BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. W-354, SUB 364

In the Matter of
Application by Carolina Water Service, Inc. of North Carolina
for Authority to Adjust and Increase Rates for
Water and Sewer Utility Service in All of Its Service Areas in
North Carolina

Pre-Filed Rebuttal Testimony

Of

DYLAN W. D'ASCENDIS, CRRA, CVA

On Behalf Of
CAROLINA WATER SERVICE, INC. OF NORTH CAROLINA

November 20, 2019

TABLE OF CONTENTS

I. INTRODUCTION

Q. **Please state your name and business address.**

A. My name is Dylan W. D'Ascendis. My business address is 3000 Atrium Way, Suite 241, Mount Laurel, NJ 08054.

Q. **By whom are you employed and in what capacity?**

A. I am a Director at ScottMadden, Inc. ("ScottMadden").

Q. **Are you the same Dylan W. D'Ascendis that provided direct testimony in this proceeding?**

A. Yes, I am.

II. PURPOSE OF TESTIMONY

Q. **What is the purpose of your rebuttal testimony in this proceeding?**

A. The purpose of my rebuttal testimony is two-fold. First, I will update my recommended weighted average cost of capital ("WACC"), including my recommended return on common equity ("ROE"). Second, I will respond to the direct testimony of John R. Hinton, witness for the Public Staff of the North Carolina Utilities Commission ("Public Staff") concerning the investor required ROE of Carolina Water Service, Inc. of North Carolina ("CWSNC" or the "Company").

Q. **Have you prepared an exhibit in support of your rebuttal testimony?**

A. Yes. I have prepared D'Ascendis Rebuttal Exhibit No. 1, which consists of Schedules DWD-1R through DWD-12R.

III. SUMMARY

Q. What conclusions did you reach?

A. My updated analysis recommends the North Carolina Utilities Commission ("Commission" or "NCUC") authorize the Company the opportunity to earn a WACC of 7.74%, based on a ratemaking capital structure as of September 30, 2019. The updated capital structure is based on the actual capital structure of CWSNC's parent, Utilities, Inc., at September 30, 2019. It consists of 50.90% long-term debt at an embedded cost rate of 5.36% and 49.10% common equity at my updated ROE of 10.20%. My updated recommended overall rate of return is summarized on page 1 of Schedule DWD-1R and in Table 1, below:

Table 1: Summary of Overall Rate of Return

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	50.90%	5.36%	2.73%
Common Equity	49.10%	10.20%	5.01%
Total	100.00%		7.74%

I also respond to Mr. Hinton's estimation of the Company's ROE and explain its shortcomings, including his:

- Inclusion of a gas proxy group to determine an ROE for a water utility;
- Misapplication of the discounted cash flow ("DCF") model;
- Misapplication of the risk premium model ("RPM");
- Misapplication of the capital asset pricing model ("CAPM");

- Misapplication of the Comparable Earnings Model ("CEM");
- Failure to account for size-specific risks; and
- Opinion that the approval of the Company's requested consumption adjustment mechanism ("CAM") in this proceeding requires a downward adjustment to the ROE.

I will also address Mr. Hinton's opinions regarding current capital markets.

IV. UPDATED ANALYSIS

Q. **Please discuss your updated analysis in this proceeding.**

A. My updated study, which reflects current investor expectations, is as of October 18, 2019 and is contained in Schedule DWD-1R.

Q. **Have you applied the models in the same manner as you applied them in your direct testimony?**

A. No. In the predictive risk premium model ("PRPM"), I averaged the long-term predicted variance with the spot predicted variance in my updated analyses while I selected the minimum value in my direct analysis.

V. CURRENT CAPITAL MARKETS

Q. **Please summarize Mr. Hinton's summary of current capital markets.**

A. Mr. Hinton provided the Moody's A-rated public utility bond yield as of January 10, 2014 when Docket No. W-354, Sub 336 was stipulated, which was 4.63%, and the current Moody's A-rated public utility bond as of September 2019, which is 3.37%. Mr. Hinton then presents a chart showing the current flattening yield curve as compared with the yield curves in

January 2014, September 2015, August 2017, and February 2019, the approximate dates of CWSNC's last four rate cases.[1] Because of decreasing interest rates and previous inaccuracies in forecasted interest rate levels, Mr. Hinton relies on current interest rates in his analyses.[2]

Q. **Do you have any comment on Mr. Hinton's opinions regarding current market conditions?**

A. Yes, I do. I agree with Mr. Hinton that A-rated public utility bonds have declined about 126 basis points since Docket No. W-354, Sub 336. This reduction is reflected in the debt cost rates requested by the Company over that period of time. In Docket No. W-354, Sub 336, the Company's actual embedded debt cost was 6.60%. Currently, the Company's actual embedded debt cost rate is 5.36%, a decline of 124 basis points to the cost of debt, or 0.62% from the WACC, assuming a 50% debt / 50% equity capital structure, a substantial savings for the Company's customers over that period of time. However, I disagree with Mr. Hinton regarding the stability of the current low levels of Treasury bonds.

Q. Please discuss the changes in long-term Treasury bonds since your direct testimony.

A. There was a substantial decline in interest rates since my direct testimony, occurring over a relatively short period of time encompassing the month of August into early September of this year. Specifically, over the 30-trading days ended August 28, 2019, the 30-year Treasury bond yield declined 66

[1] Hinton Direct Testimony, at 14-15.
[2] *Ibid.,* at 15-16.

basis points, or 25.10%. This is noteworthy because since 1977, there are only two other instances with a 30-trading day decline of 30-year Treasury bond yields of 66 basis points or more, and a percentage decline of 30-year Treasury bond yields greater than 24.0%. The first occurrence happened during December 2008 through January 2009 as a part of the Great Recession, with the second occurrence in early September 2011, which attended the European Sovereign Debt Crisis.

Chart 1: Occurrences of Substantial Declines in 30-Year Treasury Bond Yields – 2008 to Present[3]

As shown in the Chart above, even though the overall trend is downward, interest rates after these two events have recovered shortly thereafter. Because of this, I expect that the current 30-year Treasury bond yield will also recover (30-year Treasury bond yields are 2.43% as of November 8, 2019, up over 25% from the August 28, 2019 low of 1.94%.).

[3] Source of information: Federal Reserve Bank of St. Louis.

Q. **Do you believe that current interest rates are appropriate for the estimation of the cost of common equity in this proceeding?**

A. No. Using current measures, like interest rates, are inappropriate for cost of capital and ratemaking purposes because they are both prospective in nature. The cost of capital, including the cost rate of common equity, is expectational in that it reflects investors' expectations of future capital markets, including an expectation of interest rate levels, as well as future risks. Ratemaking is prospective in that the rates set in this proceeding will be in effect for a period in the future.

Even though Mr. Hinton relies, in part, on projected growth rates in his DCF analyses, he fails to apply that same logic to selecting an appropriate interest rate in his RPM analysis. Whether Mr. Hinton believes those forecasts will prove to be accurate is irrelevant to estimating the market-required cost of common equity. Published industry forecasts, such as *Blue Chip Financial Forecasts*' ("*Blue Chip")* consensus interest rate projections, reflect industry expectations. Additionally, investors' expectations are not improper inputs to cost of common equity estimation models simply because prior projections were not proven correct in hindsight. As the Federal Energy Regulatory Commission ("FERC") noted in Opinion No. 531, "the cost of common equity to a regulated enterprise depends upon what the market expects, not upon what ultimately happens."[4] Because our analyses are predicated on market expectations,

[4] Opinion No. 531, 150 FERC ¶ 61,165 at P 88.

the expected increase in bond yields is a measurable, observable, and relevant data point that should be reflected in Mr. Hinton's analysis. Therefore, Mr. Hinton should have used forecasted interest rates in his analysis.

VI. RESPONSE TO MR. HINTON

Q. **What are Mr. Hinton's recommendations for the Company's WACC, including his recommended ROE?**

A. Mr. Hinton recommends that the Commission establish an overall rate of return of 7.15%, based on a capital structure consisting of 50.90% long-term debt at an embedded cost rate of 5.36%, and 49.10% common equity at his recommended cost of common equity of 9.10%.[5] If the CAM is approved, Mr. Hinton recommends an ROE of 9.00%.[6] Since Mr. Hinton's direct testimony, the Company has decided to not pursue the CAM in this proceeding. Because of this, Mr. Hinton's ROE recommendation is 9.10%, which is based on the average of his DCF (8.64%) and RPM (9.57%) results.[7]

Q. **Do you have any general comments on Mr. Hinton's recommended ROE?**

A. Yes. Mr. Hinton relies on only two models, the DCF and the RPM, in his ROE analysis, using both the CAPM and CEM only as checks on his

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5 Hinton Direct Testimony, at 36.
6 *Ibid.,* at 39.
7 *Ibid.*, at 36.

recommended ROE.[8] As discussed in my direct testimony,[9] the use of multiple models adds reliability to the estimation of the common equity cost rate, and the prudence of using multiple cost of common equity models is supported in both the financial literature and regulatory precedent.

Q. **Can you please provide some examples from the financial literature which support the use of multiple cost of common equity models in determining the investor-required return?**

A. Yes. In one example, Morin states:

> Each methodology requires the exercise of considerable judgment on the reasonableness of the assumptions underlying the methodology and on the reasonableness of the proxies used to validate a theory. The inability of the DCF model to account for changes in relative market valuation, discussed below, is a vivid example of the potential shortcomings of the DCF model when applied to a given company. Similarly, the inability of the CAPM to account for variables that affect security returns other than beta tarnishes its use.
>
> **No one individual method provides the necessary level of precision for determining a fair return, but each method provides useful evidence to facilitate the exercise of an informed judgment.** Reliance on any single method or preset formula is inappropriate when dealing with investor expectations because of possible measurement difficulties and vagaries in individual companies' market data. (emphasis added)
>
> * * *
>
> The financial literature supports the use of multiple methods. Professor Eugene Brigham, a widely respected scholar and finance academician, asserts (footnote omitted):
>
> Three methods typically are used: (1) the Capital Asset Pricing Model (CAPM), (2) the discounted cash flow (DCF)

[8] *Ibid.*, at 23.
[9] D'Ascendis Direct Testimony, at 43.

method, and (3) the bond-yield-plus-risk-premium approach. **These methods are not mutually exclusive – no method dominates the others**, and all are subject to error when used in practice. Therefore, when faced with the task of estimating a company's cost of equity, we generally use all three methods and then choose among them on the basis of our confidence in the data used for each in the specific case at hand. (emphasis added)

Another prominent finance scholar, Professor Stewart Myers, in an early pioneering article on regulatory finance, stated(footnote omitted):

> Use more than one model when you can. Because estimating the opportunity cost of capital is difficult, **only a fool throws away useful information**. That means you should not use any one model or measure mechanically and exclusively. Beta is helpful as one tool in a kit, to be used in parallel with DCF models or other techniques for interpreting capital market data. (emphasis added)
>
> Reliance on multiple tests recognizes that no single methodology produces a precise definitive estimate of the cost of equity. As stated in Bonbright, Danielsen, and Kamerschen (1988), 'no single or group test or technique is conclusive.' Only a fool discards relevant evidence. (italics in original) (emphasis added)

* * *

While it is certainly appropriate to use the DCF methodology to estimate the cost of equity, there is no proof that the DCF produces a more accurate estimate of the cost of equity than other methodologies. Sole reliance on the DCF model ignores the capital market evidence and financial theory formalized in the CAPM and other risk premium methods. **The DCF model is one of many tools to be employed in conjunction with other methods to estimate the cost of equity.** It is not a superior methodology that supplants other financial theory and market evidence. The broad usage of the DCF methodology in regulatory proceedings in contrast to its virtual disappearance in academic textbooks does not make

> it superior to other methods. The same is true of the Risk Premium and CAPM methodologies. (emphasis added) [10]

Finally, Brigham and Gapenski note:

> In practical work, *it is often best to use all three methods* – CAPM, bond yield plus risk premium, and DCF – and then apply judgment when the methods produce different results. People experienced in estimating equity capital costs recognize that both careful analysis and some very fine judgments are required. It would be nice to pretend that these judgments are unnecessary and to specify an easy, precise way of determining the exact cost of equity capital. Unfortunately, this is not possible. Finance is in large part a matter of judgment, and we simply must face this fact. (italics in original) [11]

In the academic literature cited above, three methods are consistently mentioned: the DCF, CAPM, and the RPM, all of which I used in my analyses.

Q. **Can you also provide specific examples where this Commission has considered multiple cost of common equity models?**

A. Yes. The Commission in Docket W-354, Sub 360, concerning CWSNC, stated:

> The average of witness D'Ascendis' utility proxy group DCF result of 9.15%, traditional CAPM result of 10.67%, total market RPM of 10.56%, witness Hinton's DCF result of 8.70% and RPM of 9.70% is 9.75%. The Commission approved return on equity of 9.75% is thus supported by the average of the results of the above listed cost of equity models which the

[10] Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 428-431. ("Morin")

[11] Eugene F. Brigham and Louis C. Gapenski, Financial Management – Theory and Practice, 4th Ed. (The Dryden Press, 1985) at 256. ("Brigham and Gapenski")

> Commission finds are entitled to substantial weight based on the record in this proceeding.

Also, in Docket E-2, Sub 1142, concerning Duke Energy Progress, LLC, the Commission stated:

> Thus, the Commission finds and concludes that the Stipulation, along with the expert testimony of witnesses Hevert (risk premium analysis), O'Donnell (comparable earnings), and Parcell (comparable earnings), are credible and substantial evidence of the appropriate rate of return on equity and are entitled to substantial weight in the Commission's determination of this issue.

In the Commission Orders cited above, there is clear language that the Commission considers multiple models in its determination of ROE. It is also my interpretation of these Orders that the Commission correctly observes capital market conditions and their effect on the model results in determining a ROE for utility companies. This, in addition to the academic literature cited above, justifies the use of the DCF, CAPM, RPM, and CEM in this proceeding.

A. Proxy Group Selection

Q. Is it proper for Mr. Hinton to use a gas proxy group to determine an ROE for a water utility?

A. No, it is not. As stated in my direct testimony,[12] water and wastewater utilities have specific risks not borne by gas companies. For example, water is the only utility service that is ingested. As such, water utilities have an ever-increasing responsibility to be stewards of the environment from which supplies are drawn in order to preserve and protect essential resources of

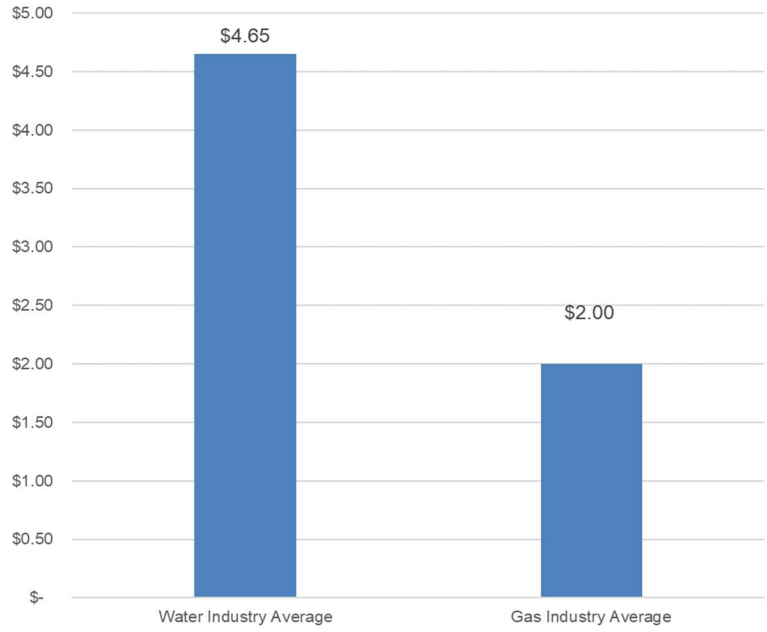
[12] D'Ascendis Direct Testimony, at 8-10.

the United States. This increased environmental stewardship is a direct result of compliance with the Safe Water Drinking Act and in response to the continuous monitoring of the water supply by the Environmental Protection Agency, state governments, and local governments for potential contaminants and their resultant regulations. Because of this, water utilities' risk profiles are distinct from gas utilities.

As stated in my direct testimony,[13] water utility companies have high capital intensity (how many dollars of plant generate one dollar in revenue) and low depreciation rates (a source of internal cash flow). As a capital-intensive industry, water utilities require significantly greater capital investment in infrastructure required to produce a dollar of revenue than natural gas utilities. For example, as shown on Chart 2, below, it took $4.65 of net utility plant on average to produce $1.00 in operating revenues in 2018 for the water utility industry as a whole. In contrast, for the natural gas utility industry, on average it took just $2.01 to produce $1.00 in operating revenues in 2018. As financing needs have increased and will continue to increase, the competition for capital from traditional sources has also increased and will continue to increase, making the need to maintain financial integrity and the ability to attract needed new capital increasingly important.

[13] *Ibid.*, at 7-8.

Chart 2: 2018 Capital Intensity of the Water and Gas Utility Industries[14]

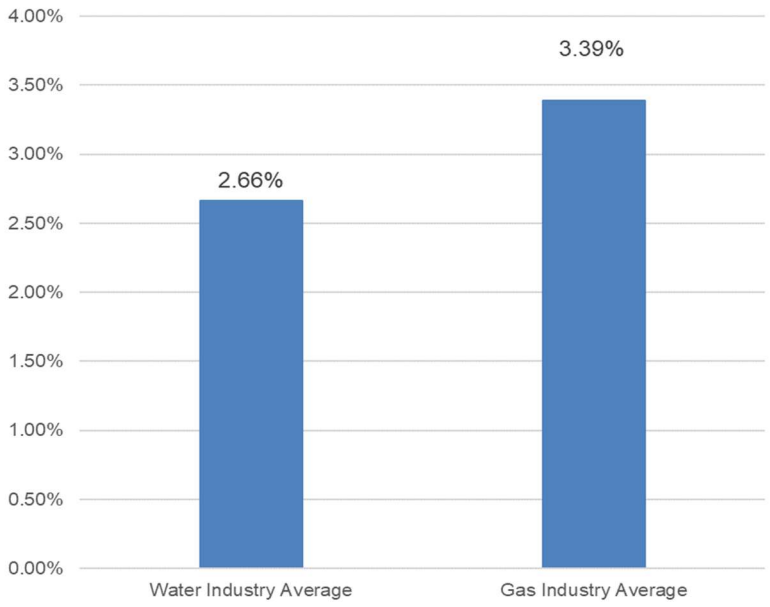


Coupled with its capital-intensive nature, the water utility industry also experiences lower relative depreciation rates compared with other types of utilities. Given that depreciation is one of the principal sources of internally-generated cash flows for all utilities, lower depreciation rates mean that water utilities cannot rely upon depreciation as a source of cash to the same extent that gas utilities do. Because water utility assets have longer lives and, hence, longer capital recovery periods than other types of utilities, water utilities face greater risk due to inflation. This results in a significantly higher replacement cost per dollar of net plant than for other types of utilities.

[14] Sources of Information: SNL Financial and Company Form 10-K.

As shown on Chart 3, below, water utilities experienced an average depreciation rate of 2.66% for 2018. In contrast, in 2018, the natural gas utilities experienced average depreciation rates of 3.39%, respectively. Lower depreciation rates signify that the pressure on cash flows remains significantly greater for water utilities than for other types of utilities

Chart 3: 2018 Depreciation Rate of the Water and Gas Utility Industries[15]



Q. Have you reviewed Public Staff Hinton Exhibit 3 regarding the measures of risk used by Mr. Hinton to show comparability between his water and gas proxy groups?

A. Yes, I have. From my review of the data in Hinton Exhibit 3, it is clear that Mr. Hinton's water and gas proxy groups are not comparable, as none of

[15] Sources of Information: SNL Financial and Company Form 10-K.

the measures for the two proxy groups were within the same ranking for either the Value Line or S&P measures.

Table 2: Comparison of Measures of Risk for Mr. Hinton's Water and Gas Groups

	Safety Rank	VL Beta	Price Stability	Earnings Predictability	Financial Strength	S&P Beta	S&P Quality Rank
Water Group Median	3	0.70	85	85	B++	0.19	A
Gas Group Median	2	0.65	90	80	A	0.30	A-

Furthermore, I used reasonable ranges of each Value Line measure used by Mr. Hinton for his water proxy group and screened them against Mr. Hinton's gas proxy group companies to see if any of them would be comparable to Mr. Hinton's water proxy group. I used the following ranges of Value Line risk measures representative of Mr. Hinton's water proxy group screen against Mr. Hinton's gas proxy group:

Table 3: Value Line Selection Criteria for Comparable Gas Companies to Water Group

Safety Rank	VL Beta	Price Stability	Earnings Predictability	Financial Strength
2 to 3	0.60 to 0.75	65 to 100	65 to 90	B+ to A

From this selection criteria, only three of the nine companies in Mr. Hinton's gas proxy group (Chesapeake Utilities, New Jersey Resources, and Southwest Gas Holdings) were deemed to be of comparable risk to Mr. Hinton's water proxy group using his own measures of risk.

For a more robust analysis, I applied the selection criteria I use to select my Non-Price Regulated Proxy Group, as explained in my direct testimony,[16] to Mr. Hinton's water group to see if any of Mr. Hinton's gas companies were comparable to his water proxy group. Again, only three of the nine gas companies in Mr. Hinton's gas proxy group (Chesapeake Utilities, Southwest Gas Holdings, and Spire, Inc.) were deemed as comparable to his water proxy group.

Q. Are you aware of any gas utility proceedings that Mr. Hinton was a party to where he used a water utility proxy group in addition to a gas proxy group for insight into the investor-required return?

A. No. If it is Mr. Hinton's contention that water and gas utilities are similar in risk, one would think that he would have used both water and gas proxy groups regardless of whether it was a gas or a water proceeding.

Q. What was Mr. Hinton's position in CWSNC's last rate case (Docket No. W-354, Sub 360) regarding the relative risk between water and gas utilities?

A. Mr. Hinton's position was that water companies were less risky than gas companies, stating: "Thus, the [water] industry is often considered less risky from an investor's perspective relative to [the] natural gas industry, which competes with electric service, propane, and other alternative fuel services."[17] While I disagree with Mr. Hinton to the extent one utility industry is riskier than the other, I do agree that the risks of each industry are

[16] D'Ascendis Direct Testimony, at 39-40.
[17] Docket No. W-354, Sub 360, Hinton Direct Testimony, at 35. (clarification added)

different, which supports my position that ROEs for water utilities should be determined by using water proxy groups.

Q. What is your conclusion regarding Mr. Hinton's gas proxy group?

A. Given that the water utility industry has unique operating risks compared to gas companies, the fact that neither Mr. Hinton's nor my measures of total risk were able to create a gas proxy group comparable in total risk to Mr. Hinton's water proxy group, and Mr. Hinton's own statements in the Company's last rate case, it is my conclusion that the Commission should give the results of Mr. Hinton's gas proxy group no weight in this proceeding.

B. <u>Discounted Cash Flow Model</u>

Q. **Please summarize Mr. Hinton's DCF analysis.**

A. Mr. Hinton calculated his dividend yield by using the Value Line estimate of the 12-month projected dividend yield for each of his proxy companies as reported in the Value Line Summary and Index for 13 weeks ended October 18, 2019.[18] He then added the average expected dividend yields of 1.7% (water proxy group) and 2.6% (gas proxy group) to a range of growth rates from 4.4% to 8.3% (water proxy group) and 5.6% to 7.9% (gas proxy group) to arrive at indicated DCF cost rates from 6.1% to 10.0% (water proxy group) and 8.2% to 10.5% (gas proxy group). From these indicated DCF cost rates, he averaged all of them together for his low DCF cost rate of 8.48%, and then he averaged all of his indicated DCF cost rates using projected measures of growth for his high DCF cost rate of 8.80%. He then

[18] Hinton Direct Testimony, at 25-26.

averaged the 8.48% and 8.80% indicated DCF cost rates to arrive at 8.64%, which is his recommended DCF cost rate.[19]

Q. **Please comment on Mr. Hinton's growth rate analysis in his application of the DCF Model.**

A. Mr. Hinton states on page 28 of his direct testimony that he employed earnings per share ("EPS"), dividends per share ("DPS"), and book value of equity per share ("BVPS") growth rates as reported in Value Line, both five- and ten-year historical and forecasted, and the five-year projected EPS growth rate as reported by Yahoo Finance. He includes both historical and forecasted growth rates, "because it is reasonable to expect that investors consider both sets of data in deriving their expectations".

There is a significant body of empirical evidence supporting the superiority of analysts' EPS growth rates in a DCF analysis, indicating that analysts' forecasts of earnings remain the best predictor of growth to use in the DCF model. Such ample evidence of the proven reliability and superiority of analysts' forecasts of EPS should not be dismissed by Mr. Hinton.

[19] *Ibid.*, at 36.

Q. **Please describe some of the empirical evidence supporting the reliability and superiority of analysts' EPS growth rates in a DCF analysis.**

A. As discussed in my direct testimony,[20] over the long run, there can be no growth in DPS without growth in EPS. Security analysts' earnings expectations have a more significant, but not the only, influence on market prices than dividend expectations. Thus, the use of projected earnings growth rates in a DCF analysis provides a better match between investors' market price appreciation expectations and the growth rate component of the DCF, because they have a significant influence on market prices and the appreciation or "growth" experienced by investors.[21] This should be evident even to relatively unsophisticated investors just by listening to financial news reports on radio, TV, or by reading newspapers.

In addition, Myron Gordon, the "father" of the standard regulatory version of the DCF model widely utilized throughout the United States in rate base/rate of return regulation, recognized the significance of analysts' forecasts of growth in EPS in a speech he gave in March 1990 before the Institute for Quantitative Research and Finance[22], stating on page 12:

> We have seen that earnings and growth estimates by security analysts were found by Malkiel and Cragg to be superior to data obtained from financial statements for the explanation of variation in price among common stocks… estimates by

[20] D'Ascendis Direct Testimony, at 18.

[21] Morin, at 298-303.

[22] Gordon, Myron J., "*The Pricing of Common Stock",* Presented before the Spring 1990 Seminar, March 27, 1990 of the Institute for Quantitative Research in Finance, Palm Beach, FL.

> security analysts available from sources such as IBES are far superior to the data available to Malkiel and Cragg.
>
> * * *
>
> Eq (7) is not as elegant as Eq (4), but it has a good deal more intuitive appeal. It says that investors buy earnings, but what they will pay for a dollar of earnings increases with the extent to which the earnings are reflected in the dividend or in appreciation through growth.

Professor Gordon recognized that the total return is largely affected by the terminal price, which is mostly affected by earnings (hence price/earnings multiples).

Studies performed by Cragg and Malkiel [23] demonstrate that analysts' forecasts are superior to historical growth rate extrapolations. While some question the accuracy of analysts' forecasts of EPS growth, the level of accuracy of those analysts' forecasts well after the fact does not really matter. What is important is the forecasts reflect widely held expectations influencing investors at the time they make their pricing decisions, and hence, the market prices they pay.

In addition, Jeremy J. Siegel[24] also supports the use of security analysts' EPS growth forecasts when he states:

> For the equity holder, the source of future cash flows is the earnings of firms. (p. 90)

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[23] Cragg, John G. and Malkiel, Burton G., Expectations and the Structure of Share Prices (University of Chicago Press, 1982) Chapter 4.

[24] Jeremy J. Siegel, Stocks for the Long Run – The Definitive Guide to Financial Market Returns and Long-Term Investment Strategies, McGraw-Hill 2002, pp. 90-94.

* * *

> Some people argue that shareholders most value stocks' cash dividends. But this is not necessarily true. (p. 91)

* * *

> Since the price of a stock depends primarily on the present discounted value of all expected future dividends, it appears that dividend policy is crucial to determining the value of the stock. However, this is not generally true. (p. 92)

* * *

> Since stock prices are the present value of future dividends, it would seem natural to assume that economic growth would be an important factor influencing future dividends and hence stock prices. However, this is not necessarily so. The determinants of stock prices are earnings and dividends on a *per-share* basis. Although economic growth may influence *aggregate* earnings and dividends favorably, economic growth does not necessarily increase the growth of per-share earnings of dividends. It is earnings per share (EPS) that is important to Wall Street because per-share data, not aggregate earnings or dividends, are the basis of investor returns. (italics in original) (pp. 93-94)

Therefore, given the overwhelming academic and empirical support regarding the superiority of security analysts' EPS growth rate forecasts, such EPS growth rate projections should have been relied on by Mr. Hinton in his DCF analysis.

Q. **What would Mr. Hinton's DCF result be had he only relied on EPS growth forecasts?**

A. As shown on Schedule DWD-2R, the mean DCF derived cost rate based on EPS growth forecasts is 9.43%. This result should be viewed with caution, however, as the DCF model is currently understating the investor-required return.

Q. **Why is it your opinion that the DCF model is currently understating the investor-required return?**

A. Traditional rate base/rate of return regulation, where a market-based common equity cost rate is applied to a book value rate base, presumes that market-to-book ("M/B") ratios are at unity or 1.00. However, that is rarely the case. Morin states:

> The third and perhaps most important reason for caution and skepticism is that application of the DCF model produces estimates of common equity cost that are consistent with investors' expected return only when stock price and book value are reasonably similar, that is, when the M/B is close to unity. As shown below, application of the standard DCF model to utility stocks understates the investor's expected return when the market-to-book (M/B) ratio of a given stock exceeds unity. This was particularly relevant in the capital market environment of the 1990s and 2000s where utility stocks were trading at M/B ratios well above unity and have been for nearly two decades. The converse is also true, that is, the DCF model overstates that investor's return when the stock's M/B ratio is less than unity. The reason for the distortion is that the DCF market return is applied to a book value rate base by the regulator, that is, a utility's earnings are limited to earnings on a book value rate base.[25]

As Morin explains, a "simplified" DCF model, like that used by Mr. Hinton, assumes an M/B ratio of 1.0 and therefore under- or over-states investors' required return when market value exceeds or is less than book value, respectively. It does so because equity investors evaluate and receive their returns on the market value of a utility's common equity, whereas regulators authorize returns on the book value of that common equity. This means that the market-based DCF will produce the total annual

[25] Morin, at 434.

dollar return expected by investors only when market and book values of common equity are equal, a very rare and unlikely situation.

Q. **Why do market and book values diverge?**

A. Market values can diverge from book values for a myriad of reasons including, but not limited to, EPS and DPS expectations, merger/acquisition expectations, interest rates, etc. As noted by Phillips:

> Many question the assumption that market price should equal book value, believing that 'the earnings of utilities should be sufficiently high to achieve market-to-book ratios which are consistent with those prevailing for stocks of unregulated companies.[26]

In addition, Bonbright states:

> In the first place, commissions cannot forecast, except within wide limits, the effect their rate orders will have on the market prices of the stocks of the companies they regulate. In the second place, *whatever the initial market prices may be, they are sure to change not only with the changing prospects for earnings, but with the changing outlook of an inherently volatile stock market*. In short, market prices are beyond the control, though not beyond the influence of rate regulation. Moreover, even if a commission did possess the power of control, any attempt to exercise it ... would result in harmful, uneconomic shifts in public utility rate levels. (italics added)[27]

Q. **Can the under- or over-statement of investors' required return by the DCF model be demonstrated mathematically?**

A. Yes, it can. Schedule DWD-3R demonstrates how a market-based DCF cost rate of 8.64%,[28] when applied to a book value substantially below market value, will understate the investors' required return on market value. As

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[26] Charles F. Phillips, The Regulation of Public Utilities, Public Utilities Reports, Inc., 1993, p. 395.

[27] James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates (Public Utilities Reports, Inc., 1988), p. 334.

[28] Mr. Hinton's DCF cost rate as shown in Hinton Exhibit JRH-3.

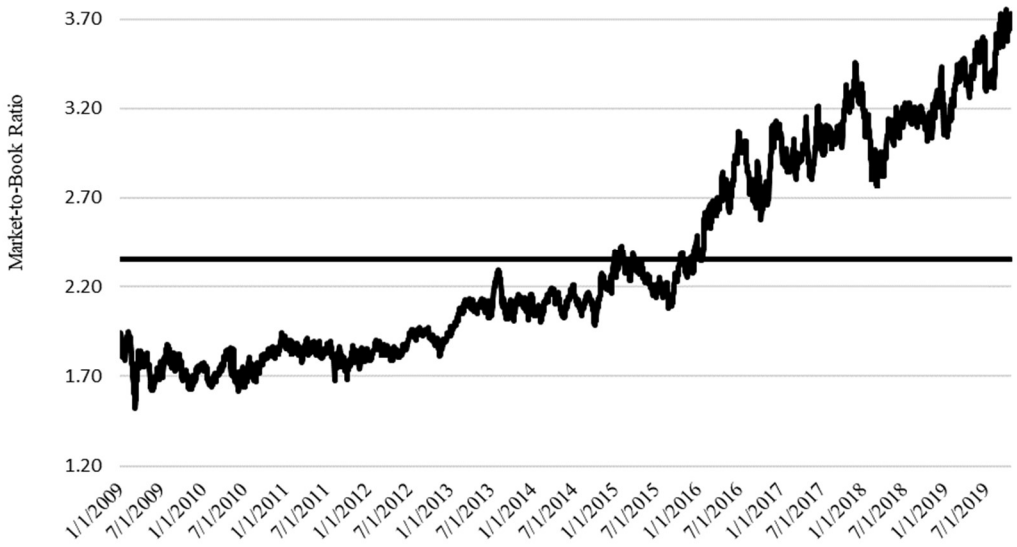
shown, there is no realistic opportunity to earn the expected market-based rate of return on book value. In Column [A], investors expect an 8.64% return on an average market price of $67.07 for Mr. Hinton's proxy group of water utility companies. Column [B] shows that when Mr. Hinton's 8.64% return rate is applied to a book value of $18.62,[29] the total annual return opportunity is $1.609. After subtracting dividends of $1.140, the investor only has the opportunity for $0.469 in market appreciation, or 0.70%. The magnitude of the understatement of investors' required return on market value using Mr. Hinton's 8.64% cost rate is 6.24%, which is calculated by subtracting the market appreciation based on book value of 0.70% from Mr. Hinton's expected growth rate of 6.94%.

Q. **How do the M/B ratios of the water proxy group compare to their ten-year average?**

A. The M/B ratios of the water proxy group are currently extraordinarily high compared with their ten-year average. As shown in Chart 4, below, since early 2016, the M/B ratios of the water proxy group have increased dramatically over their ten-year average M/B ratio of approximately 2.35 times.

[29] Representing a market-to-book ratio of 321.56%.

Chart 4: M/B Ratios Compared with Ten-Year Average[30]



The significance of this is that even though the ten-year average M/B ratio has always been greater than 1.0x, the current M/B ratio is even further removed from 1.0x, which further distorts DCF results.

Q. How can the inaccuracy or mis-specification of the DCF model be quantified when the M/B ratios are different than unity?

A. The inaccuracy of the DCF model, when market values diverge from book values, can be measured by first calculating the market value of each proxy company's capital structure, which consists of the market value of the company's common equity (shares outstanding multiplied by price) and the fair value of the company's long-term debt and preferred stock. All of these measures, except for price, are available in each company's SEC Form 10-K.

[30] Source: Bloomberg Financial Services.

Second, one must de-leverage the implied cost of common equity based on the DCF. This is accomplished using the Modigliani / Miller equation[31] as illustrated in Schedule DWD-4R and shown below:

ku = ke - (((ku - i)(1 - t)) D/E) - (ku - d) P/E [Equation 1]

Where:

ku	=	Unlevered (i.e., 100% equity) cost of common equity;
ke	=	Market determined cost of common equity;
i	=	Cost of debt;
t	=	Income tax rate;
D	=	Debt ratio;
E	=	Equity ratio;
d	=	Cost of preferred stock; and
P	=	Preferred equity ratio.

Using average proxy group-specific data, the equation becomes:

ku = 8.64% - (((ku – 5.22%)(1 - 21%)) 23.31% / 76.65%) - (ku – 7.38%) 0.04% / 76.65%

Solving for ku results in an unlevered cost of common equity of 7.98%.

Next, one must re-leverage those costs of common equity by relating them to each proxy group's average book capital structure as shown below:

ke = ku + (((ku – i)(1 – t)) D/E) + (ku – d) P/E [Equation 2]

Once again, using average proxy group-specific data, the equation becomes:

ke = 7.98%+(((7.98% - 5.22%)(1 - 21%))45.17%/54.74%)+(7.98%-7.38%)0.09%/54.74%

Solving for ke results in a 9.78% indicated cost of common equity relative to the book capital structure of the proxy group, which is an increase

[31] The Modigliani / Miller theorem is an influential element of economic theory and forms the basis for modern theory on capital structure. *See,* Modigliani, F., and Miller, M. "The Cost of Capital, Corporation Finance and the Theory of Investment", The American Economic Review, Vol. 48, No. 3, (June 1958), at 261-297.

of 114 basis points over Mr. Hinton's average indicated DCF result of 8.64%.

Q. Are you advocating a specific adjustment to the DCF results to correct for its mis-specification of the investor-required return as Mr. Hinton alleges?[32]

A. No. The purpose of this discussion is to demonstrate that, like all cost of common equity models, the DCF has its limitations. The use of multiple cost of common equity models, in conjunction with informed expert judgment, provides a clearer picture of the investor-required ROE.

C. Application of the Risk Premium Model

Q. **Please summarize Mr. Hinton's RPM.**

A. Mr. Hinton's RPM explores the relationship between average allowed equity returns for water utility companies published by Regulatory Research Associates, Inc. ("RRA") and annual average Moody's A-rated utility bond yields. Using data from the years 2006 through 2019, Mr. Hinton conducts a regression analysis, which he then combines with recent monthly yields on Moody's A-rated public utility bonds to develop his risk premium estimate of 5.86% and a corresponding cost of equity of 9.57%.

Q. **Please comment on Mr. Hinton's application of the RPM.**

A. As previously addressed, it is inappropriate to use current bond yields to determine an expected ROE, so I will not repeat that discussion here. In addition, instead of using yearly average authorized returns and Moody's

[32] Hinton Direct Testimony, at 49-50.

A-rated public utility bond yields, it is preferable to use the authorized returns and Moody's A-rated public utility bond yields on a case by case basis. One reason why one should use individual cases instead of an annual average is that some years have more rate case decisions than others, and years with less rate case decisions will garner unnecessary weight. Another reason to use individual cases over an annual average is that interest rates and market conditions change during the year (*e.g.* the beginning and end of 2008), if one uses annual average authorized returns and annual average interest rates, the fluctuation between the interest rates and equity risk premiums during the year are lost.

Q. **What is the corrected result of the RPM after reflecting a prospective Moody's A-rated public utility bond yield and using individual rate case data in place of annual rate case data?**

A. As shown on page 1 of Schedule DWD-5R, the analysis is based on a regression of 185 rate cases for water utility companies from August 24, 2006 through July 1, 2019. It shows the implicit equity risk premium relative to the yields on Moody's A-rated public utility bonds immediately prior to the issuance of each regulatory decision.[33]

I determined the appropriate prospective Moody's A-rated public utility yield by relying on a consensus forecast of about 50 economists of the expected yield on Moody's Aaa-rated corporate bonds for the six

[33] If the Order was in the first half of the month, the Moody's A rated utility bond from two months prior would be used. If the Order was in the second half of the month, the Moody's A rated public utility bond from the last prior month was used.

calendar quarters ending with the first calendar quarter of 2021, and *Blue Chip's* long-term projections for 2021 to 2025, and 2026 to 2030.[34] As described on page 12 of Schedule DWD-1R, the average expected yield on Moody's Aaa-rated corporate bonds is 3.60%. I then derived an expected yield on Moody's A2-rated public utility bonds, by making an upward adjustment of 0.35%, which represents a recent spread between Moody's Aaa-rated corporate bonds and Moody's A2-rated public utility bonds.[35] Adding the recent 0.35% spread to the expected Moody's Aaa-rated corporate bond yield of 3.60% results in an expected Moody's A2-rated public utility bond yield of 3.95%.

I then used the regression results to estimate the equity risk premium applicable to the projected yield on Moody's A2-rated public utility bonds of 3.95%. Given the expected Moody's A-rated utility bond yield of 3.95%, the indicated equity risk premium is 5.72%, which results in an indicated ROE of 9.67%, as shown on Schedule DWD-5R.

D. Application of the Capital Asset Pricing Model

Q. Please summarize Mr. Hinton's CAPM analysis.

A. Mr. Hinton uses a six-month average 30 year Treasury yield ending September 2019 for his risk-free rate, and adds that yield to two Value Line beta adjusted market risk premiums ("MRP"), one using a long-term historical geometric average return on the market less the risk-free rate, and one using a long-term historical arithmetic average return on the market

[34] *Blue Chip Financial Forecasts*, October 1, 2019, at 2, June 1, 2019, at 14.
[35] As explained on page 12 of Schedule DWD-1R.

less the risk-free rate. His indicated ROEs using the CAPM are 7.65% (geometric mean) and 8.96% (arithmetic mean).[36] Mr. Hinton does not assign any weight to his CAPM analysis, only using it as a limited check on his DCF and RPM analyses

Q. Do you have any concerns regarding Mr. Hinton's CAPM analysis?

A. Yes, I do. Mr. Hinton's CAPM analysis is flawed in at least three respects. First, he has incorrectly relied on a current risk-free rate despite the fact that both ratemaking and cost of capital are prospective, as discussed previously.

Second, Mr. Hinton incorrectly calculated the MRP by relying on a geometric mean historical market equity risk premium as well as the historical total returns on U.S. Treasury securities.

Third, Mr. Hinton did not incorporate an empirical CAPM ("ECAPM") analysis, even though empirical evidence indicates that low-beta securities, such as utilities, earn returns higher than the CAPM predicts and high-beta securities earn less.

Q. Please comment on Mr. Hinton's use of a six-month average 30-year Treasury bond yield as his risk-free rate.

A. Mr. Hinton's use of current, rather than projected, yields on 30-year U.S. Treasury Bonds ignores the fact that the cost of capital and ratemaking are prospective, as discussed previously. Mr. Hinton concurs when he states that:

[36] Hinton Direct Testimony, at 35.

> The cost of equity capital for a firm is the expected rate of return on common equity that investors require in order to induce them to purchase shares of the firm's common stock. The return is expected given that when the investor buys a share of the firm's common stock, he does not know with certainty what his returns will be in the future.[37]

Mr. Hinton also implicitly agrees when he incorporates projected growth rates in his DCF analysis. The cost of capital, including the cost rate of common equity, reflects investors' expectations of future capital markets, including an expectation of interest rate levels, as well as future risks. In addition, ratemaking is prospective in that the rates set in this proceeding will be in effect for a period of time in the future. Therefore, the appropriate expected risk-free rate available at the time of the preparation of Mr. Hinton's direct testimony was the average of the consensus forecasts of approximately 50 economists from *Blue Chip* for the six quarters ending with the first quarter 2021 from the October 1, 2019 edition, and the long-range forecasts from the June 1, 2019 edition for 2021-2025 and 2026-2030. This rate, 2.64%, is derived in note 2 on page 22 of Schedule DWD-1R.

Q. Please comment on Mr. Hinton's calculations of the expected MRP using long-term historical returns on the market.

A. Mr. Hinton calculates his expected MRP from data using the 2019 SBBI® Yearbook | Stocks, Bonds, Bills and Inflation ("SBBI – 2019"), which presents return data from 1926 – 2018. However, he relied on both arithmetic and geometric mean returns for both large company common

[37] *Ibid.*, at 22.

stocks and long-term U.S. Treasury Bonds, rather than exclusively relying on the appropriate arithmetic mean returns as detailed below.

Q. Please comment on Mr. Hinton's use of the geometric mean historical market return.

A. Mr. Hinton notes that he has relied on both the arithmetic and geometric mean returns for the S&P 500 as tabulated by Duff & Phelps.[38] Mr. Hinton states regarding his preference in measures of central tendency:

> However, I believe the use of the geometric return, which measures the annualized rate of return compounded over time, is the more appropriate measure of investor expectations.[39]

This statement is contradictory to what average SBBI – 2019, the source of Mr. Hinton's market return information, recommends for cost of capital purposes:

> The equity risk premium data presented in this book are arithmetic average risk premiums as opposed to geometric average risk premiums. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building-block approach, the arithmetic mean, or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building-block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance because it represents the compound average return.[40]

Thus, only arithmetic mean return rates and yields are appropriate for cost of capital purposes because ex-post (historical) returns and equity

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38 *Ibid.*, at 35.
39 *Ibid.*
40 SBBI – 2019, at 10-22

risk premiums differ in size and direction over time, providing insight into the variance and standard deviation of returns. Because the arithmetic mean captures the prospect for variance in returns and equity risk premiums, it provides the valuable insight needed by investors in estimating risk in the *future* when making a current investment. Absent such valuable insight into the potential variance of returns, investors cannot meaningfully evaluate prospective risk.

In contrast, the geometric mean of ex-post equity risk premiums provides no insight into the potential variance of future returns because the geometric mean relates the change over many periods to a constant rate of change, rather than the year-to-year fluctuations, or variance, critical to risk analysis. Therefore, the geometric mean is of little or no value to investors seeking to measure risk. Moreover, from a statistical perspective, because stock returns and equity risk premiums are randomly generated, the arithmetic mean is also forward-looking, consistent with the prospective nature of the cost of capital and ratemaking. The financial literature is quite clear that risk is measured by the variability of expected returns, *i.e.*, the probability distribution of returns.[41]

In addition, Weston and Brigham provide the standard financial textbook definition of the riskiness of an asset when they state:

[41] Eugene F. Brigham, Fundamentals of Financial Management (The Dryden Press, 1989) at 639.

> The riskiness of an asset is defined in terms of the likely variability of future returns from the asset. (emphasis added)[42]

Furthermore, Morin states:

> The geometric mean answers the question of what constant return you would have to achieve in each year to have your investment growth match the return achieved by the stock market. The arithmetic mean answers the question of what growth rate is the best estimate of the future amount of money that will be produced by continually reinvesting in the stock market. It is the rate of return which, compounded over multiple periods, gives the mean of the probability distribution of ending wealth. (emphasis added)[43]

In addition, Brealey and Myers note:

> The proper uses of arithmetic and compound rates of return from past investments are often misunderstood... Thus the arithmetic average of the returns correctly measures the opportunity cost of capital for investments... *Moral*: If the cost of capital is estimated from historical returns or risk premiums, use arithmetic averages, not compound annual rates of return. (italics in original)[44]

As previously discussed, investors gain insight into relative riskiness by analyzing expected *future* variability. This is accomplished using the arithmetic mean of a random distribution of returns/premiums. Only the arithmetic mean considers all the returns/premiums over a period of time, hence, providing meaningful insight into the variance and standard deviation of those returns/premiums.

Q. Can it be demonstrated that the arithmetic mean takes into account all of the returns, and therefore, the arithmetic mean is appropriate to use

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42 J. Fred Weston and Eugene F. Brigham, Essentials of Managerial Finance, 3rd Edition (The Dryden Press, 1974) at 272.

43 Morin, at 133.

44 Richard A. Brealey and Stewart C. Myers, S.C., Principles of Corporate Finance, 5th Ed. (McGraw-Hill Publications, Inc., 1996) at 146 – 147.

when estimating the opportunity cost of capital in contrast to the geometric mean?

A. Yes. Schedule DWD-7R graphically demonstrates this. Page 1 charts the returns on large company stocks for each of the years 1926 through 2018 from the SBBI – 2019 Appendix A Tables.[45] It is clear from the year-to-year variation of these returns that stock market returns, and hence, equity risk premiums, vary.

The distribution of each one of those returns for the entire period of 1926 through 2018 is shown on page 2. There is a clear bell-shaped pattern to the histogram, or probability distribution, of returns, an indication that the returns are randomly generated and not serially correlated. The arithmetic mean of this distribution of returns considers every return in the distribution, thus, takes into account the standard deviation or variance which may be experienced in the future when estimating the rate of return based on such historical returns.

In contrast, the geometric mean of these returns considers only two of the returns, the initial and terminal years, which, in this case, are 1926 and 2018. Based on only those two years, a constant rate of return is calculated by the geometric average. That constant return is graphically represented by a flat line, showing no year-to-year variation, over the entire 93-year (1926 to 2018) time period. This is clearly far different from actual,

[45] SBBI – 2019 Appendix A Tables.

based on the histogram, or probability distribution, of returns shown on page 2 and demonstrated on page 1 of Schedule DWD-7R.

Clearly, only the arithmetic mean takes the volatility of returns into account and, thus, is appropriate for estimating the investor required rate of return. The geometric mean, which does not take this volatility into account, is appropriate only when measuring historical performance and should not be used to estimate the investors required rate of return. Consequently, Mr. Hinton should not have relied on the historical geometric mean return on large company stocks from 1926-2018 from SBBI – 2019 in his CAPM analysis.

Q. Is there another expected return on the market Mr. Hinton could have relied on in his CAPM analysis?

A. Yes. In his DCF model, Mr. Hinton relied on the expected 12-month dividend for each company in his proxy group from the Value Line Summary & Index.[46] The Value Line Summary & Index also provides prospective returns on the market each week, located on the cover of each issue. The Value Line Summary & Index 13-week ending October 18, 2019 average expected return on the market is 13.83%.[47]

Q. Did Mr. Hinton incorporate an ECAPM analysis?

A. No. Mr. Hinton failed to consider the ECAPM, despite the fact that numerous tests of the CAPM have confirmed the ECAPMs validity by

[46] Hinton Direct Testimony, at 27.

[47] Source of information: Value Line Summary & Index, July 26, 2019 to October 18, 2019. 13-week average market appreciation of 55% and average median dividend yield of 2.25% equals an annual expected market return of 13.83% ($(1.55^{0.25} - 1) + 2.25\% = 13.83\%$).

showing that the empirical Security Market Line ("SML") described by the traditional CAPM is not as steeply sloped as the predicted SML, as discussed in detail in my direct testimony.[48]

Q. If corrected for the above errors, what would be the results of Mr. Hinton's CAPM analysis?

A. Schedule DWD-6R presents the results of the correct applications of both the traditional CAPM and the ECAPM for Mr. Hinton's water proxy group. The corrected CAPM results indicate a cost of common equity of 10.12% for Mr. Hinton's water proxy group.

E. Application of the Comparable Earnings Model

Q. Please describe Mr. Hinton's CEM analysis

A. Mr. Hinton examined five years of historical earned returns on equity for his water and gas proxy groups and averaged all the returns together to arrive at a 9.83% indicated equity return.[49] Mr. Hinton did not rely on the results of this data for his recommended ROE, but only as a check on his DCF and RPM.[50] I would note that his indicated ROE using his CEM is in excess of 70 basis points over his recommended ROEs of 9.10% and 9.00% (with the authorization of the Company's requested CAM) and the average of his water proxy group's earned return is 10.05%.

48 D'Ascendis Direct Testimony, at 32-35.
49 Hinton Direct Testimony, at Public Staff Hinton Exhibit 6.
50 *Ibid.,* at 33.

Q. Do you have any comment on the proxy groups Mr. Hinton used in his CEM analysis?

A. Yes. Mr. Hinton used his water and gas proxy groups in his CEM analysis.[51] Any proxy group selected for a CEM analysis should be broad-based in order to obviate company-specific aberrations and should exclude utilities to avoid circularity. Since the achieved returns on book common equity of utilities is a function of the regulatory process itself, they are substantially influenced by regulatory return on common equity awards. Therefore, the achieved ROEs of utilities are not representative of the returns that could be earned in a truly competitive market. Hence, Mr. Hinton's use of his water and gas proxy utilities in his CEM analysis should be rejected and replaced with the results of market models applied to a group of non-price regulated companies similar in total risk to Mr. Hinton's water proxy group. I addressed the inapplicability of Mr. Hinton's gas proxy group earlier in this testimony, and as such, will not be selecting a non-price regulated proxy group for his gas proxy group.

Q. Please explain the basis of using a non-price regulated proxy group in a CEM analysis.

A. Neither the *Hope* nor *Bluefield* cases specify that comparable risk companies must be regulated utilities. Since rate regulation is a substitute for the competition of the marketplace, non-price regulated firms operating in the competitive marketplace are an excellent proxy if a group can be

[51] *Ibid*.

selected to be comparable in total risk to the water proxy group on whose market data Mr. Hinton relied on to estimate the cost of common equity. The bases of the selection applied are theoretically and empirically sound, identical to those I applied in my direct testimony,[52] and result in a non-price regulated proxy group which is comparable in total risk to Mr. Hinton's water proxy group.[53]

Q. Please explain how you chose the non-price regulated proxy group comparable in total risk to Mr. Hinton's water proxy group.

A. As discussed in my direct testimony,[54] the selection criteria for non-price regulated firms are based on statistics derived from Value Line regression analyses of weekly market prices over the most recent 260 weeks, *i.e.*, five years from the market prices paid by investors. Value Line unadjusted betas were used as a measure of systematic risk, while the standard errors of the regressions giving rise to those beta coefficients are a measure of unsystematic or firm-specific risk reflecting the extent to which events specific to a firm's operations affect its stock price. In essence, companies with similar betas and standard errors of the regression have similar total investment risk. Using a Value Line proprietary database dated September 2019 and applying the same selection criteria as in my direct testimony results in a non-price regulated proxy group comparable in total risk to Mr. Hinton's water proxy group. The basis of selection and the non-price

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52 D'Ascendis Direct Testimony, at 39-40.

53 Frank J. Hanley & Pauline M. Ahern, "Comparable Earnings: New Life for an Old Precept," American Gas Association, *Financial Quarterly Review*, Summer 1994 at 4 – 8.

54 D'Ascendis Direct Testimony, at 39-40.

regulated proxy group's regression statistics are shown on pages 1 through 3 of Schedule DWD-8R.

Q. Did you also select a non-price regulated proxy group based on the ranges of Value Line risk measures used by Mr. Hinton?

A. Yes, I did. I ran the screens using Mr. Hinton's Value Line risk measures as shown on Table 3 against the universe of Value Line companies to obtain a group of non-price regulated companies comparable in total risk to Mr. Hinton's water proxy group as shown on page 4 of Schedule DWD-8R.

Q. How did you calculate common equity cost rates for the non-utility proxy group that is comparable in total risk to Mr. Hinton's water proxy group?

A. I applied the market models in a manner identical to my correction of Mr. Hinton's applications of the DCF and the CAPM for his water proxy group as shown on Schedules DWD-2R and DWD-6R, respectively.

Page 6 of Schedule DWD-8R contains the derivation of the DCF cost rates for each comparable group. The composite DCF-derived cost rates based on EPS growth forecasts are 10.97% and 9.25% for the two comparable groups (average of 10.11%). My recommended indicated result using the DCF would be 10.11%, which is the average of the two groups' DCF results.

Page 7 of Schedule DWD-8R contains my correction of the CAPM applied to the non-utility proxy groups comparable in total risk to Hinton's water proxy group. The CAPM / ECAPM results indicates cost of common

equity rates of 10.55% and 10.50% for the two non-price regulated proxy groups, respectively. I will rely on the average of the two results, or 10.53%, as the indicated CAPM result for the non-price regulated proxy groups comparable in total risk to Mr. Hinton's water proxy group.

Q. What is your conclusion of the common equity cost rate based on the non-price regulated proxy groups?

A. It is 10.32% as shown on page 5 of Schedule DWD-8R. The results of the DCF and CAPM applied to the non-price regulated proxy groups are 10.11% and 10.53%, respectively, which average to 10.32%.

Q. **What are the results of Mr. Hinton's ROE models after making the adjustments described above and including the CAPM and CEM.**

As discussed above, my adjustments to Mr. Hinton's DCF and RPM result in ROEs of 9.43% and 9.67%, respectively. After the inclusion of the corrected CAPM (10.12%) and CEM (10.32%) results,[55] Mr. Hinton's average result is 9.89%. The average result of 9.89% still does not reflect the cost of common equity for CWSNC, as it has not been adjusted for the Company's greater risk relative to the proxy group based on its small size.

Q. **Mr. Hinton justifies his recommended ROE of 9.10% by reviewing the interest coverage ratio and confirming that his ROE would allow the**

[55] Schedules DWD-6R and DWD-8R, respectively.

Company a single "A" rating.[56] Does one measure of financial risk such as pre-tax interest coverage indicate a specific credit rating?

A. No. While I do not take issue with Mr. Hinton's inputs or calculations in determining CWSNC's pre-tax interest coverage ratio, I note that the ratios of pre-tax coverage needed to qualify for a single "A" rating range from 3.0 to 6.0. As can be seen in Schedule DWD-9R, ROE's ranging from 9.00% (Mr. Hinton's recommended ROE if the CAM is approved) to as high as 22.22%, all allow CWSNC to qualify for a single "A" rating based on its pre-tax coverage ratio. Clearly a significantly large range of results indicates that simply relying on a single measure, out of a multitude of measures reviewed by the bond/credit ratings agencies, to determine a company's bond rating is misleading and without significance.

F. Failure to Reflect CWSNC's Greater Relative Risk Due to its Small Size

Q. **Does Mr. Hinton make a specific adjustment to reflect the smaller size of CWSNC relative to the proxy group?**

A. No. As previously discussed in my direct testimony,[57] relative company size is a significant element of business risk for which investors expect to be compensated through greater returns. Smaller companies are simply less able to cope with significant events which affect sales, revenues and earnings. For example, smaller companies face more exposure to business cycles and economic conditions, both nationally and locally. Additionally,

[56] Hinton Direct Testimony, at 39.
[57] D'Ascendis Direct Testimony, at 43-48.

the loss of revenues from a few large customers would have a far greater effect on a small company than on a larger company with a more diverse customer base. Finally, smaller companies are generally less diverse in their operations and have less financial flexibility. Consistent with the financial principle of risk and return in my direct testimony,[58] such increased risk due to small size must be taken into account in the allowed rate of return on common equity.

Q. **Is there another empirical study in addition to the empirical analysis you performed in your direct testimony that evaluates the effect of size on the cost of equity?**

A. Yes. Duff & Phelps' ("D&P") 2019 Valuation Handbook Guide to Cost of Capital – Market Results through 2018 ("D&P 2019") presents a Size Study based on the relationship of various measures of size and return. Relative to the relationship between average annual return and the various measures of size, D&P state:

> **The size of a company is one of the most important risk elements to consider when developing cost of equity estimates for use in valuing** a firm. Traditionally, researchers have used market value of equity (*i.e.,* "market capitalization" or "market cap") as a measure of size in conducting historical rate of return research. For example, the Center for Research in Security Prices (CRSP) "deciles" are developed by sorting U.S. companies by market capitalization. Another example is the Fama-French "Small Minus Big" (SMB) series, which is the difference in return of "small" stocks minus "big" (*i.e.*, large) stocks, as defined by market capitalization. (emphasis added) [59]

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58 *Ibid.,* at 8.

59 D&P 2019, at p. 10-1.

The Size Study uses the following eight measures of size, all of which have empirically shown that, over the long-term, the smaller the company, the higher the risk:

- Market Value of Common Equity (or total capital if no debt / equity);
- Book Value of Common Equity;
- Net Income (five-year average);
- Market Value of Invested Capital;
- Total Assets (Invested Capital);
- Earnings Before Interest, Taxes, Depreciation & Amortization ("EBITDA") (five-year average);
- Sales / Operating Revenues; and
- Number of Employees.

I used the D&P Size Study to determine the approximate magnitude of the necessary risk premium due to the size of CWSNC relative to the water proxy group. Schedule DWD-10R shows the relative size of CWSNC compared with the water proxy group. Indicated size adjustments based on these relative measures range from 1.08% to 2.79%, averaging 1.78%. From these results, it is clear that CWSNC is riskier than the water proxy group due to its small size, and that my proposed size adjustment of 40 basis points for CWSNC is conservative.

Q. **Mr. Hinton cites a study by Dr. Annie Wong for the proposition that there is no size premium for utilities. Does this study establish that contention?**

A. No. Dr. Wong's study is flawed because she attempts to relate a change in size to beta coefficients, which accounts for only a small percentage of

diversifiable company-specific risk. Size is company-specific and therefore diversifiable. For example, the average R-squared, or coefficient of determination for the water proxy group, is 0.0718 as shown on Schedule DWD-11R. An R-squared of 0.0718 means that approximately 7% of total risk is explained by beta, leaving 93% unexplained by beta.

Q. **Is there also a published response to Dr. Wong's article?**

A. Yes, there is. In response to Professor Wong's article, *The Quarterly Review of Economics and Finance* published an article in 2003, authored by Thomas M. Zepp, which commented on the Annie Wong article cited by Mr. Hinton. Relative to Ms. Wong's results, Dr. Zepp concluded in the Abstract on page 1 of his article: "Her weak results, however, do not rule out the possibility of a small firm effect for utilities."[60] Dr. Zepp also noted on page 582 that: "Two other studies discussed here support a conclusion that smaller water utility stocks are more risky than larger ones. To the extent that water utilities are representative of all utilities, there is support for smaller utilities being more risky than larger ones."[61] Finally, I note that Professor Wong's study, while relying on a large group of gas and electric utilities, used no water utilities.

Q. **Are you aware of any other academic article relating to the applicability of a size premium?**

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60 Thomas M. Zepp, Thomas M. "Utility Stocks and the Size Effect --- Revisited", The Quarterly Review of Economics and Finance, 43 (2003) at 578-582.

61 *Ibid, at 582.*

A. Yes. An article by Michael A. Paschall, ASA, CFA, and George B. Hawkins ASA, CFA, "Do Smaller Companies Warrant a Higher Discount Rate for Risk?" also supports the applicability of a size premium. As the article makes clear, all else equal, size is a risk factor which must be taken into account when setting the cost of capital or capitalization (discount) rate. Paschall and Hawkins state in their conclusion as follows:

> The current challenge to traditional thinking about a small stock premium is a very real and potentially troublesome issue. The challenge comes from bright and articulate people and has already been incorporated into some court cases, providing further ammunition for the IRS. Failing to consider the additional risk associated with most smaller companies, however, is to fail to acknowledge reality. Measured properly, small company stocks have proven to be more risky over a long period of time than have larger company stocks. This makes sense due to the various advantages that larger companies have over smaller companies. Investors looking to purchase a riskier company will require a greater return on investment to compensate for that risk. There are numerous other risks affecting a particular company, yet the use of a size premium is one way to quantify the risk associated with smaller companies.[62]

Hence, Paschall and Hawkins corroborate the need for a small size adjustment, all else equal. Consistent with the financial principle of risk and return discussed previously, and the stand-alone nature of ratemaking, an upward adjustment must be applied to the indicated cost of common equity derived from the cost of equity models of the water proxy group used in this proceeding.

[62] Michael A. Paschall, ASA, CFA and George B. Hawkins ASA, CFA, "Do Smaller Companies Warrant a Higher Discount Rate for Risk?", CCH Business Valuation Alert, Vol. 1, Issue No. 2, December 1999.

Q. **Does Mr. Hinton give evidence to the relative risk of water companies based on their size in his direct testimony?**

A. Yes, he does. On page 21 of his direct testimony, Mr. Hinton states that Utilities, Inc., CWSNC's parent company, "has a history of making private placements of debt at relatively higher interest rates relative to public offerings by other utilities, such as seen with Aqua North Carolina." The inability to offer public debt, and the resulting higher capital costs is directly attributable to Utilities, Inc.'s small size. As the size risk of Utilities, Inc., and in turn, CWSNC is reflected in its debt cost rate, it must also be reflected in its equity cost rate.

G. Consideration of Mechanisms in Place for CWSNC

Q. **Mr. Hinton discusses the Company's Water and Sewer System Improvement Charge mechanisms and the Company's requested CAM that he claims impact risk for CWSNC.[63] Is his claim valid?**

A. No. The cost of capital is a comparative exercise, so if the mechanism is common throughout the companies that one bases their analyses on, the comparative risk is zero because any impact of the perceived reduced risk of the mechanism(s) by investors would be reflected in the market data of the proxy group. To that point, as shown on Schedule DWD-12R, every single one of the proxy companies has a Distribution Service Improvement Charge and five of seven of his water proxy group companies have a CAM-type mechanism in at least one of their jurisdictions.

[63] Hinton Direct Testimony, at 36-37.

Q. Are you aware of any studies that have addressed the relationship between decoupling mechanisms, generally, and ROE?

A. Yes. I, along with Dr. Richard A. Michelfelder of Rutgers University, and my colleague at ScottMadden, Pauline M. Ahern, CRRA, examined the relationship between decoupling and ROE among electric, gas, and water utilities. Using the generalized consumption asset pricing model, also known as the Predictive Risk Premium Model, we found decoupling to have no statistically significant effect on investor perceived risk, and hence, ROE.[64]

Also, in March 2014, The Brattle Group ("Brattle") published a study addressing the effect of revenue decoupling structures on the cost of capital for electric utilities.[65] In its report, which extended a prior analysis focused on natural gas distribution utilities, Brattle pointed out that although decoupling structures may affect revenue, net income still can vary.[66] Brattle further noted that the distinction between diversifiable and non-diversifiable risk is important to equity investors, and the relationship between decoupling and ROE should be examined in that context. Further to that point, Brattle noted that although reductions in total risk may be important to bondholders, only reductions in non-diversifiable business risk

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64 Dr. Richard A. Michelfelder, Pauline M. Ahern, Dylan W. D'Ascendis, *The Impact of Decoupling on The Cost of Capital of Public Utilities*, Energy Policy 130 (2019) 311-319.

65 The Brattle Group, *The Impact of Revenue Decoupling on the Cost of Capital for Electric Utilities: An Empirical Investigation*, Prepared for the Energy Foundation, March 20, 2014.

66 *Ibid*., page 7.

would justify a reduction to the ROE.[67] In November 2016 the Brattle study was updated based on data through the fourth quarter of 2015.[68]

Brattle's empirical analysis examined the relationship between decoupling and the After-Tax WACC for a group of electric utilities that had implemented decoupling structures in various jurisdictions throughout the United States. As with Brattle's 2014 study, the updated study found no statistically significant link between the cost of capital and revenue decoupling structures.[69] Even though the Company has removed the CAM from consideration in this proceeding, I want to make sure that the Commission knows that there has been no study that links the approval of a decoupling mechanism to a lower investor-required ROE.

VII. CONCLUSION

Q. **Does this conclude your rebuttal testimony?**

A. Yes, it does.

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67 *Ibid*., page 8.

68 Michael J. Vilbert, Joseph B. Wharton, Shirley Zhang and James Hall, *Effect on the Cost of Capital of Innovative Ratemaking that Relaxes the Linkage between Revenue and kWh Sales – An Updated Empirical Investigation*, November 2016. Also available at http://files.brattle.com/files/5711_effect_on_the_cost_of_capital_of_ratemaking_that_relaxes_the_linkage_between_revenue_and_kwh_sales.pdf.

69 *Ibid.*