gas to nearly 197,000 customers located in 110 communities located in the eastern third of Nebraska.”¹ He describes its revenue mix as “68.4 percent residential, 23.4 percent commercial, and 1.9 percent industrial ... with 6.3 percent from transportation and other.”² BHE is held by Black Hills Utility Holdings, Inc. (BHUH) “a wholly-owned subsidiary to hold assets purchased from Aquila, Inc. in a transaction effective July 14, 2008.”³ BHUH is itself wholly-owned by Black Hills Corp.

Dr. Avera writes that “Black Hills Corp. is the legal entity that obtains common equity capital, a portion of which is allocated to Black Hills Utility Holdings, Inc. which in turn, allocates a portion to Black Hills Energy.”⁴ He also contends that “long-term debt capital is allocated to Black Hills Energy from Black Hills Corp. through Black Hills Utility Holdings, Inc. in a manner similar to that of equity.”⁵

In section III of his Direct Testimony, Dr. Avera discusses his capital market estimates. Recognizing that investors need a return on their capital to reward them for taking associated risks, Dr. Avera points out that “the required rate of return for a particular asset at any time is a function of: (1) the yield on risk-free assets, and (2) the asset’s relative risk, with investors demanding correspondingly larger risk premiums for bearing greater risk.”⁶

Dr. Avera uses “both the [Discounted Cash Flow model] DCF and [Capital Asset Pricing Model] CAPM methods to estimate the cost of common equity.”⁷ He also evaluates “a fair [Return on Equity] ROE using an earnings approach based on investors’ current expectations in capital markets.”⁸

Dr. Woolridge writes “[t]he cost of debt and preferred stock are normally based on historical or book values and can be determined with a great degree of accuracy.”⁹ He then posits, as did Dr. Avera, that the current value of an asset depends on the discounted cash flow generated by the asset. Dr. Woolridge relies to a large extent on the

¹ Avera Direct at 8, lines 3-5.

² Avera Direct at 8, lines 8-10.

³ Avera Direct at 8-9, lines 20-1.

⁴ Avera Direct at 9, lines 7-9.

⁵ Avera Direct at 9, lines 11-13.

⁶ Avera Direct at 18, lines 17-19.

⁷ Avera Direct at 21, lines 3-4.

⁸ Avera Direct at 21, lines 4-5.

⁹ Woolridge Direct at 23, lines 8-9.

Discounted Cash Flow (DCF) model to determine the cost of equity capital. He also performs a CAPM study.

II. COMPARABLE COMPANIES

Dr. Avera develops three groups of comparable companies. The first, his Gas Utility Proxy Group, includes “twelve publicly traded firms included by Value Line in their Natural Gas Utility industry group.”¹⁰ His second group, the Combined Utility Proxy Group, includes utilities “followed by Value Line with: (1) both gas and electric utility operations, (1) [*sic*] an S&P corporate bond rating of “BBB” or “BBB-“, (2) a Value Line Safety Rank of “2” or “3”, and (3) a Value Line Financial Strength Rating of “B” to “B+.”¹¹

Dr. Avera’s third group, the Non-Utility Proxy Group, is “composed of those U.S. companies followed by Value Line that: 1) pay common dividends; 2) have a Safety Rank of “1”; 3) have investment grade credit ratings from S&P, and 4) have an S&P Stock Quality Rankings of “B” or higher. In addition, I also included only those firms with published earnings per share (“EPS”) growth projections from at least two of the following sources: Value Line, Thompson Reuters (“IBES”), First Call Corporation (“First Call”), and Zacks Investment Research (“Zacks”).”¹²

As a comparable group, Dr. Woolridge develops “a proxy group of publicly-held gas distribution companies.”¹³ Nine companies are in the group. According to Dr. Woolridge, these companies “meet the following selection criteria: (1) listed as a Natural Gas Distribution, Transmission, and/or Integrated Gas Companies in *AUS Utility Reports*; (2) listed as a natural Gas Utility in the Standard Edition of the *Value Line Investment Survey*; (3) at least 50% of revenues from regulated gas operations; and (4) an investment grade bond rating by Moody’s and Standard and Poor’s.”¹⁴

Dr. Woolridge takes exception with including Dr. Avera’s Combined Utility Proxy Group as being comparable to Black Hills Energy. On page two of his exhibit JRW-13 he shows that two-thirds of the companies in this group earn more than half of their revenues from their electricity operations.¹⁵ He also argues that their “bond ratings indicate that these are riskier enterprises than gas distribution companies...[and that] these companies have lower common equity ratios than gas distribution companies.”¹⁶

¹⁰ Avera Direct at 22, lines 19-20.

¹¹ Avera Direct at 22, lines 3-7.

¹² Avera Direct at 24, lines 8-14.

¹³ Woolridge Direct at 11, lines 20-21.

¹⁴ Woolridge Direct at 12, lines 1-6.

¹⁵ See Woolridge Exhibit JRW-13 at 2.

¹⁶ Woolridge Direct at 58-59, lines 27-2.

Dr. Woolridge also takes exception with Dr. Avera's Non-Utility Proxy Group. He writes "Dr. Avera has estimated an equity cost rate for Black Hills using a proxy group of 67 non-utility companies....While many of these companies are large and successful, their lines of business are vastly different from the gas distribution business and they do not operate in a highly regulated environment. As such, the non-utility group is not an appropriate proxy for Black Hills."¹⁷

Discussion: The nine companies in Dr. Woolridge's comparable group are a subset of the 12 companies in Dr. Avera's Gas Utility Proxy Group. Dr. Woolridge excludes three companies because they "receive a low percentage of revenues from regulated gas operations and/or they are listed as combination electric and gas companies. These include New Jersey Resources (42% of revenues from regulated gas), UGI Corporation (34% of revenues from regulated gas), NiSource (listed as a combination electric and gas company by *AUS Utilities Reports*.)"¹⁸

Whether Dr. Avera's Gas Utility Proxy Group or Dr. Woolridge's comparable group is used results in fairly small differences to the analysis. Referring to Dr. Avera's exhibit WEA-2, the dividend yield for the 9-company proxy group is nearly identical to the dividend yield for the 12-company proxy group. Across the 9- and 12-company proxy groups, the Value Line, IBES, First Call and Zacks estimated dividend growth rates, as well as the sustainable and "price" growth rate estimates are within from four to 28 basis points of one another. Across all six measures, the average absolute difference is only 11 basis points. The similarity of dividend yield and growth rates will make DCF estimates of equity costs very similar as well.

Dr. Avera derives an estimate of beta equal to 0.68 for his 12-company Gas Utility Proxy Group. Dr. Woolridge derives a beta estimate of 0.67 from his group of nine comparable utilities. This is the only input in the CAPM that relies on these comparable groups. Based on a comparison of the DCF and CAPM analyses, without loss of applicability, results from Dr. Avera's Gas Utility Proxy Group can reasonably be compared to results from Dr. Woolridge's proxy group.

Dr. Avera also includes his Combined Utility Proxy Group and Non-Utility Proxy Group as groups of comparable companies. He concludes that because a select group of their financial ratings are comparable or better than Black Hills Corp.'s ratings, these proxy groups meet the *Hope* and *Bluefield* comparable risk standards.

The *Bluefield* court wrote: "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 for the public equal to that generally being made at the same time and in the same general part of the country on investments and other business undertakings which are attendant by

¹⁷ Woolridge Direct at 59, lines 12-18.

¹⁸ Woolridge Direct at 58, lines 11-16.

corresponding, risks and uncertainties.”¹⁹ In *Hope*, the court wrote: “the return to the equity owner should be commensurate with the terms on investments in other enterprises having corresponding risks.”²⁰

Gas and electric utility distribution companies are fundamentally different entities and face different risks and uncertainties. Gas utilities distribute through pipes that are typically placed underground. They buy natural gas from a wholesale natural gas market. They peak in the winter and variance in their residential demand is driven by cold weather. Electric utilities distribute through wires that can be either under or above ground. Above ground distribution systems are more susceptible to storm damage. Electric utilities buy from wholesale electric markets which are completely different than wholesale gas markets. They peak in the summer and variance in their residential demand is driven by hot weather. Gas and electric utilities can face a different profile of commercial and industrial use and may have very different types of interruptible customers. Hence, it is questionable whether Dr. Avera’s Combined Utility Proxy Group meets a comparability standard.

Dr. Avera’s third group, the Non-Utility Proxy Group, contains companies based on select measures of financial risk. The three measures are the Value Line Safety Rank, an investment grade credit rating from S&P, and the S&P Stock Quality Rankings. Dr. Avera defends their inclusion by arguing that “[w]ith regulation taking the place of competitive market forces, required returns for utilities should be in line with those of non-utility firms of comparable risk operating under the constraints of free competition.”²¹ Furthermore, by considering the various measures of risk included in his criteria, Dr. Avera concludes that “[c]onsidered together, a comparison of these objective measures indicates that the risks investors associate with Black Hills Energy generally exceed those of the proxy groups.”²² With respect to the impact that regulation plays in risk assessment, Dr. Avera posits that “any differences in investment risk attributable to regulation should already be reflected in these objective measures.”²³

There are a number of problems with using the Non-Utility Proxy Group in this setting. One is that Dr. Avera posits no explanation as to why regulation “taking the place of competitive market forces”²⁴ will bring about returns for utilities in line with those of non-utility firms operating in a free market. Regulation is a process very different from competition. A regulatory body is stepping in and ensuring a fair return to utilities and investors, in exchange for the utility benefitting from economies associated with serving the whole market. These economies are passed on to the consumer.

¹⁹ 262 U.S. 697, 692-3.

²⁰ 320 U.S. 591, 603.

²¹ Avera Direct at 23-24, lines 22-2.

²² Avera Direct at 27, lines 2-4.

²³ Avera Direct at 26-27, lines 19-1.

²⁴ Avera Direct at 23-24, lines 23-1.

Another problem is that the ratings indicated by Dr. Avera are for Black Hills Corp., the parent of Black Hills Energy's holding company, Black Hills Utility Holdings. Exhibit DJM-1 shows that Black Hills Corp. has a variety of regulated and non-regulated holdings. It is not clear from Dr. Avera's testimony that Black Hills Energy would have a credit rating similar to its ultimate parent.

Another concern is that the ratings used to establish comparability of the Non-Utility Proxy Group address comparability of financial instruments and not the *Bluefield* court's "investments and other business undertakings which are attendant by corresponding, risks and uncertainties" or the *Hope* court's "investments in other enterprises having corresponding risks."²⁵

Similarity in the Value Line Safety Rank, the S&P credit rating and the S&P Stock Quality Rankings speaks to similarity in measures such as credit quality, ability and willingness to meet financial obligations in full and on time, likelihood of default, earnings, the outlook for profits, capital structure, cash flow, net income, financial strength and price volatility. Many of these measures, however, are specifically addressed for a regulated natural gas distribution company. Consider measures such as earnings, profits and cash flows. These are constrained under regulation. In contrast, a free market company is unfettered by regulation in its quest for earnings, cash flows and profits. Free market companies' capital structures are controlled only to the extent that the market responds to that structure. In contrast, capital structure is specifically considered and determined in a regulated setting. Hence, while financial instruments of the parent of a regulated entity and other unregulated companies may have a similar investment rating, the similarity does not mean that a regulated natural gas distribution company and a company such as Coca-Cola meet the *Bluefield* and *Hope* criteria of "corresponding risk".

In addition, there are other measures of financial risk that would suggest that Dr. Avera's group of non-utility companies is more risky than regulated natural gas distribution companies. For example, in exhibit JRW-8, Dr. Woolridge reports betas, a measure of investment risk, for 100 industries. From this exhibit, he concludes that "the gas distribution industry is the lowest risk industry as ranked by Beta of the 100 industries."²⁶

Companies in regulated environments are protected from entry. It is true that bypass may occur and that there may be competition from alternative energy sources. But this is very different from the competition that Coca-Cola faces from Pepsi-Cola, that UPS faces from FedEx, or that Microsoft faces from Apple.

²⁵ See notes 22 and 23, *supra*.

²⁶ Woolridge Direct at 22-23, lines 22-2.

Companies such as Kellogg, ITT, Coca-Cola, Microsoft, UPS, Verizon and Walgreen – which are included in Dr. Avera’s non-utility group – face very different risks than a regulated natural gas distribution company. Even though the financial instruments of these non-utility companies may be rated more highly than those of Black Hills Corp., these non-utility companies are not comparable to the regulated gas distribution company Black Hills Energy.

That is not to say that information about the Non-Utility Proxy Group is irrelevant. If anything, it creates an upper limit for returns to the regulated distribution company. The empirical results generated by Dr. Avera comport well with this evaluation of relative rankings. Equity cost estimates for his Non-Utility Proxy Group are consistently higher than estimates for his Gas Utility Proxy Group.

In summary, The Company satisfies the burden of proof in establishing the Gas Utility Proxy Group as a reasonable proxy group for Black Hills. It does not establish that either the Combined Utility Proxy Group or the Non-Utility Proxy Group is comparable.

III. THE CAPITAL STRUCTURE

Mr. Cleberg provides the proposed capital structure for Black Hills Energy “of 52 percent common stock equity and 48 percent debt.”²⁷ Presumably this is based on the relative shares of long-term debt and common stock equity for Black Hills Energy on July 31, 2009 as shown in Exhibit II, Schedule A.

Dr. Avera examines Black Hills Energy’s proposed capital structure. He compares it to the capital structures of the firms in his proxy groups. Dr. Avera finds that “for the firms in the [Gas] Utility Proxy Group, common equity ratios at fiscal year-end 2008 ranged between 42.4 and 66.1 percent and averaged 52.9 percent of long-term capital. Meanwhile, Value Line expects an average common equity ratio for the Gas Utility Proxy Group of 56.2 percent for its three-to-five year forecast horizon.”²⁸ Based on his evaluation, Dr. Avera concludes that “Black Hills Energy’s requested capital structure represents a reasonable mix of capital sources from which to calculate its overall rate of return.”²⁹

Dr. Woolridge has three areas of criticisms with the company’s capital structure and debt cost. He argues “the capital structure has no short-term debt..., the capitalization of the Company and Black Hills Utility Holdings are in transition since the acquisition [of Aquila], and the two financings used in the development of the capitalization and debt cost rate of the company are ... unrelated to the assets of Black Hills.”³⁰

²⁷ Cleberg Direct at 11, lines 16-17.

²⁸ Avera Direct at 59, lines 5-9.

²⁹ Avera Direct at 61, lines 3-4.

³⁰ Woolridge Direct at 13, lines 7-16.

Dr. Woolridge uses the companies in his proxy group in developing an alternative capital structure that is “10.21% short-term debt, 39.92% long-term debt, 0.16% preferred stock, and 48.99% common equity.”³¹ This capital mix reflects the “average quarterly capitalization ratios for the Gas Proxy Group” for 2009.³²

Mr. Cleberg brings more clarity to Black Hills Energy’s proposal for a capital structure in his rebuttal testimony. He writes, Black Hills Corporation initially “borrowed \$382.8 million on its Acquisition Credit Facility...to provide interim financing for a portion of the Aquila acquisition cost. The remaining portion ... was funded with equity.”³³ Later, Black Hills Corporation completed a “\$250 million issue having a five year maturity with a 9% coupon (9.18 all-in) rate,”³⁴ the proceeds of which “were applied to reduce Black Hills Corporation’s borrowings on the Acquisition Credit Facility, and the facility was retired.”³⁵ He goes on to write that “Black Hills Corporation allocated the \$250 million long-term debt issue to BHUH with a further assignment of \$60 million to Black Hills Energy at the time of issuance.”³⁶

The \$60 million represents only part of Black Hills Energy’s debt. Mr. Cleberg continues “to achieve a target capital structure of 52% equity and 48% debt Black Hills Corporation needed to assign additional debt to BHUH with further assignment of that debt to Black Hills Energy ... Black Hills Corporation made the decision to allocate its other \$225 million holding company debt issue. ... The debt is a \$225 million, 6.5% senior unsecured long-term debt obligation of Black Hills Corporation. Black Hills Corporation allocated \$54.0 million of the \$225 million long-term debt financing ... to Black Hills Energy’s Nebraska utility operations. Since October 2009 with the assignment of the two holding company debt issues, BHE has had \$114 million allocated of long-term debt.”³⁷

With respect to the capital structure implied by the \$114 million in debt financing, Mr. Cleberg writes “[s]ubsequent to the assignment of the long-term debt issues from Black Hills Corporation to BHUH with further assignment to Black Hills Energy, which was completed in October 2009, the ratio of equity to debt has ranged from 50%-53% equity.”³⁸ Later he writes “[a]s of March 1, 2010, the date of implementation of interim rates, for the purpose of setting “just and reasonable rates,” the equity to debt ratio is 52% equity and 48% debt.”³⁹

In justifying the proposed capital structure, Mr. Cleberg writes “[t]he Company has concluded that a common equity ratio of 52% is a reasonable capitalization level that is

³¹ Woolridge Direct at 15, lines 8-9.

³² Woolridge Direct at 15, lines 6-7.

³³ Cleberg Rebuttal at 4, lines 18-22.

³⁴ Cleberg Rebuttal at 5, lines 17-18.

³⁵ Cleberg Rebuttal at 6, lines 2-4.

³⁶ Cleberg Rebuttal at 6, lines 4-7.

³⁷ Cleberg Rebuttal at 6-7, lines 11-9.

³⁸ Cleberg rebuttal at 9, lines 20-23.

³⁹ Cleberg Rebuttal at 10, lines 1-3.

consistent with other utilities in the industry, allowing for the relatively small size of the Company, and appropriate in order for Black Hills Corporation to support its investment grade credit rating.”⁴⁰

Mr. Cleberg addresses Dr. Woolridge’s concern over the lack of short-term debt in the capital structure. Mr. Cleberg writes, “[t]he assets of the Company are predominately [*sic*] long-lived utility plant assets. Accordingly, the financing for such assets has been done through the issuance of long-term debt and through equity investments in the Company as outlined above.”⁴¹ Mr. Cleberg continues, “[s]hort-term debt is generally used by gas utilities to meet seasonal working capital needs. ... The Company may also use short-term debt to fund plant construction until its completion or until permanent financing has been placed.”⁴²

Mr. Cleberg rebuts Dr. Woolridge’s contention that the capitalization of the company and Black Hills Utility Holdings are in “transition” since the acquisition of Aquila. He writes:

The permanent financing and capitalization of the Company has been completed through the following transactions: 1) the initial equity capital investment in the Company, 2) the issuance by Black Hills Corporation of the \$250 million of long-term debt financing in May 2009, of which approximately \$60.0 million was allocated to the Company at the time, 3) an allocation in October 2009 of approximately \$54.0 million of the \$225 million long-term debt financing of Black Hills Corporation.⁴³

Mr. Cleberg also addresses Dr. Woolridge’s concern that the two financings used in the development of the capitalization and debt cost rate of the company are unrelated to the assets of Black Hills. He writes:

[T]he \$250 million Black Hills Corporation holding company debt issue completed in May, 2009 was a direct financing for the acquisition of the Aquila utility assets. The company assigned the \$225 million, 6.5% Black Hills Corporation debt issue to the acquired Aquila utilities because it was available to be used to finance a portion of the acquired Aquila utility assets and to provide a permanent capital structure and achieve a lower blended debt rate.⁴⁴

As to the cost of the \$225 million issue, Mr. Cleberg writes “the 6.5%, \$225 million existing debt was at a debt rate lower than Black Hills Corporation or Black Hills Energy could obtain at the time this financing was completed.”⁴⁵

⁴⁰ Cleberg Rebuttal at 9, lines 4-8.

⁴¹ Cleberg Rebuttal at 14-15, lines 20-2.

⁴² Cleberg Rebuttal at 15, lines 3-8.

⁴³ Cleberg Rebuttal at 10, lines 13-20.

⁴⁴ Cleberg Rebuttal at 16, lines 13-20.

⁴⁵ Cleberg Rebuttal at 16, lines 20-23.

Discussion: Based on Mr. Cleberg's more detailed discussion in his rebuttal testimony, it is hard to dispute the company's proposed capital structure of 52 percent equity and 48 percent debt. These relative shares comport well with the companies in both Dr. Avera's Gas Utility Proxy Group and Dr. Woolridge's proxy group.

Based on Mr. Cleberg's rebuttal testimony, the permanent financing of the acquisition appears to be complete. In addition, the \$250 and \$225 million issues that are incorporated into the capital structure are related to the assets of Black Hills. The \$250 million instrument, issued in May of 2009, was used to retire the Acquisition Credit Facility that was borrowed to finance a portion of the Aquila purchase. The \$225 million instrument was used to bring the capital structure into balance. While the instrument was issued before the purchase of Aquila's assets, Mr. Cleberg makes the case that Black Hills Energy needed to increase the debt portion of its capital structure to meet its target debt to equity ratio and using that particular instrument was more cost effective than issuing new debt.

As to the mix of short-term and long-term debt in the capital structure, Mr. Cleberg's arguments are sound. Long-term assets should be financed with long-term debt. While page two of Dr. Woolridge's Exhibit JRW-5 shows the mix of long-term and short-term debt held by the companies in Dr. Woolridge's Gas Proxy Group, there is no indication as to how the short-term debt is being used. Based largely on Mr. Cleberg's rebuttal testimony, the Company provides sufficient evidence to support a capital structure that is 52 percent common equity and 48 percent debt.

IV. THE COST OF DEBT

Mr. Cleberg represents that "the average cost of debt for Black Hills Energy is 8.04 percent."⁴⁶ In developing this number, he writes "Black Hills Corporation has advanced \$475 million of existing long-term debt to Black Hills Utility Holdings as short-term debt. As part of this rate application, in accordance with Nebraska law, Black Hills Utility Holdings allocates \$130,096,976 of that amount to Black Hills/Nebraska Gas Utility Company, LLC. The 8.04% cost of debt is the average of the actual debt assigned to Black Hills Energy."⁴⁷ This average is supported by Mr. Cleberg's Application Exhibit II, Schedule A, which shows \$250 million of financing at an "effective rate" of 9.18 percent and another \$225 million of financing at an "effective rate" of 6.77 percent.

Dr. Woolridge takes exception with the proposed cost of debt, arguing that the two financings are reflective of risk associated with the past performance of the parent holding company. He writes that "both bond issues are unsecured, which means that they are not backed by any specific assets (such as those of Black Hills) and therefore they

⁴⁶ Cleberg Direct at 17, line 4.

⁴⁷ Cleberg Direct at 17, lines 7-12

have higher interest rates to reflect unsecured status.”⁴⁸ Dr. Woolridge also argues that the credit ratings for Black Hills Energy are “strictly a function of the riskiness of the Company’s parent, BHC [Black Hills Corporation], and the weakness in BHC’s credit rating attributable to BHC’s riskier unregulated operations including oil and gas exploration, unregulated energy generation, coal mining, and energy marketing.”⁴⁹

Dr. Woolridge develops his own estimate of the cost of debt. To estimate the cost of short-term debt, Dr. Woolridge uses “the average of the 1-year utility bond yields [for his Gas Proxy Group], or 1.31%.”⁵⁰ For the long-term rates he begins by calculating the average of “(1) the 10- and 30- years utility bonds [for his Gas Proxy Group] since the beginning of 2010..., (2) the 30- year utility bonds [for his Gas Proxy Group] since the beginning of 2010...; and (3) the long-term debt cost for the Gas Proxy Group.”⁵¹ That average is 5.89 percent. From this he concludes that “an appropriate long-term debt cost rate for the Company is 6.0%.”⁵²

Mr. Cleberg addresses Dr. Woolridge’s concern about the cost of debt. With respect to the unsecured nature of the debt financing instruments, Mr. Cleberg argues that “the ring-fencing provisions in each state of jurisdiction of the acquired Aquila utilities do not allow for the assets of the individual utility to secure the obligations of other utilities or entities. Thus, a combined secured financing of all of the BHUH legal entities could not be implemented.”⁵³ Mr. Cleberg goes on to argue “to complete secured debt financings for the Aquila assets, it would have required separate debt issuances at each separate utility. Black Hills Corporation concluded that it was not practicable to complete separate secured financings for each separate BHUH utility given the additional costs that would be incurred in proportion to the amount being financed.”⁵⁴

Mr. Cleberg also addresses Dr. Woolridge’s concern that the two financings used in the development of the capitalization and debt cost rate are reflective of the risk and past performance of the Company’s ultimate parent company, Black Hills Corporation. Mr. Cleberg writes “Dr. Woolridge is wrong for two reasons: (1) the rate is a function of timing and the credit crisis not Black Hills Corporation’s credit rating, which is investment grade and (2) Dr. Woolridge has not demonstrated that his conclusion is factually accurate.”⁵⁵

Mr. Cleberg discusses debt costs if Black Hills Energy were to issue its own debt as a “stand alone” entity. Mr. Cleberg argues that because of Black Hills Energy’s relatively

⁴⁸ Woolridge Direct at 14, lines 6-8.

⁴⁹ Woolridge Direct at 14, lines 10-14.

⁵⁰ Woolridge Direct at 16, lines 4-5.

⁵¹ Woolridge Direct at 16, lines 12-16.

⁵² Woolridge Direct at 16, lines 15-16.

⁵³ Cleberg Rebuttal at 17, lines 14-19.

⁵⁴ Cleberg Rebuttal at 17-18, lines 20-2.

⁵⁵ Cleberg Rebuttal at 17, lines 1-5.

small size, "it would require a capital structure greater than 55% equity."⁵⁶ He also argues that issuing its own debt "would require the incurrence [*sic*] of significant additional costs."⁵⁷

Mr. Cleberg's representation of the company's cost of debt is that "[t]he average debt rate of 8.04% used by Black Hills Energy is the actual cost of debt."⁵⁸

Discussion: Mr. Cleberg reasonably established that the weighted average cost of debt for the two financings related to Black Hills Energy is 8.04 percent. Information in this and the previous section reasonably establishes that the \$250 and \$225 million debt issues were used to finance the purchase of Aquila's assets and to bring Black Hills Energy's capital structure in line with targets. The first issue was at an effective rate of 9.18 percent and the second at an effective rate of 6.77 percent. Neither rate is disputed. They are actual costs and their weighted average is 8.04 percent.

The question is whether the effective rates represent reasonable costs. Dr. Woolridge argues that they are biased upward because they are unsecured and are reflective of the risks associated with the parent company. However, he gives no empirical estimates as to the magnitude of the additional costs imposed by these biases. Mr. Cleberg argues that it was impractical for each Black Hills distribution company to issue its own secured debt and that doing so would have been more costly. He also argues that there would be additional costs incurred by issuing debt as a stand-alone entity. However, Mr. Cleberg does not provide any detail as to the magnitude of those additional costs.

Mr. Cleberg, Dr. Avera and Dr. Woolridge allude frequently to the financial upheaval occurring during 2009. Black Hills was caught in that financial upheaval. Panel A of Dr. Woolridge's Exhibit JRW-3 provides information about interest rates at the time. The Panel shows BBB-rated 30-year utility bond interest rates above 7.5 percent for most of 2009. Panel B of the same exhibit shows that in 2009 there was a pronounced jump in the spread between 30-year utility bonds and treasuries. Panel B of exhibit JRW-2 shows a widening of spreads to as much as six percent for 10-year bonds.

Black Hills Corporation had to pay a 9 percent rate on \$250 million in debt financed in May of 2009. Given the financial turbulence of the times, this does not seem an imprudent cost. Furthermore, there is no evidence in the record to indicate if Black Hills Energy could have obtained a lower rate on its own. As to the \$225 million, Black Hills Corporation's use of existing debt at a rate of 6.77 seems prudent given the volatile financial markets of the time.

Based largely on Mr. Cleberg's rebuttal testimony, the Company certainly demonstrates that its weighted average cost of debt is equal to 8.04 percent. The Public Advocate does

⁵⁶ Cleberg Rebuttal at 11, lines 9-10.

⁵⁷ Cleberg Rebuttal at 11, lines 17-18.

⁵⁸ Cleberg Rebuttal at 8, lines 8-9.

not provide enough persuasion to clearly refute that showing. Hence, the Company meets its burden of proof in developing the capital structure.

V. THE COST OF EQUITY CAPITAL

A. Discounted Cash Flow Analysis

The DCF model estimates the return on equity by adding the current dividend yield to the expected dividend growth rate.⁵⁹ The current dividend yield is the dividend expected at the end of the period divided by the current stock price. In equation form,

$$k = D_1/P_0 + g$$

where

k = estimated return on equity for a particular investment

D_1/P_0 = dividend yield

g = expected dividend growth rate.

Dr. Avera applies “the constant growth DCF model to estimate the cost of common equity for Black Hills Energy, which is the form of the model most commonly relied on to establish the cost of common equity for traditional regulated utilities and the method most often referenced by regulators.”⁶⁰ The DCF model “recognizes that the rate of return to stockholders consists of two parts: 1) dividend yield (D_1/P_0) and, 2) growth (g).”⁶¹

In estimating the dividend yield, Dr. Avera uses “[e]stimates of dividends to be paid by each of these utilities over the next twelve months, obtained from Value Line” as his estimate of the coming dividend, D_1 .⁶² Dr. Avera is not completely clear as to his choice for the stock price, but apparently he uses a price on one day, as indicated in note (a) of his Exhibit WEA-2, which states “[r]ecent price and estimated dividend for next 12 mos. from Value Line Investment Survey, Summary and Index (Nov. 6, 2009).”⁶³ For the Gas Utility Proxy Group, the average dividend yield is 4.4 percent.⁶⁴

In estimating the dividend growth rate, g, Dr. Avera eschews the use of historical growth rates as proxies for expected growth rates in favor of analysts’ projections of future growth rates. In explaining this preference, he writes “[i]f past trends in earnings,

⁵⁹ For a description see Avera direct at 28 and Woolridge direct at 25-27.

⁶⁰ Avera Direct at 29, lines 2-5.

⁶¹ Avera Direct at 28, lines 16-17.

⁶² Avera Direct at 29, lines 16-17.

⁶³ Avera Exhibit WEA-2, note (a).

⁶⁴ Note that Dr. Avera combines the dividend yield and growth rate to get an expected rate of return for each company in his comparable group. He then takes the average of those rates of return to derive an estimated rate of return for Black Hills Energy. This is mathematically equivalent to adding the average of the dividend yields to the average of the growth rates to get an estimate of the rate of return for Black Hills Energy.

dividends, and book value are to be representative of investors' expectations for the future, then historical conditions giving rise to these growth rates should be expected to continue. This is clearly not the case for utilities."⁶⁵ In addition, he contends that "[p]rofessional security analysts study historical trends extensively in developing their projections of future earnings. Hence, to the extent there is any useful information in historical patterns, that information is incorporated into analysts' growth forecasts."⁶⁶

Dr. Avera argues for using earnings growth rather than dividend growth because "[a]s payouts ratios for firms in the utility industry trended downward, investors' focus has increasingly shifted from dividends to earnings as a measure of long-term growth."⁶⁷ Consequently, he uses "earnings growth projections for each of the firms in the Gas Utility Proxy Group reported by Value Line, IBES, First Call, and Zacks."⁶⁸ The average growth rates for his Gas Utility Proxy Group are 4.5, 5.5, 5.5, and 5.8 percent, respectively.

Dr. Avera takes two additional approaches to estimating the dividend growth rate. For the first, he points out that "[i]n constant growth theory, growth in book equity will be equal to the product of the earnings retention ratio ... and the earned rate of return on book equity. Furthermore, if the earned rate of return and the payout ratio are constant over time, growth in earnings and dividends will be equal to growth in book value."⁶⁹ Calling this the sustainable growth rate, Dr. Avera estimates an average sustainable growth rate for his Gas Utility Proxy Group is 6.1 percent.

For his last measure, Dr. Avera argues that "the DCF model assumes that investors expect to receive a portion of their total return in the form of current dividends and the remainder through price appreciation. Consistent with this paradigm, I also examined expected growth in each utility's stock price based on Value Line's 2011-2014 projections."⁷⁰ The resulting appreciation rate for his Gas Utility Proxy Group is 7.8 percent.

Dr. Avera combines his expected dividend yield with the projected growth rates and removes outliers to get DCF-based estimates of the cost of equity capital.⁷¹ Using his first four growth rate measures, for the Gas Utility Proxy Group, the growth rate estimates range from 8.9 to 10.2 percent. Using the sustainable growth rate estimate of g, the expected return on equity is 10.6 percent. Using the price appreciation growth rate

⁶⁵ Avera Direct at 30, lines 12-14.

⁶⁶ Avera Direct at 33, lines 5-7.

⁶⁷ Avera Direct at 31, lines 13-15.

⁶⁸ Avera Direct at 33, lines 10-11.

⁶⁹ Avera Direct at 35, lines 6-12.

⁷⁰ Avera Direct at 36, lines 18-21.

⁷¹ Note that for the Gas Utility Proxy Group, outliers are removed only from the model using his last earnings growth rate estimate.

estimate of g , the expected return on equity for the Gas Utility Proxy Group is 11.5 percent.

Dr. Woolridge also uses the constant growth DCF model to value the cost of equity capital for Black Hills Energy. He argues in favor of using a constant growth model based on, “the relative stability of the utility business, the maturity of the demand for public utility services, and the regulated status of public utilities.”⁷²

Dr. Woolridge’s dividend yield data are contained on page two of his exhibit JRW-10. His initial dividend yield estimate is “the median of the six month and March 2010 dividend yields”⁷³ for his Gas Proxy Group. The median of the six-month average is 4.4 percent. The median for March is 4.5 percent. Their average is 4.45 percent. (Note that based on the data in exhibit JRW-10, mean and median results are fairly similar.) He then adjusts this initial dividend yield estimate to account for growth in the dividend over the first year. To do this, he multiplies it by “one-half (1/2) the expected dividend growth rate so as to reflect growth over the coming year.”⁷⁴

Dr. Woolridge then discusses estimating the dividend growth rate. He writes that while there is debate about how to estimate the growth rate, “[p]resumably, investors use some combination of historical and/or projected growth rates for earnings and dividends per share and for internal or book value growth to assess long-term potential.”⁷⁵ Dr.

Woolridge then examines a variety of historical and projected growth rates, including:

historic [*sic*] growth rates in earnings per share (“EPS”), dividends per share (“DPS”), and book value per share (“BVPS”). I have reviewed *Value Line*’s historical and projected growth rate estimates for EPS, DPS, and BVPS. In addition, I have utilized the average EPS growth rate forecasts of Wall Street analysts as provided by Yahoo! – First Call, Zacks, and Reuters. ... Finally I have also assessed prospective growth as measured by prospective retention rates and earned returns on common equity.⁷⁶

Using median values of 5-year and 10-year historical EPS, DPS and BVPS growth rates for his Gas Proxy Group, Dr. Woolridge develops an average historical growth rate estimate of 4.0 percent. The corresponding *Value Line* historical growth rate estimate is 4.4 percent. The average of the *Value Line* projected EPS, DPS and BVPS median growth rates for the Gas Proxy Group is 3.8 percent. The median prospective sustainable growth rate (for only three companies with data) is 4.6 percent. Finally his average of the median of analysts’ EPS projections is 5.0 percent. Averaging results in an estimated long-term dividend growth rate of 4.4 percent. However, Dr. Woolridge writes that “[g]iving more weight to the projected growth rate indicators and to prospective internal

⁷² Woolridge Direct at 27, lines 21-23.

⁷³ Woolridge Direct at 29, line 4.

⁷⁴ Woolridge Direct at 30, lines 9-10.

⁷⁵ Woolridge Direct at 30, lines 16-19.

⁷⁶ Woolridge Direct at 30-31, lines 24-5.

growth, an expected DCF growth rate in the 4.5% range is reasonable for the group.”⁷⁷
This figure is used in his DCF analysis.

Combining Dr. Woolridge’s adjusted dividend yield estimate of 4.55 percent with his consensus dividend growth rate estimate of 4.5 percent yields a DCF-based cost of equity estimate equal to 9.1 percent.

Discussion:

Dr. Avera uses the expected dividend over the next four quarters and the stock price at one point in time to estimate a dividend yield of 4.4 percent for his group of comparable gas utilities.⁷⁸ Dr. Woolridge uses the median of the six month and March 2010 dividend yields to develop a current dividend yield of 4.45 percent for his group of comparable utilities. He then multiplied this by an adjustment factor to estimate the appropriate one year ahead dividend yield required in the constant DCF model. This estimate is 4.55 percent.

Dr. Avera’s dividend yield estimating procedure does not stand up under Dr. Woolridge’s direct and rebuttal testimony. Dr. Avera’s use of the stock price on one day makes his dividend yield estimate too susceptible to very short-term shocks that may not be relevant. In contrast, Dr. Woolridge measures the dividend yield over a period of time that is long enough to not be overly influenced by a very short-term shock. Yet it does not cover a time period so long as to no longer be relevant. His estimate of 4.55 percent is the preferred value.

Turning to the dividend growth rate, Dr. Avera’s first four growth rate estimates rely on four different sets of analysts’ earnings growth rate projections. There is certainly merit in his arguments that past trends influenced historical data and, consequently, past conditions would have to hold to some extent in order to justify historically-based estimates. There is also merit in his argument that to the extent there is any useful information in historical patterns, the information is incorporated into analysts’ growth forecasts. Hence these four estimates ranging from 4.5 to 5.8 percent cannot be discounted.

However, there is also merit in Dr. Woolridge’s use of historical values as well as analysts’ expectations to form a range of growth rate estimates. His estimates of growth rates for earnings, dividends and book value range from 2.6 to 7.2 percent with a mean of 4.9 percent.

There are two main issues to be settled here. One is if forecasts of growth rates are the most appropriate estimate of future growth rates or if historical data can be used as well. The other is whether the growth rate in earnings is an appropriate proxy for the dividend

⁷⁷ Woolridge Direct at 38, lines 7-9.

⁷⁸ Note that if Dr. Woolridge’s group of 9 comparable utilities is used, Dr. Avera’s average dividend yield would still be 4.4 percent.

growth rate in the DCF model or if dividend and book value growth rates can be used as well.

As to the issue of historical versus forecast data, from an empirical standpoint, it may make little difference whether historical data or forecasts are used. Dr. Woolridge has four historical measures; 5-year compound growth rates, 10-year compound growth rates, *Value Line* 5-year historical growth rates and *Value Line* 10-year historical growth rates. Dr. Avera and Dr. Woolridge also show a variety of analysts' forecasts. Dr. Woolridge introduces estimates from *Value Line*, Yahoo/First Call, Zacks and Reuters. Dr. Avera has forecasts from *Value Line*, IBES, First Call and Zacks. When the historical estimates are combined with the analysts' forecasts, the resulting average EPS growth rate is 5.57 percent. When just the forecasts are used, the resulting average EPS growth rate is 5.52 percent.⁷⁹ When just the historical averages are used, the resulting average EPS growth rate is 5.68 percent. The EPS growth rate averages from the historical data versus the forecasts differ by only 16 basis points. There seems to be little difference between average EPS growth estimates based on historical data or estimates based on analysts' forecasts.

The other relevant issue is whether an earnings growth rate can be used as a proxy for the long-term dividend growth rate required in the constant DCF model. Dr. Woolridge has "several issues with using the EPS growth rate forecasts of Wall Street analysts as DCF growth rates."⁸⁰ His first is that the DCF model relies on the dividend growth rate, not the earnings growth rate. His more significant objection is that "it is well-known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased."⁸¹ He more extensively discusses his concerns with using EPS forecasts in section V of his report.⁸² However, his objection seems to moderate when he writes "[t]he appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Nonetheless, over the very long-term, dividend and earnings will have to grow at a similar growth rate. Therefore, consideration must be given to other indicators of growth, including prospective dividend growth, internal growth, as well as projected earnings growth."⁸³

Dr. Avera spends considerable space in his written rebuttal defending the use of analysts' forecasts of earnings and discrediting the use of historical measures, particularly dividend growth rates. His arguments are clear. However, they are not convincing enough to warrant excluding those measures.

The problem is that the constant DCF model is a long-run model. Unfortunately, Black Hills Energy is not in this theoretical construct of the long-run. Neither Dr. Avera nor

⁷⁹ Note that only *Value Line* has dividend projections.

⁸⁰ Woolridge Direct at 34, lines 23-24.

⁸¹ Woolridge Direct at 35, lines 3-5.

⁸² See Woolridge direct at 60-71.

⁸³ Woolridge direct at 34-35, lines 24-3.

Dr. Woolridge shows whether historical or forecast measures of the EPS, DPS or BVPS growth rates would be the correct measure of the dividend growth rate when the company reaches its long-run steady state earnings growth path. Investors seeking an appropriate risk-adjusted return on Black Hills Energy just know current estimates for DPS, EPS and BVPS growth rates. Investors must use all of the information available to make their own predictions of the appropriate return to expect from an investment in Black Hills Energy equity capital. This includes information on dividend and book value growth rates as well as earnings growth rates. Hence, no measure is necessarily preferred and none can be summarily ignored.

With respect to Dr. Avera's final two estimates of the dividend growth rate, they deserve further discussion. Dr. Avera estimates a "sustainable growth rate" as:

The sustainable growth rate is calculated by the formula, $g=br+sv$, where "b" is the expected retention ratio, "r" is the expected return on equity, "s" is the percent of common equity expected to be issued annually as new common stock, and "v" is the equity accretion rate.⁸⁴

The first part of his equation multiplies the retention ratio times the ratio of earnings per share to book value per share.⁸⁵ This product is retained earnings divided by book value. The average value for Dr. Avera's 12 companies in the Gas Utility Proxy Group is 5.1 percent.

As to the second part of Dr. Avera's measure, he writes:

Under DCF theory, the "sv" factor is a component of the growth rate designed to capture the impact of issuing new common stock at a price above, or below, book value. When a company's stock is greater than its book value per share, the per-share contribution in excess of book value associated with new stock issues will accrue to the current shareholders. This increase in the book value of existing share holders leads to higher expected earnings and dividends, with the "sv" factor incorporating this additional growth component.⁸⁶

Dr. Avera calculates s as "the product of the projected market-to-book ratio and growth in common shares outstanding"⁸⁷ and calculates v as "1 minus the inverse of the projected market-to-book ratio."⁸⁸ In addition, he adjusts r , explaining that "[b]ecause Value Line reports end-of-year book values, an adjustment factor was incorporated to compute an average rate of return over the year, consistent with the theory underlying this approach to estimating investors' growth expectations."⁸⁹

⁸⁴ Avera Direct at 35, lines 13-16.

⁸⁵ See notes (c) and (d) in exhibit WEA-3 at 3.

⁸⁶ Avera direct at 35-36, lines 18-2.

⁸⁷ Avera direct at 36, lines 14-15.

⁸⁸ Avera direct at 36, line 16.

⁸⁹ Avera direct at 36, lines 10-12.

The mathematics of the “br+sv” growth rate estimate in Dr. Avera’s exhibit WEA-3 convert it from a sustainable growth rate to a growth rate in book value. The “br” part is retained earnings divided by BVPS. The “sv” part is the margin between market and book value, all divided by BVPS. Hence, “br+sv” essentially measures the growth rate in book value.

For all but one firm in Dr. Avera’s Gas Utility Proxy Group, the “sv” part is positive.⁹⁰ This strongly indicates that in addition to growth through retained earnings, the firms in his Gas Utility Proxy Group are expecting – at least over the next five years – return through issues of new common stock at prices above book value. This will force the resulting growth in book value to be greater than the growth rate in either earnings or dividends.

Dr. Avera’s last measure, his stock price appreciation measure, contradicts the math of the constant DCF model. The DCF model presumes that an investor in a particular equity will receive annual dividend payments into the infinite future and that these dividend payments will grow at a constant rate. Consequently, the current price of that stock can be calculated as the present discounted value of the infinite flow of dividend payments, where the discount rate is the return on equity. Through mathematical manipulation, it is possible to relocate the dividend growth rate in the original DCF equation. In its manipulated form, each annual payment is the first year dividend payment and the discount rate becomes the rate of return on equity minus the dividend growth rate. The two specifications are mathematically equivalent and will produce the same result for either the initial stock price or the return on equity.

In its manipulated form, the DCF model is a perpetuity model. The owner of the stock will receive an infinite stream of constant annual dividend payments, with each payment discounted by the return on equity minus the dividend growth rate, raised to the appropriate power. Both Dr. Avera and Dr. Woolridge use this latter form of the DCF model to estimate the return on equity.⁹¹

In developing his last growth rate estimate, Dr. Avera writes “[a]s noted earlier, the DCF model assumes that investors expect to receive a portion of their total return in the form of current dividends and the remainder through price appreciation.”⁹² This does not hold in the constant growth rate DCF model used by Dr. Avera. Investors expect to receive their total return through a stream of dividend payments.

Following Dr. Avera’s logic, it is possible to divide the infinite stream of payments associated with a perpetuity into two parts. The first part is an annuity where the dividends are paid for a finite number of years. The second part is the remaining infinite stream of dividends paid once the annuity ends. The remaining infinite stream of

⁹⁰ For Piedmont Natural Gas, “sv” takes a value of negative one-tenth of one percent.

⁹¹ See Avera direct at 28, Woolridge direct at 27.

⁹² Avera direct at 36, lines 18-20.

payments, appropriately discounted, is equal to the price of the stock at the time when the annuity ends. But if Dr. Avera is going to add stock price appreciation to his growth rate estimate he needs to use an annuity formula for the first part, not a perpetuity formula.⁹³ This greatly complicates the mathematics involved in calculating either the dividend growth rate or the implied return on equity. However, in explaining the derivation of this measure, Dr. Avera's sole elucidation is "I also examined expected growth in each utility's stock price based on Value Line's 2011-2014 projections."⁹⁴ There is no explanation of how the growth rate in stock prices is calculated, how it relates to a dividend growth rate, or how the estimate is translated into the growth rate estimates in exhibit WEA-2. In summary, there is little theoretical basis in using his "Price" model to calculate the dividend growth rate and certainly no empirical justification to use the measures shown in his exhibit.

Drs. Woolridge and Avera also provide information to calculate comparable sustainable growth rates. Dr. Woolridge calculates this growth rate estimate as "*Value Line's* average projected retention rate and return on shareholders' equity."⁹⁵ Page five of his exhibit JRW-10 shows that by averaging across his group of nine comparable gas utilities, the estimated sustainable growth rate is 5.1 percent. Dr. Avera provides a comparable measure in the "br" part of his "br+sv" measure. The average value for Dr. Avera's 12 companies in the Gas Utility Proxy Group is also 5.1 percent.

Summarizing the growth rate information, the Company provides justification for five acceptable growth rates ranging between 4.50 and 6.14 percent. The average is 5.48 percent. However, the Public Advocate provides enough reasonable information to cast doubt on that showing. The Company's rebuttal does not discredit the evidence from the Public Advocate's direct testimony. In light of the evidence provided by the Public Advocate, the Company's evidence standing alone does not meet the burden of proof as to a reasonable range of values for the dividend growth rate. Therefore, the growth rate evidence must be looked at in total, including the Public Advocate's estimates with the reasonable Company estimates. Combined, the growth rate estimates range between 2.6 percent and 7.2 percent with a mean of 5.0 percent.

Adding the previously discussed dividend yield of 4.55 percent to the growth rate estimates produces equity cost estimates ranging between 7.2 and 11.8 percent. Using the mean growth rate of 5.0 percent produces a DCF-based cost of equity capital of 9.55 percent. This value is adopted from the DCF analysis.

⁹³ Dr. Avera's incorrect use of the perpetuity formula should upwardly bias his estimate. It does for all three proxy groups, especially when considering the large number of individual estimates that are thrown out as being "too large".

⁹⁴ Avera direct at 36, lines 20-21.

⁹⁵ Woolridge direct at 37, lines 5-6.

B. Capital Asset Pricing Model Analysis

The Capital Asset Pricing Model is another technique used to estimate the return on equity. The CAPM has two components. The first component is the return available on a risk free asset. The second component has two parts. The first part is a firm's beta. Beta measures the variation of return on a specific investment relative to variation in the market return as a whole. The second part is the difference between the return on the risk free asset and the return on the market as a whole. This difference, also called a risk premium, is multiplied by beta and then added to the risk free rate to get an estimate of the investment's return on equity. In equation form,

$$k = r_f + \beta(r_m - r_f)$$

where

k = estimated return on equity for a particular investment

r_f = the risk free rate of return

β = Beta

r_m = the rate of return on the market as a whole.

Dr. Avera uses a forward-looking CAPM analysis. He writes "the CAPM is an *ex-ante*, or forward-looking model based on expectations of the future. As a result, in order to produce a meaningful estimate of investors' required rate of return, the CAPM must be applied using estimates that reflect the expectations of actual investors in the market, not with backward-looking, historical data."⁹⁶

Using every dividend paying firm in the S&P 500, Dr. Avera calculates the expected market return on equity using the constant DCF model. First Dr. Avera calculates a weighted average dividend yield. For the dividend payment he uses the Value Line expected dividend, increased by the dividend growth rate to get the next period expected dividend. The growth rate is the "consensus earnings growth projections for each firm published by IBES."⁹⁷ Dr. Avera does not indicate what is used as the stock price. He then forms a weighted dividend yield for the dividend paying companies of the S&P 500 by weighting each firm's dividend yield by its "proportionate share of total market value."⁹⁸ The weighted average expected dividend yield is 2.7 percent. The same weighting process is applied to the estimated dividend growth rates to get a weighted average expected dividend growth rate of 9.2 percent. The two are combined to get an expected market return of 11.9 percent.

For the risk free rate, Dr. Avera uses the 4.2 percent "average yield on 20-year Treasury bonds for October 2009."⁹⁹ Subtracting the risk free rate from the expected market return generates a market risk premium of 7.7 percent.

⁹⁶ Avera Direct at 42, lines 12-16.

⁹⁷ Avera Direct at 43, line 4.

⁹⁸ Avera Direct at 43, lines 5-6.

⁹⁹ Avera Exhibit WEA-8 at 2, note (d).

Dr. Avera “relied on the beta values reported by Value Line.”¹⁰⁰ It is assumed that Dr. Avera uses an average for each proxy group, but this is not specifically mentioned in either his direct testimony or exhibits. The beta for the Gas Utility Proxy Group is 0.68.

Multiplying the market risk premium by beta and adding in the risk free rate, Dr. Avera’s resulting Utility Proxy Group implied cost of equity capital is equal to 9.5 percent. For the two other proxy groups, the CAPM-based implied costs of equity capital are 10.2 and 10.3 percent.¹⁰¹

Dr. Woolridge also develops an equity cost estimate using the Capital Asset Pricing Model. Dr. Woolridge uses a risk free rate of 4.65 percent. This is the rate on 30-year U.S. Treasury bonds on March 1, 2010.¹⁰² He uses the average of betas for his Gas Proxy Group. That average is 0.67.¹⁰³

Dr. Woolridge then discusses the concept and measurement of the market risk premium. He defines the premium as “the expected return on the stock market (e.g., the expected return on the S&P 500)..., minus the risk-free rate of interest.”¹⁰⁴ Dr. Woolridge points out what he sees as several caveats in using risk premium estimates that are estimated either using historical data or forecast using expectations of future premia. On page 5 of his exhibit JRW-11, he reviews results of several independent studies that estimated the market risk premium via a variety of methods and using various data. The estimates using the historical risk premium, ex ante models, and surveys of market experts produce market risk estimates that range from 2.0 percent to 7.0 percent.¹⁰⁵

Dr. Woolridge cautions that “[m]ost of these studies were published prior to the financial crisis of the past two years. In addition, some of these studies were published in the early 2000s at the market peak. It should be noted that many of these studies (as indicated) used data over long periods of time (as long as fifty years of data) and so they were not estimating an equity risk premium as of a point in time.”¹⁰⁶

Dr. Woolridge also uses a “Building Blocks Methodology” to estimate the market return.¹⁰⁷ This approach relates “the compounded historical returns to the different fundamental variables employed by different researchers in building ex ante expected equity risk premiums.”¹⁰⁸ Variables include “inflation, real EPS and DS growth, POE and book value growth, and price-earnings (“P/E”) ratios.”¹⁰⁹ He goes on to present a

¹⁰⁰ Avera Direct at 43, line 14.

¹⁰¹ See Avera Exhibit WEA-8.

¹⁰² See discussion in Woolridge Direct at 41, lines 14-19.

¹⁰³ See discussion in Woolridge Direct at 41-42, lines 21-20.

¹⁰⁴ Woolridge Direct at 43, lines 2-3.

¹⁰⁵ See Woolridge Exhibit JRW-11 at 5.

¹⁰⁶ Woolridge Direct at 51-52, lines 23-2.

¹⁰⁷ See Woolridge Direct at 45-49.

¹⁰⁸ Woolridge Direct at 45-46, lines 22-2.

¹⁰⁹ Woolridge Direct at 45, lines 2-4.

building block estimate using current data, where the market return is explained by expected inflation, the dividend yield, real growth in earnings, and a repricing gain associated with an increase in the P/E ratio. His resulting expected market return is 7.15 percent. Dr. Woolridge defends his 7.15 percent market return by comparing it to forecasts of market professionals and expectations of chief financial officers.

On page 6 of his exhibit JRW-11 Dr. Woolridge excludes studies done before the year 2009 and shows that across studies, on average, the equity risk premium is 4.38 percent. Presumably based on all of this information, he writes, "I am using an equity risk premium of 4.35%."¹¹⁰ Dr. Woolridge goes on to assert that his equity risk premium is consistent with premiums used by CFOs, developed by professional forecasters and used by leading consulting firms.

Combining his risk-free rate of 4.65 percent with a beta of 0.67 and an equity risk premium of 4.35 percent, Dr. Woolridge generates a CAPM estimate of the cost of equity equal to 7.6 percent.¹¹¹ However, when comparing the DCF to CAM results, Dr. Woolridge gives the CAPM results "less weight because I believe that risk premium studies, of which the CAPM is one form, provide a less reliable indication of equity cost rates for public utilities."¹¹²

Dr. Woolridge reviews Dr. Avera's CAPM analysis. His primary concern is with the "equity risk premium of 7.70%."¹¹³ The root of this concern is in the growth rate used in the underlying DCF model used to calculate the expected market return.

Discussion: Both Dr. Avera and Dr. Woolridge appropriately use the return on long-term Treasury securities as the risk free rate. Their estimates differ by 45 basis points because Dr. Avera uses the rate for 20-year securities in October of 2009 and Dr. Woolridge uses the rate for 30-year securities in March 1, 2010. The Company certainly meets its burden of proof in positing a risk free rate of 4.2 percent.

There is virtually no difference in their estimates of beta. Dr. Avera's estimate from his Gas Utility Proxy Group is 0.68. Dr. Woolridge's estimate from his group of comparable utilities is 0.67. The Company has once again met its burden of proof in using a beta equal to 0.68.

Dr. Avera takes a forward looking approach to estimating the market return. He applies the DCF model to dividend paying firms in the S&P 500, presumably based on data from October 1, 2009. His derived risk premium is 7.7 percent. Previously mentioned caveats apply to his DCF analysis. Using stock price data from one day may bias dividend

¹¹⁰ Woolridge Direct at 52, line 10.

¹¹¹ See Woolridge Exhibit JRW-11 at 1.

¹¹² Woolridge Direct at 24, lines 14-16.

¹¹³ Woolridge Direct at 72, line 10.

yields. It is not clear that analysts' predictions of earnings growth rates are the best estimate of the long-run dividend growth rate required in the constant DCF model. Dr. Woolridge takes a more convoluted approach to estimating the market risk premium. On page 5 of his exhibit JWR-11, he reviews estimates of the market risk premium from a number of studies. These studies use a variety of historical and forward looking approaches and cover various time spans in their analyses. They produce estimates that range from 1.5 percent to 7.31 percent. His historical, *ex ante* and survey results produce an average risk premium of approximately 4.5 percent.

Dr. Woolridge also uses a "building blocks" approach to estimating the market return. In essence, this approach begins with an *ex post* estimate of equity returns. It then decomposes that return into causal components including "inflation..., dividend yield..., real earnings growth..., repricing gains... and return interaction/reinvestment."¹⁴ Finally, it builds an *ex ante* estimate of future market returns based on expected values of the causal components.

While in theory the building blocks approach seems reasonable, in practice it involves combining estimates of a variety of causal components, each with its own underlying noise and uncertainty. In addition, it is not clear that the components selected by Dr. Woolridge are all of the components that should be included in the estimate. Page 7 of exhibit JRW-11 shows three columns representing estimates in the three phases of the building blocks approach. It is not clear why the *ex post* return in column one is divided into only three components. It is not clear why those three components are converted into the selected five components in column two. Column three shows the rebuilding of the market return based on *ex ante* predictions. There may be other factors omitted from column two that are relevant to the reconstruction in column three. Given the speculative nature of this analysis, Dr. Woolridge's building blocks approach must be heavily discounted. Hence, his most reasonable estimate of the market risk premium is 4.5 percent.

Dr. Avera develops a CAPM-based equity rate of return estimate equal to 9.44 percent. This estimate cannot be ignored. Dr. Woolridge develops estimates based on a variety of market risk premia. However, excluding his building blocks approach and using his average premium of 4.5 percent, Dr. Woolridge's resulting CAPM estimate is 7.67 percent.

The Company provides justification for its CAPM estimate of 9.44 percent. However, the Public Advocate provides enough reasonable information to cast doubt on the showing that 9.44 percent is the most appropriate value. The Company's rebuttal does not discredit the evidence from the Public Advocate's direct testimony. In light of the evidence provided by the Public Advocate, the Company's evidence standing alone does

¹⁴ Woolridge Direct at 46, lines 7-9

not meet the burden of proof as to the preferred CAPM estimate. The Public Advocate's estimate of 7.67 percent must be considered as well.

Dr. Avera has a number of caveats about using the CAPM. He argues that recent capital market turmoil may "cause CAPM cost of common equity estimates to understate investors' required returns for common stock."¹¹⁵ In particular, he argues that flight to safety has driven down the risk free rate. But Dr. Avera also points out that the flight to safety has increased the market risk premium. There is no quantitative analysis suggesting whether either effect dominates.

Dr. Avera's second caveat is that "[t]he precipitous drop and subsequent partial recovery in stock prices over the last year or so have caused many firms' historical betas to become unstable, so that reported betas may or may not reflect investors' expected betas."¹¹⁶ Again, there are no empirical data to either confirm or reject his assertion. Dr. Avera's third caveat is that "forward-looking estimates of the market required rate of return may be distorted by the recent run-up in stock prices."¹¹⁷ However, once again, there is no empirical analysis to examine either the existence or magnitude of this distortion.

C. Other Considerations

Dr. Avera refers again to the *Bluefield* and *Hope* comparable earnings standards in looking at *Value Line* anticipated average rates of return on common equities for utility companies. Exhibit WEA-9 shows three-to-five year projections for the group of comparable utilities. He writes "these year-end values were converted to average returns using the same adjustment factor discussed earlier and developed on Exhibits WEA-3 and WEA-5, respectively."¹¹⁸ Dr. Avera derives an average expected rate of return on equity of 11.5 percent for the Gas Utility Proxy Group.

Dr. Woolridge takes exception with Dr. Avera's expected earnings analysis on two grounds. Dr. Woolridge writes that "[f]irst, these ROE results include the profits associated with the unregulated operations of the utility proxy group. As previously noted, the unregulated operations are significant for several of the gas ... companies."¹¹⁹ He also argues that "since Dr. Avera has not evaluated the market-to-book ratios for these companies, he cannot indicate whether the past and projected returns on common equity are above or below investors' requirements."¹²⁰

Dr. Avera considers the costs of "floating" new equity securities. He suggests that these costs may include costs for services such as "legal, accounting and printing" as well as

¹¹⁵ Avera Direct at 44, lines 21-22.

¹¹⁶ Avera Direct at 45, lines 7-9.

¹¹⁷ Avera Direct at 45, lines 13-14.

¹¹⁸ Avera Direct at 47, lines 5-7.

¹¹⁹ Woolridge Direct at 75, lines 17-20.

¹²⁰ Woolridge Direct at 75, lines 21-23.

“market pressures from the additional supply of common stock and other factors.”¹²¹ Dr. Avera does not propose a specific recommendation for increasing the allowed return on equity to account for flotation costs. Rather, he writes that “[w]hile my recommendation does not include an adjustment for flotation costs, this is a legitimate consideration that should be reflected in establishing an ROE for Black Hills Energy in this case.”¹²² He does, however, imply that a “flotation cost adjustment on the order of 20 to 55 basis points” may be warranted.¹²³

Dr. Woolridge takes exception to these flotation costs.¹²⁴ He argues that Black Hills Energy has not identified any flotation costs. He also argues that when market-to-book values are in the range of those for the comparable companies there is no dilution of value. Finally, Dr. Woolridge argues that flotation costs are covered in the underwriting spread and “not out-of-pocket expenses.”¹²⁵

Dr. Avera argues that other factors adversely affect Black Hills Energy relative to its group of comparable companies. Black Hills Energy has lower credit ratings than the averages for the proxy groups. Because of this, he writes “investors require a higher rate of return to compensate them for bearing more risk, the greater investment risks implied for Black Hills Energy suggests that the cost of equity is correspondingly higher than for the proxy group.”¹²⁶

Dr. Avera points out that Black Hills Energy does not have a weather normalization adjustment (WNA) mechanism. In contrast, 11 of the 12 proxy gas utilities do. As a result, Dr. Avera argues that “while Black Hills Energy remains exposed to the risks associated with abnormal weather, the reduced uncertainties associated with a WNA are at least partially accounted-for by investors and reflected in my cost of equity estimates.”¹²⁷

Dr. Avera argues that Black Hills “does not benefit from elasticity or decoupling mechanisms that insulate utility margins from declining usage. As a result, Black Hills Energy’s continued exposure to the uncertainties associated with the impact of price elasticity and other fluctuations in customer usage implies a level of risk in excess of that faced by other gas utilities.”¹²⁸

Finally, Dr. Avera argues that due to its small size relative to the group of comparable utilities, Black Hills Energy may be more risky than the group of comparable companies.

¹²¹ Avera Direct at 47, lines 17-19.

¹²² Avera Direct at 49, lines 10-12.

¹²³ Avera Direct at 49, lines 9-10.

¹²⁴ See Woolridge Direct at 76-77.

¹²⁵ Woolridge Direct at 77, lines 15-16.

¹²⁶ Avera Direct at 53, lines 2-4.

¹²⁷ Avera Direct at 53, lines 16-19.

¹²⁸ Avera Direct at 54, lines 4-8.

It also faces more risk “due to the lower density and other characteristics of its service territory.”¹²⁹ He discusses analyses of relative returns to “Mid-Cap” and “Low-Cap” stocks in the S&P 500. However, he has “not made a specific adjustment to the results of [his] analysis.”¹³⁰

Discussion: Dr. Avera’s expected return results are another piece of information to be used in determining the allowed rate of return on equity. *Value Line* measures the expected return on equity as earnings minus preferred dividends, all over the sum of book value plus intangibles. There is some value in Dr. Woolridge’s criticism that this measure reflects profits in unregulated operations. For example, intangibles from operations where the companies hold minority positions are not included in the denominator of *Value Line*’s measure.

A similar criticism can be made for company data related to the DCF and CAPM results. The underlying problem is that the proxy group companies may own a variety of regulated and unregulated operations.¹³¹ There is no way to separate the regulated from the unregulated operations. An earnings growth rate for Atmos Energy, for example (a company in both proxy groups) will reflect earnings for Atmos as a whole, even though only 60 percent of its revenues are from natural gas.¹³² So while this is a concern in theory, in practice, there is little in the record to warrant either exclusion or adjustment of Dr. Avera’s expected earnings result. With these caveats in mind, the Company meets its burden of proof in proffering its expected return estimate as another proxy for the cost of equity capital.

On the issue of flotation costs, the record does not contain any information as to the extent of these costs or if the costs will be recovered in the underwriting process. Dr. Avera makes no specific recommendation as to how the rate of return on equity should be adjusted to account for these costs. There is nothing in the record to support an adjustment for flotation costs.

With respect to Black Hills Energy’s credit rating there is an assertion that capital costs should be higher, but no data to quantify this assertion. It is interesting to note that Table WEA-1 in Dr. Avera’s direct testimony portrays his Non-Utility Proxy Group as less risky than his other two proxy groups. Yet all of his techniques generate higher comparable estimates for the Non-Utility group than the other two proxy groups. This is contrary to what might be expected if credit ratings are always inversely related to returns and suggests a less precise relationship between credit rating and return. The Company did not provide sufficient information in support of a credit rating adjustment.

¹²⁹ Avera Direct at 55, lines 5-6.

¹³⁰ Avera Direct at 57, lines 4-5.

¹³¹ This problem is amply reflected in Dr. Woolridge’s exhibit JRW-4, showing that on average, only 70 percent of his proxy group revenues come from gas operations.

¹³² See Woolridge Exhibit JRW-4.

Concerning weather normalization, elasticity and decoupling mechanisms, the record contains no specific recommendation for an adjustment to the cost of equity. Dr. Avera makes no mention of how many utilities in the proxy group have elasticity or decoupling mechanisms. He does point out that many of the proxy utilities have some form of weather normalization. However, the specific types and their impacts on rates and rates of return are neither examined nor quantified. The Company did not provide sufficient information to support any normalization, elasticity or decoupling adjustment.

The record contains no information and there is no empirical analysis as to how much riskier Black Hills Energy is due to its relative size, lower density and other characteristics of its service territory or how that riskiness translates into the cost of equity capital. The record contains no information to establish how the relative performance of "Mid-Cap" and "Low-Cap" S&P 500 companies relates specifically to natural gas distribution companies. There is some suggestion of relative performance based on a 16-year-old Public Utilities Fortnightly analysis. However, those results are inconclusive and there is no indication of results from newer or more extensive research in this area. There is no suggestion in the record as to how the return on equity should be adjusted to account for these concerns. Again, insufficient evidence is provided.

D. Conclusion on Cost of Equity Capital

An equity cost estimate of 9.6 percent was developed in the DCF section. Dr. Avera's relevant CAPM-based equity cost estimate is 9.5 percent. Dr. Woolridge's is 7.7 percent. Dr. Avera's expected return estimate is 11.5 percent. Taken as a whole, these results suggest that a reasonable range for the cost of equity estimate is between 7.7 and 11.5 percent. The midpoint of this range is 9.6 percent. An equity return of 9.6 percent is recommended in this case.

The 9.6 percent recommended rate of return on equity is based on the information, analyses and results described above. The analyses were based on the performance of property employed for the convenience of the public attendant with corresponding risks and uncertainties that are comparable to the properties of Black Hills Energy, as well as investments in other enterprises having corresponding risks as Black Hills Energy. The methods used to derive these estimates are forward looking. Hence, they incorporate investors' and analysts' best expectations about the future, including the competitive environment, uncertainty about economic and financial market conditions, uncertainty about political and regulatory developments, assessments of relative credit quality, capital expenditure requirements, expectations about interest rates, inflation, and gas price volatility.

Investors understand that risks and uncertainties exist in the market. That is why market data for comparable companies are used to estimate the cost of equity capital. These risks and uncertainties are reflected in the prices that investors pay for stocks of other companies assuming comparable risks. They are reflected in dividend payments and

expected growth rates. Risks and uncertainties are reflected in expectations of market risk premia. They are reflected in financial measures such as betas. The approaches used to estimate the cost of equity for Black Hills Energy incorporate market participants' best expectations, evaluations and reactions to market conditions.

The recommended cost of equity is approximately 160 basis points above the recommended cost of debt. This is understandable given that equity costs are forward looking while debt costs are embedded. The majority of the debt was acquired at relatively high cost during the very volatile financial crisis of 2009. There is ample information in the record to show that current debt costs are significantly lower than debt costs were in 2009. This indicates that there is a much larger spread between the recommended cost of equity and current debt rates. This spread should allow Black Hills Energy to fairly compensate its investors, offer a return adequate to attract new capital and maintain its financial integrity.

The recommended rate of return on equity of 9.6 percent is for assets in Black Hills Energy, a regulated natural gas distribution company. Its parent, Black Hills Corporation, owns other unregulated assets as well and is free to earn whatever return the market will allow on those unregulated assets. That return, combined with the 9.6 percent return on its Black Hills Energy equity, will form the weighted average overall rate of return on equity for Black Hills Corporation. This distinction is important because investors will not be buying equity in Black Hills Energy alone. Rather they will be buying equity in Black Hills Corporation and earning a return on the myriad of assets owned by that parent company.

VI. SUMMARY

Based on the previous analysis, Black Hills Energy should be allowed a cost of equity equal to 9.6 percent, a cost of debt equal to 8.04 percent and a common equity ratio of 52 percent. This leads to an overall cost of capital equal to 8.85 percent.