

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF SOUTH DAKOTA**

**In the Matter of the Application of Otter Tail )  
Power Company for Authority to Increase Its ) Docket No. EL18-021  
Electric Rates )**

**RATE OF RETURN ON EQUITY**

**TESTIMONY OF BASIL L. COPELAND JR.  
ON BEHALF OF  
THE COMMISSION STAFF**

**February 19, 2019**



**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF SOUTH DAKOTA**

**In the Matter of the Application of Otter Tail )  
Power Company for Authority to Increase Its ) Docket No. EL18-021  
Electric Rates )**

**RATE OF RETURN ON EQUITY**

**TESTIMONY AND EXHIBIT OF BASIL L. COPELAND JR.  
ON BEHALF OF  
THE COMMISSION STAFF**

**TABLE OF CONTENTS**

<b>I.</b>	<b>BACKGROUND AND QUALIFICATIONS .....</b>	<b>1</b>
<b>II.</b>	<b>OVERVIEW OF TESTIMONY.....</b>	<b>3</b>
<b>III.</b>	<b>ROLE OF RATE OF RETURN AND THE COST OF EQUITY IN REGULATION .....</b>	<b>5</b>
<b>IV.</b>	<b>COST OF EQUITY CAPITAL A CURRENT CAPITAL MARKET PERSPECTIVE.....</b>	<b>7</b>
<b>V.</b>	<b>OTP'S COST OF EQUITY CAPITAL .....</b>	<b>11</b>
	<b>A. DCF ANALYSIS .....</b>	<b>11</b>
	<b>B. MARKET-TO-BOOK RATIOS, EXCESS RETURNS, AND COST OF EQUITY .....</b>	<b>18</b>
<b>VI.</b>	<b>ANALYSIS OF COMPANY TESTIMONY.....</b>	<b>46</b>
	<b>A. DISCOUNTED CASH FLOW METHODOLOGIES .....</b>	<b>47</b>
	<b>B. RISK PREMIUM METHODOLOGIES.....</b>	<b>55</b>
	<b>C. SIZE PREMIUM .....</b>	<b>76</b>
	<b>D. FLOTATION COSTS .....</b>	<b>79</b>
	<b>E. IMPACT OF TAX CUTS &amp; JOBS ACT (TCJA) .....</b>	<b>80</b>
<b>VII.</b>	<b>CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>83</b>



1 **I. BACKGROUND AND QUALIFICATIONS**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 **A.** My name is Basil L. Copeland Jr. and my business address is 14619 Corvallis Road,  
4 Maumelle, AR, 72113.

5 **Q. WHAT IS YOUR OCCUPATION, BY WHOM ARE YOU EMPLOYED, AND**  
6 **FOR WHOM ARE YOU TESTIFYING?**

7 **A.** I am an economist, specializing in energy and utility economics and a principal in  
8 Chesapeake Regulatory Consultants, Inc., Annapolis, MD. I am testifying on behalf of  
9 the Staff of the South Dakota Public Utilities Commission.

10 **Q. PLEASE DESCRIBE YOUR EDUCATION AND PROFESSIONAL EXPERI-**  
11 **ENCE.**

12 **A.** I received my education at Portland State College (1967-1969), New Mexico Institute  
13 of Mining and Technology (1969), and Oregon State University (1972-75). In 1974 I  
14 received a Bachelor of Science degree in Economics from Oregon State University and  
15 in 1976 a Master of Science degree in Resource Economics (with a minor in Business  
16 Finance) from the same institution.

17 From August 1975 to February 1977 I worked as a financial analyst and staff  
18 economist for the Arkansas Public Service Commission. From March 1977 to August  
19 1978 I worked in a similar position for the Iowa State Commerce Commission. In  
20 September of 1978 I went to work for the Attorney General of Arkansas in a U.S. De-  
21 partment of Energy-funded office of consumer services with responsibility for eco-  
22 nomic analysis in electric utility rate cases. While with the Attorney General I as-  
23 sisted in the development of legislation that created the Arkansas Department of En-  
24 ergy. In July of 1979, soon after the Department was officially created, I became Dep-  
25 uty Director for Forecasting. In that position I directed a staff with broad

1 responsibilities that included the development of an energy management information  
2 system for monitoring energy supply and demand in Arkansas, including comprehen-  
3 sive forecasts of energy demand by fuel source and sector.

4 I left the Arkansas Department of Energy in January 1981 and worked briefly  
5 as an independent consultant before joining the consulting firm of Hess and Lim, Inc.  
6 in April 1981. While employed by Hess and Lim, I served as a consultant on numer-  
7 ous rate cases before the FERC and various state utility commissions. I left Hess &  
8 Lim in October 1986 to join with two other consultants in the founding of Chesapeake  
9 Regulatory Consultants. I have testified or provided technical assistance in over 150  
10 proceedings before the FERC, the FCC, and regulatory bodies in: Alabama, Arizona,  
11 Arkansas, California, Colorado, Georgia, Illinois, Iowa, Kansas, Maine, Maryland,  
12 Mississippi, Montana, New Jersey, New Mexico, New York, Oklahoma, Pennsylvania,  
13 Rhode Island, South Dakota, Texas, Vermont, Washington State, West Virginia, and  
14 the District of Columbia. On four occasions I have been invited to appear on the pro-  
15 gram of the annual conference of Michigan State University's Institute of Public Utili-  
16 ties and I have served as faculty for the Michigan State-NARUC summer training pro-  
17 gram for regulatory commission personnel.

18 I have published numerous articles, set forth in Appendix A, on a variety of  
19 utility issues, including articles or comments in *Land Economics*, *American Eco-*  
20 *nomic Review*, *Public Utilities Fortnightly*, *Journal of Business Research*, *Yale Jour-*  
21 *nal on Regulation*, *Journal of Portfolio Management*, *Energy Law Journal*, and the  
22 *Financial Analysts Journal*. My 1982 article in the *Financial Analysts Journal* on  
23 the equity risk premium received a Graham and Dodd award from the Financial Ana-  
24 lysts Federation. I have also served as an academic referee for two academic journals

1 where I reviewed articles on utility economics and finance. My article in the Spring  
2 1991 issue of the *Energy Law Journal*<sup>1</sup> dealt with the constitutional standards for due  
3 process as applied to utility ratemaking under the celebrated Hope case. It offers a  
4 comparative analysis and critique of the 1989 Duquesne decision.<sup>2</sup> A list of publica-  
5 tions is provided at the end of my testimony.

6 **II. OVERVIEW OF TESTIMONY**

7 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

8 **A.** This is a filing by Otter Tail Power Company (“OTP”), a subsidiary of Otter Tail Cor-  
9 poration (“OTC” or “OTTR”), for authority to increase its electric rates. The purpose  
10 of my testimony is to present evidence with respect to the cost of equity capital for  
11 OTP and to recommend a fair and reasonable rate of return on equity based upon that  
12 evidence. I will also review and respond to OTP’s testimony on this matter.

13 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING THE COST OF**  
14 **EQUITY AND YOUR RECOMMENDED RATE OF RETURN ON EQUITY.**

15 **A.** Based on the evidence presented in my testimony I conclude that the required rate of  
16 return on equity (“cost of equity”) is presently about 7 percent. Taking into considera-  
17 tion the impact upon OTC’s stock price in relation to its book value (“market-to-book  
18 ratio”) I recommend a return on equity (“ROE”) for OTP of 8.25 with a range of 25  
19 base points on either side, e.g., 8.0 percent to 8.5 percent. Though I am recommend-  
20 ing a rate of return on equity of 8.25 percent, as just noted my analysis of the cost of  
21 equity indicates that it is probably about 7 percent at the present time. The following

---

<sup>1</sup>“Procedural vs. Substantive Economic Due Process for Public Utilities,” with Walter Nixon. *Energy Law Journal* 12 No. 1 (Spring 1991): 81-110.

<sup>2</sup>Federal Power Comm’n v. Hope Natural Gas, 320 U.S. 591 (1944); Duquesne Light Co. v. Barasch, 488 U.S. 591 (1989).

1 table summarizes the evidence for this conclusion based upon three different method-  
2 ologies I employed, as well as two others employed by Mr. Hevert after taking into  
3 consideration fundamental errors in his applications of those methodologies:

4 **Cost of Equity Estimates**

Methodology	Result	Testimony Page Reference
Constant Growth Discounted Cash Flow (DCF)	7.71%	15
Non-Constant Growth Discounted Cash Flow (DDM)	7.05%	17
Market-to-Book/Excess Returns Analysis (XROE)	7.03%	29
Capital Asset Pricing Model (CAPM)	6.74%	71
Bond Yield Plus Risk Premium	7.00%	76

5 Though the cost of equity is presently about 7 percent, using this as the allowed rate  
6 of return would have a significant impact on OTC's market price and market-to-book  
7 ratio. While I think that the Commission should move OTP's allowed rate of return on  
8 equity toward a market-to-book ratio of no more than 1.25, I recognize that it would  
9 not be prudent to do this all at once. My recommended rate of return of 8.25 percent  
10 is adequate to support a market-to-book ratio of 1.37 at the present time. I will ex-  
11 plain how I arrived at this number and discuss further its implications for a fair and  
12 reasonable rate of return in Section V, Part B, of my testimony.

13 **Q. YOUR RECOMMENDED RETURN ON EQUITY IS BELOW THE 9.25 PER-**  
14 **CENT THAT THE COMMISSION GRANTED IN DOCKET NO. EL11-019.**  
15 **PLEASE ADDRESS THAT.**

16 **A.** Capital costs have declined since the issue of rate of return was adjudicated in that  
17 docket. This is apparent from the results shown in the above table for the first two  
18 methodologies, which are exactly the same as I employed in Docket No. EL11-019 ex-  
19 cept for the inputs which reflect current financial market realities. The stock market is  
20 near all-time highs and interest rates are near all-time lows, indicative of lower



1 capital costs than at the time the Commission set that rate of return on equity. I will  
2 discuss this further in Section IV of my testimony and present evidence in support of  
3 this decline in the cost of capital since the Commission ruled in Docket No. EL11-019.

4 **Q. PLEASE DESCRIBE HOW YOU HAVE ORGANIZED THE REMAINDER OF**  
5 **YOUR TESTIMONY.**

6 **A.** In Section III, I present a brief discussion of basic principles regarding rate of return  
7 and the cost of equity in regulation. In Section IV, I discuss recent trends in capital  
8 markets and capital costs and their relevance to determining an allowed return on eq-  
9 uity. Section V describes the cost of equity methodologies I employ and presents my  
10 findings based upon those methodologies. In Section VI, I discuss OTP's testimony  
11 and evidence regarding cost of equity capital and rate of return on equity. Section VII  
12 summarizes my conclusions and recommendations.

13 **III. ROLE OF RATE OF RETURN AND THE COST OF EQUITY IN REGULA-**  
14 **TION**

15 **Q. PLEASE EXPLAIN THE RELATIONSHIP BETWEEN RATE OF RETURN**  
16 **AND THE COST OF EQUITY.**

17 **A.** Regulated utilities typically have utilized three sources of capital to capitalize their  
18 utility assets: common stock, preferred stock, and long-term debt (though not all util-  
19 ities issue preferred stock). The rate of return for a regulated firm is usually based on  
20 its "weighted average cost" of this capital. This weighted average cost of capital repre-  
21 sents the cost of the individual sources of capital weighted by their proportion as rep-  
22 resented in the capital structure.

23 **Q. HOW ARE CAPITAL COSTS MEASURED?**

24 **A.** The cost of long-term debt (and preferred stock) can be directly measured from the  
25 interest (dividend) rate and related costs on the various issues of debt (or preferred

1 stock) used to support the capital structure and is only rarely a direct source of signif-  
2 icant controversy in establishing a rate of return for a regulated utility. The cost of  
3 common equity however cannot be directly measured or estimated. It must be in-  
4 ferred from market-based common stock dividend and price information using one or  
5 more cost of equity estimation methodologies.

6 **Q. WHY IS IT IMPORTANT TO BASE THE ALLOWED RATE OF RETURN ON**  
7 **EQUITY ON THE MARKET COST OF EQUITY?**

8 **A.** Basing the allowed rate of return on equity on the market cost of equity accomplishes  
9 two significant and desirable regulatory objectives. First, it fairly balances the com-  
10 peting interests of ratepayers and shareholders. Ratepayers are interested in receiv-  
11 ing safe and reliable service at the lowest possible cost. Shareholders are interested in  
12 receiving the highest rate of return they can. A rate of return based on the market  
13 cost of equity fairly and reasonably balances these competing interests. If the allowed  
14 rate of return on equity is significantly below the market cost of equity the impair-  
15 ment of the firm's financial integrity undermines its ability to render safe and reliable  
16 service. So, it is usually in the ratepayer's interest to allow a rate of return on equity  
17 at least equal to the market cost of equity. Ratepayers however have no interest in  
18 paying a rate of return significantly above the market cost of equity. And while share-  
19 holders might delight at the opportunity to earn the excess profits associated with a  
20 return on equity above the market cost of equity, they will not complain if the allowed  
21 equity return is consistently established on the basis of the market cost of equity.  
22 Such a return is commensurate with the financial risks they incur and with the re-  
23 turns they could earn elsewhere in the marketplace on comparable investments.

1           Second, an allowed rate of return on equity for the Company equal to the mar-  
2           ket cost of equity provides the appropriate management incentives to operate the firm  
3           safely, reliably and efficiently. An allowed rate of return on equity equal to the market  
4           cost of equity provides the same kind of incentive to the managers of a regulated firm  
5           as do earnings per share and market value goals for a competitive, unregulated firm.  
6           If management has a reasonable opportunity to earn a rate of return on equity equal  
7           to the market cost of equity, it should be able to meet all reasonable goals and expec-  
8           tations of both shareholders and ratepayers.

9   **IV. COST OF EQUITY CAPITAL – A CURRENT CAPITAL MARKET PERSPEC-**  
10   **TIVE**

11   **Q. WHAT IS THE PURPOSE OF THIS PORTION OF YOUR TESTIMONY?**

12   **A.** The last adjudicated rate of return on equity in South Dakota was the 9.25 percent re-  
13   turn on equity allowed in Docket No. EL11-019, in an order issued July 2, 2012. The  
14   capital market data upon which the Commission relied in that docket spanned the lat-  
15   ter months of 2011 and the early months of 2012. There is persuasive evidence that  
16   capital market costs, including the cost of equity, have declined since that time. This  
17   portion of my testimony presents evidence of that.

18   **Q. TO WHAT KIND OF EVIDENCE DO YOU REFER?**

19   **A.** Since the Commission's decision in Docket No. EL11-019 there has been a remarkable  
20   and steady downward trend in equity market risk as evinced by the Standard & Poor's  
21   Volatility Index (VIX). The following chart graphically depicts this trend:

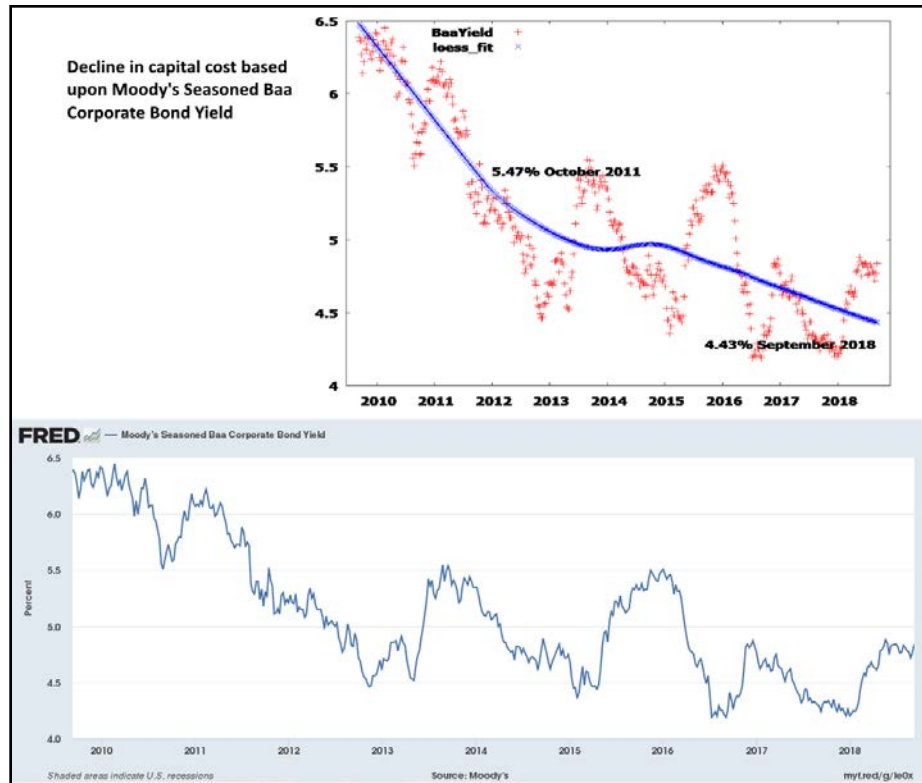


1

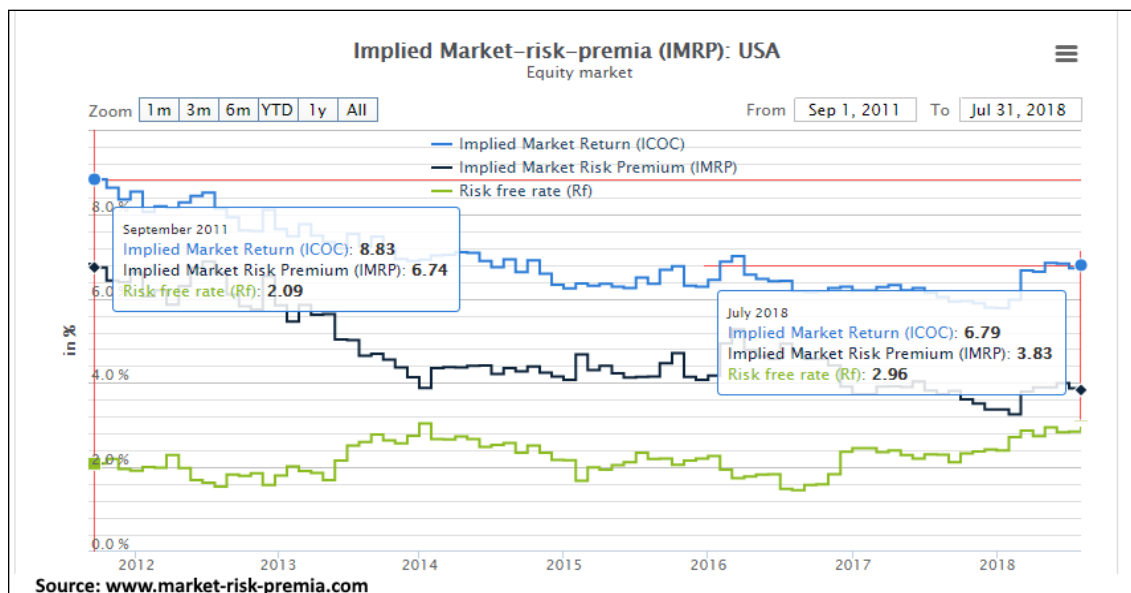
2 In the latter months of 2011, the VIX index was above 40. It fell sharply in the early  
3 months of 2012 and has generally trended downward since then as shown by the 180-  
4 day moving average. While it increased briefly in late 2016, it fell sharply through  
5 2017 before spiking in early 2018. Yet, the overall trend remains downward, espe-  
6 cially relative to what it was at the time rate of return was being considered in Docket  
7 No. EL11-019. This is an indication that market perceptions of equity risk are below  
8 the levels that existed during Docket No. EL11-019.

9 The trend in corporate interest rates since 2011 likewise suggests a decline in  
10 risk and cost of capital since the time of the Commission’s decision in Docket No.  
11 EL11-019. As shown in the chart on the next page, the trend in Moody’s Seasoned  
12 Corporate Baa Bond Yield generally matches the pattern of decline in VIX since 2011,  
13 with upward ticks in yields in 2014, 2016, and early 2018, but with the overall trend  
14 remaining downward. Also shown in the chart is a trend line for the data based on a  
15 “loess” regression line showing an “average” decline in yield of just over 100 basis

1 points (5.47% versus 4.43%).<sup>3</sup>



2 A decline in the cost of equity since the 2012 decision is also seen in following  
 3 chart:

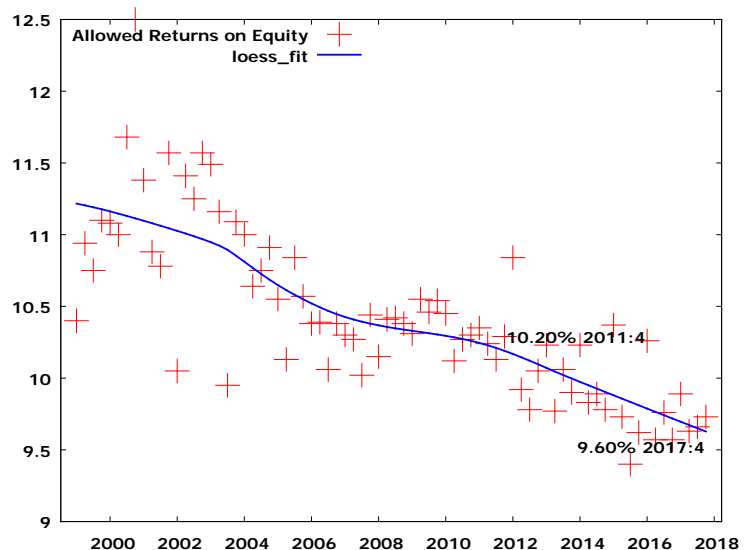


<sup>3</sup> Rather than fitting a straight line through the data, loess regression is a method of producing a smooth “best fit” through the data. Though not a strict acronym it refers to “local [weighted] regression.”

1 In it the implied market required rate of return on equity (for the market as a whole)  
2 is estimated to have declined from 8.83 percent in October 2011 to 6.79 percent as of  
3 July 2018, a decline of 204 basis points.

4 A decline in the market required rate of return on equity is not implausible  
5 given the steady, heady, and even meteoric rise in stock prices since 2011. In 2011, the  
6 average market-to-book ratio for a broad sample of electric utilities was 1.46; by the  
7 end of 2017 it had risen to 1.96. The intervening years have been *more* than kind to  
8 the electric utility industry. A rising market-to-book ratio reflects either a falling cost  
9 of equity, or earnings that are rising significantly faster than costs. The latter is more  
10 or less unheard of in utility rate regulation. In my view (and backed up by the evi-  
11 dence in Section V, Part B, of my testimony) the rising market-to-book ratio reflects a  
12 falling cost of equity *that has not been passed on to ratepayers in the form of re-*  
13 *duced rates.* We can see that when we look at the pattern of allowed rates of return on

14 equity over time. Shown at right is  
15 a plot of allowed rates of return on  
16 equity as tracked quarterly by the  
17 Edison Electric Institute. Based on  
18 the “loess” trend line the average al-  
19 lowed return on equity has only de-  
20 clined 60 basis points since 2011.



21 That has clearly been inadequate to  
22 pass on to ratepayers the full effect of declining capital costs since 2011 or the market-  
23 to-book ratio would not have increased by 50 percent of book value since then. I will  
24 return to this later in my testimony in Section V, Part B, where I discuss the

1 relationship between cost of equity, allowed rates of return on equity, and market-to-  
2 book ratios and how these metrics should be viewed in a proper balancing of rate-  
3 payer and investor interests.

4 For now, the point should be clear: 2018 is not 2011, and the improvement in  
5 financial market conditions since 2011, both for stocks and bonds, make a presump-  
6 tive case for a lower rate of return on equity than was allowed in 2011.

7 **V. OTP'S COST OF EQUITY CAPITAL**

8 **Q. WHAT METHODS DID YOU USE TO DETERMINE OTP'S COST OF EQ-**  
9 **UITY CAPITAL?**

10 **A.** I used two variations of the “Discounted Cash Flow” (“DCF”) methodology. I also un-  
11 dertook a supplemental analysis of market-to-book ratios and excess returns on eq-  
12 uity reflected in current market-to-book ratios.

13 **A. DCF ANALYSIS**

14 **Q. PLEASE EXPLAIN THE BASIC PROCEDURES INVOLVED IN USING THE**  
15 **“DISCOUNTED CASH FLOW” METHODOLOGY.**

16 **A.** In its most basic form, the DCF theory is a “constant growth” model in which the in-  
17 vestor's required return on common stock equity equals the dividend yield on the  
18 stock plus the expected rate of growth in the dividend. This relationship is commonly  
19 represented mathematically as:

$$k = D/P + g$$

20 where k is the cost of equity capital (the investor's required return), D/P is the divi-  
21 dend yield (the dividend divided by market price), and g is the expected rate of  
22 growth in the dividend. Depending on the nature of the assumptions and mathemati-  
23 cal procedures employed in the derivation of the model, the dividend yield portion of  
24 the total return is variously represented as  $D_0/P_0$  or  $D_1/P_0$  where  $D_0$  and  $D_1$  represent  
25

1 the "current dividend" and the "next period dividend," respectively. Depending fur-  
2 ther on what is assumed about the frequency of the dividend payout and the com-  
3 pounding of intra-period retained earnings, an annual yield  $D_0/P_0$  will tend to under-  
4 state the effective yield, while  $D_1/P_0$  will tend to overstate it. A valid conceptual argu-  
5 ment can be made for using an average of the two, sometimes presented in the form  
6  $D_0(1+0.5g)/P_0$ . This is the general form of the constant growth model I used in my  
7 initial DCF analysis.

8 **Q. WHAT OTHER STEPS ARE INVOLVED IN IMPLEMENTING THE DCF**  
9 **METHODOLOGY?**

10 **A.** The principal steps in implementing the DCF approach are the selection of a sample  
11 of companies to which to apply the method, and the selection of measures of expected  
12 growth. On the selection of a sample of companies to which to apply the method, I  
13 will ordinarily rely on the sample used by the applicant's cost of capital witness unless  
14 there is a reason not to. Here I used the same 9-company sample of utilities used by  
15 OTP's witness.

16 **Q. WHAT DATA DID YOU EXAMINE IN ORDER TO ESTIMATE THE INVES-**  
17 **TOR EXPECTED GROWTH RATE FOR YOUR DCF ANALYSIS?**

18 **A.** For my constant growth DCF study, I utilized industry analysts' projected growth in  
19 earnings per share ("EPS") from Zacks and Yahoo (they may come from the same  
20 source so I use a simple average of the two) and Value Line estimates of growth in  
21 dividends per share ("DPS"), growth in book value per share ("BVPS") and the Value  
22 Line estimate of "% Retained to Common Equity" (a measure of long-term sustaina-  
23 ble growth).<sup>4</sup> Theoretically, if the constant growth assumptions are valid earnings,

---

<sup>4</sup> Zacks, Yahoo and Value Line are sources of financial data widely used by investors. Besides basic financial data, Zacks and Yahoo both publish survey results of expected earnings growth (referred to



1 dividends, and book value per share should all grow at the same rate. Where this is  
2 the case, it is sometimes possible to derive reasonable and accurate estimates of the  
3 cost of equity using only one of these growth measures as a “proxy” for the expected  
4 rate of growth in dividends. But if the payout ratio is not constant then using just  
5 projected earnings or dividend growth can result in distorted estimates of the DCF  
6 cost of equity.

7 **Q. WHAT ARE YOUR ESTIMATES OF THE PROJECTED GROWTH RATE**  
8 **USING THESE MEASURES?**

9 **A.** The projected growth rates used in my constant growth DCF study for the sample of 9  
10 electric utilities are shown on Exhibit \_\_\_\_ (BLC-1), Schedule 1. As can be seen from  
11 Columns F and G there is substantial disparity between the EPS growth rates pro-  
12 jected by Zacks and Yahoo and the DPS growth rates projected by Value Line. The  
13 median (which is a better measure of central tendency if there are outliers) projected  
14 EPS growth rate, 4.56 percent, is lower than the median DPS growth rate of 5.50 per-  
15 cent. However, the median "% Return to Common Equity" in Column I, 3.50 percent,  
16 is well below the median analyst projected EPS growth forecast of 4.56 percent, im-  
17 plying that the projected earnings growth rate is unsustainable for the long-term. But  
18 the constant growth DCF model is a model of investors' long-term dividend growth  
19 expectations.

20 **Q. WHAT IS THE BEST WAY TO ESTIMATE THE CONSTANT GROWTH DCF**  
21 **COST OF EQUITY TO AVOID OVERSTATING OR UNDERSTATING IN-**  
22 **VESTORS LONG-TERM GROWTH EXPECTATIONS?**

---

as “consensus” estimates of expected earnings growth). Value Line’s “% Retained to Common Equity” is a measure of the ratio of retained earnings to common equity, or the “plowback ratio.” It is equivalent to the “br” measure of expected dividend growth used in some presentations of the DCF model.

1   **A.**    The best way to estimate the constant growth DCF cost of equity is to rely upon an av-  
2            erage of the EPS, DPS, and BVPS projections, along with the "% Return to Common  
3            Equity" measure of growth. Short-run or near-term changes in payout ratio do not  
4            impact BVPS growth as significantly as they do EPS and DPS growth, and over time  
5            EPS and DPS growth rates will always revert to the rate of growth in BVPS.<sup>5</sup> In the  
6            non-constant growth method which I discuss below, we can make more specific al-  
7            lowances for differences in the rates of growth in these parameters. But for the con-  
8            stant growth rate approach an average of these various growth rate measurements is  
9            required to reasonably estimate investors' long-term growth expectations. The aver-  
10          ages are shown in Column J; the mean expected growth rate is 4.38 percent and the  
11          median is 4.41 percent.

12   **Q.**    **PLEASE DESCRIBE THE RESULTS OF YOUR CONSTANT GROWTH DCF**  
13            **STUDY FOR THE ELECTRIC UTILITY SAMPLE.**

14   **A.**    The results are shown on Exhibit\_\_\_\_ (BLC-1), Schedule 1, Column K. Column K is the  
15          sum of Column E and the average of Columns F, G, H and I (the average is shown in  
16          Column J). Column E is the dividend yield portion of the DCF cost of equity, and is  
17          computed using a 180-day moving average stock price.<sup>6</sup> By averaging the growth

---

<sup>5</sup> A trend in the payout ratio faces two limits – a payout ratio of 100 percent if the payout ratio is rising, and a payout ratio of zero if the payout ratio is declining. At these limits growth in dividends or earnings becomes equal to the rate of growth in book value per share. If the trend in payout ratio levels off, so that payout ratio stabilizes, growth in dividends and earnings will equal growth in book value per share. So regardless of the trend in payout ratio, growth in dividends and earnings will always, ultimately, revert to growth in book value per share.

<sup>6</sup> However, I compare the 180-day moving average to "Bollinger Bands" around the recent stock price. Bollinger Bands are bands used in charting stock prices, and plot a range of two standard deviations around a 20-day moving average. If the 180-day moving average is outside the Bollinger Band, I use the price indicated by the Bollinger Band in the place of the 180-day moving average. Thus, the stock price I use is always within two standard deviations of a 20 day moving average, answering any concern that use of a 180 day moving average represents stale price data. While "Bollinger Bands" are most commonly associated with "technical" analysis of stock price movements, their use here implies no agreement with the theory or practice of technical analysis. They simply

1 rates in Columns F, G, H and I, we avoid the bias that arises from relying solely upon  
2 a single measure of expected growth. The mean and median estimate of “k” are 7.60  
3 percent and 7.71 percent respectively.

4 **Q. DID YOU UNDERTAKE ANY ADDITIONAL DCF ANALYSIS?**

5 **A.** Yes, I did. In addition to the more traditional form of the DCF methodology, I devel-  
6 oped DCF estimates using a “dividend discount model” (“DDM”). DDMs are more  
7 general forms of the DCF methodology which embody less restrictive assumptions  
8 than the traditional methodology. The traditional methodology is sometimes referred  
9 to as the “constant growth model,” and assumes that dividends, earnings, book value  
10 per share, and share price all grow at the same uniform rate of growth into perpetuity.  
11 While this is rarely the case in actuality, it is not an unreasonable assumption if the  
12 differences are small, a condition which implicitly requires a relatively constant divi-  
13 dend payout ratio. Where dividend payout ratios are expected to trend upward or  
14 downward over extended periods of time the use of five-year earnings growth projec-  
15 tions of the type published by Zacks, Value Line, or other investment services in a  
16 constant growth form of the DCF model can produce distorted and unreliable results.  
17 Multiple-period dividend discount models provide more reliable and accurate  
18 measures of the expected DCF return under such conditions.

19 **Q. PLEASE EXPLAIN IN FURTHER DETAIL HOW THE MULTIPLE PERIOD**  
20 **DIVIDEND DISCOUNT MODEL IS DERIVED.**

21 **A.** Multiple period dividend discount models are based on finite horizon DCF models of  
22 the form:

---

provide a readily available means of adjusting for the effect of dramatic short term price movements in developing an "average" price for DCF analysis.

1 
$$P_0 = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_t}{(1+k)^t} + \frac{P_t}{(1+k)^t}$$

2 where

3 
$$P_t = \frac{D_t(1+g)}{(k-g)}$$

4 Here  $t$  is a finite time period at the end of which the stock would be sold for  $P_t$ . By  
5 postponing the period of constant growth to some finite point of time in the future,  
6 dividends can be projected during the interim that follow any pattern consistent with  
7 expected earnings growth and dividend payout ratios.

8 **Q. ARE SUCH DDM MODELS ACTUALLY USED BY INVESTORS TO ESTI-**  
9 **MATE EXPECTED RETURNS?**

10 **A.** Yes. Firms such as Prudential-Bache and Merrill Lynch have used such models to de-  
11 velop expected returns, which are then used by their investment analysts in making  
12 stock buy-hold-sell recommendations. Standard textbooks also present them along  
13 with constant growth models. The New York Public Service Commission uses a varia-  
14 tion of this approach to determine allowed return on equity.

15 **Q. PLEASE DESCRIBE IN FURTHER DETAIL YOUR IMPLEMENTATION OF**  
16 **THIS METHODOLOGY.**

17 **A.** The basic data employed in my implementation of this methodology is presented, for  
18 the 9-company sample of electric utilities, in Exhibit\_\_\_\_(BLC-1), Schedule 2. This is  
19 a summary sheet with input data and the resulting DDM estimates of the cost of eq-  
20 uity. The basic input data consists of the current dividend yield, an estimated EPS  
21 projection for 2018, the current analysts' consensus EPS growth projection, an esti-  
22 mate of long-term growth into perpetuity, and estimated retention ratios for 2018,  
23 2022, and 2037. The DDM analysis assumes that earnings grow from 2018 to 2022

1 at the indicated analysts' consensus EPS growth rate (as noted for each company),  
2 and at the long-term growth rate (3.50 percent, the median value of Value Line's "%  
3 Retained to Common Equity") in perpetuity after 2037. The period from 2022 to  
4 2037 is a transition period during which the retention ratio changes from the value  
5 projected by Value Line in the year 2022 to a common value of 0.36 (the median  
6 Value Line estimate for 2022) for all companies in the sample in the year 2037. The  
7 use of a common retention rate or payout ratio, and growth rate, reflect the statistical  
8 property of "mean reversion," that statistical observations tend to revert, or regress,  
9 toward the sample mean over time. Constant growth assumptions — long-term  
10 growth of 3.50 percent, and a retention ratio of 0.36 percent — apply after the year  
11 2037, allowing the determination of a terminal share price for the year 2037.<sup>7</sup> These  
12 long-term conditions after 2037 are applied to all the companies in the sample. Hav-  
13 ing generated a series of cash flows, the model generates an expected return,  $k$ , by  
14 solving the following equation:

$$0 = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_t}{(1+k)^t} + \frac{P_t}{(1+k)^t} - P_0$$

16 The solution to this equation is the value of  $k$  which makes the right-hand side of the  
17 equation zero. This can only be done by trial and error. However, there are generally  
18 available computer algorithms for finding the solution to such formulas automati-  
19 cally. The DDM returns shown on Exhibit\_\_\_\_ (BLC-1), Schedule 2, were developed  
20 using the "Goal Seek" option in an Excel spreadsheet. The mean DDM return for the  
21 9-company sample was 6.92 percent and the median DDM return was 7.05 percent.

---

<sup>7</sup> To determine the terminal sale price, the final year's dividend is adjusted for half a year's growth beyond the terminal year, equivalent to a  $(1 + 0.5g)$  adjustment to the dividend yield.

1 **Q. WHAT ARE YOUR CONCLUSIONS USING THE DCF AND DDM AP-**  
2 **PROACHES TO ESTIMATE THE COST OF EQUITY?**

3 **A.** Based just upon the DCF and DDM approaches to estimating the cost of equity, the  
4 cost of equity appears to be about 7.0 percent to 7.5 percent at the present time.

5 **Q. ARE THESE THE SAME METHODOLOGIES YOU USED IN DOCKET NO.**  
6 **EL11-019?**

7 **A.** Yes, they are. The methodologies are *exactly* the same. Only the input variables differ.  
8 That the methodologies result in a much lower estimate of the cost of equity at the  
9 present time is consistent with the evidence presented above in Part IV of a declining  
10 cost of capital since the Commission's last adjudicated return on equity finding in  
11 Docket No. EL11-019.

12 **B. MARKET-TO-BOOK RATIOS, EXCESS RETURNS, AND THE COST**  
13 **OF EQUITY**

14  
15 **Q. WHAT IS THE MARKET-TO-BOOK RATIO?**

16 **A.** The market-to-book ratio is the ratio of a stock's selling price to its book value. If a  
17 stock has a book value per share of \$10.00 and it is selling for \$12.50 per share, the  
18 market-to-book ratio is 1.25.

19 **Q. WHAT CAN MARKET-TO-BOOK RATIOS TELL US ABOUT THE COST OF**  
20 **EQUITY?**

21 **A.** Market-to-book ratios can tell us at a glance whether a firm's return on book equity is  
22 above or below its market cost of equity. When a firm is expected to earn a return on  
23 book equity greater than the cost of equity, investors will bid up the price of the stock  
24 to capture the "excess return" the stock is offering on its book equity in relation to the  
25 required rate of return. In other words, the market-to-book ratio will exceed 1.0. If a  
26 firm is expected to earn return on book equity less than the cost of equity, investors  
27 will sell the stock, driving its price below its book value per share. The stock price will

1 be driven down to where the return on the lower market value equals the cost of eq-  
2 uity. In this case the market-to-book ratio will be less than 1.0. A firm expected to  
3 earn a return on its book equity equal to the cost of equity will have a market-to-book  
4 ratio of 1.0. So, at a glance we can tell from the market-to-book ratio whether a firm is  
5 earning (or is expected to earn) a return on book equity above, below, or equal to its  
6 cost of equity.

7 It is also possible to precisely quantify the level of excess return (or deficit) in-  
8 vestors are expecting when the market-to-book ratio is above (or below) 1.0. It can be  
9 demonstrated mathematically (as shown in Exhibit\_\_\_\_\_ (BLC-1), Schedule 3) that  
10 the excess return – which I designate “XROE” – is equal to the difference between the  
11 dividend-to-book ratio and the dividend-to-price ratio (i.e., “dividend yield”):<sup>8</sup>

$$XROE = D/B - D/P$$

12  
13 The logic of this should be self-evident. When the market-to-book ratio is 1.0, P=B,  
14 and XROE is zero. If P > B then D/B > D/P and XROE is positive. When P < B then  
15 D/B < D/P and XROE is negative. From the actions of investors in driving prices (P)  
16 above or below book value (B) we can calculate the level of excess (or deficit) return  
17 on book equity investors are expecting in relation to the market required rate of re-  
18 turn, or cost of equity. For example, Otter Tail Corporation’s stock (ticker OTTR)

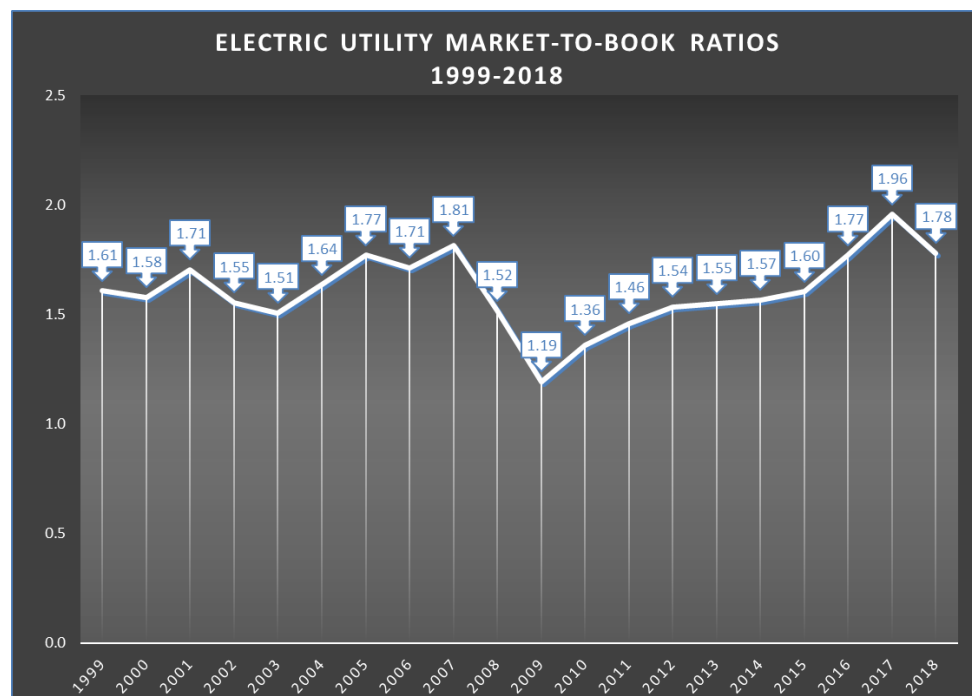
---

<sup>8</sup> The relationship between market-to-book ratios and rate of return on equity was a matter of intense interest back in the late 1970’s and early 1980’s. Two of my publications from that time period explored the theoretical and empirical implications of this relationship within the context of the discounted cash flow model: "Estimates of the Cost of Equity for Public Utilities, 1961-1976." *Journal of Business Research* 7 No. 1 (1979): 9-17, and "The Cost of Equity Capital: A Model for Regulatory Review," in *Issues in Public Utility Regulation*, edited by Harry M. Trebing, 342-66. East Lansing: Michigan State University, Graduate School of Business Administration, Institute of Public Utilities, 1979. The relationship derived in Schedule 3 is an extension of that work.

1 currently has a market-to-book ratio of 2.60. (See my Schedule 5, Line 11.) It is clearly  
2 earning a return on book equity that is substantially above its cost of equity. We can  
3 estimate its excess return on equity (XROE) from the difference between its dividend-  
4 to-book (D/B) ratio and its dividend yield (D/P):

$$\text{Otter Tail XROE} = 7.48\% - 2.87\% = 4.61\%$$

6 Later I will show how to use this kind of analysis to determine the cost of equity and  
7 evaluate what is a fair and reasonable rate of return on equity. For now, I simply want  
8 to use this discussion to make some observations about the relative financial health of  
9 the electric utility industry from an equity market point of view. The figure below  
10 shows median market-to-book ratios for the electric utility industry (based on all util-  
11 ities followed by Value Line for which relevant data was available) for the past two  
12 decades. For most of this period the median electric utility market-to-book ratio was  
13 above 1.5. It fell to 1.19 during the 2008-2009 recession, but rebounded after that,  
14 rising steadily to 1.96 in 2017, before dropping back to 1.78 in early 2018. Throughout

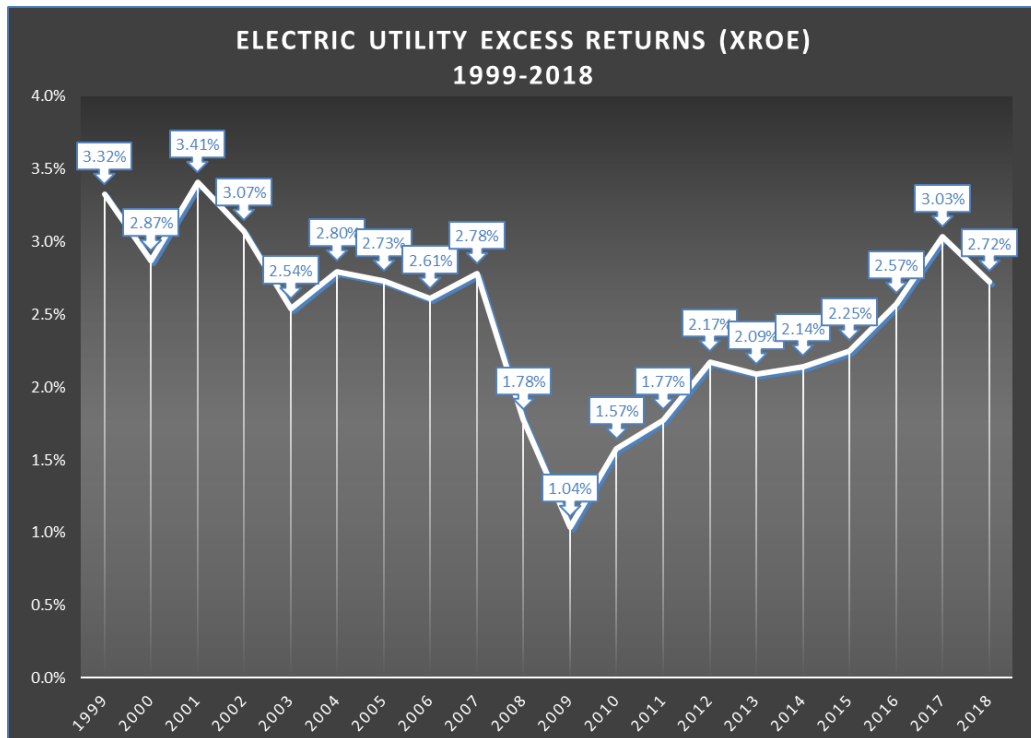




1 the past two decades, even during the recession of 2008-2009, the investor owned  
2 electric utility industry enjoyed rates of return on equity substantially above the mar-  
3 ket cost of equity.

4 **Q. HAVE YOU QUANTIFIED THESE EXCESS RETURNS?**

5 **A.** Yes, I have. The results are shown in the following chart. From 1999 up until 2007 the



6 median XROE was above 2 percent. While the XROE dropped off in the wake of the  
7 2008-2009 recession, by 2012 it had climbed back to 2 percent and has remained  
8 above 2 percent since then. In other words, during the past two decades, in all but  
9 four years electric utilities have enjoyed a median return on equity more than 200  
10 basis points above the market required return, or cost of equity.<sup>9</sup>

11 **Q. YOUR “XROE” ANALYSIS PRESUMES THAT EARNED BOOK RATES OF**

---

<sup>9</sup> The data for the preceding charts is from Value Line reports for the electric utility industry from 2014 and 2018. Those Value Line reports, and all associated analysis discussed in my testimony are part of my workpapers.

**RETURN ON EQUITY ARE EXPECTED BOOK RATES OF RETURN ON EQUITY. IS THAT A REASONABLE ASSUMPTION?**

**A.** Yes, it is, especially for a large sample of electric utilities. Earned book rates of return for electric utilities do not usually change drastically from year to year and are generally very predictable. The effect of individual exceptions for electric utilities is minimized by excluding companies that have reduced their dividends, and then further minimized by the effect of using the industry median.

The reasonableness of this assumption can be demonstrated further by taking a look at the data for Otter Tail Corporation used in the 2018 analysis of XROE's and market-to-book ratios. The expected earned book return on equity derived from Value Line's EPS and BVPS estimates for 2018 used in the XROE analysis is 10.45 percent. This is right in line with OTC's "guidance" for expected earnings shown in the following graphic:

The Value Line projected earned return on book equity, 10.45 percent is so close to the midpoint of OTC's guidance range of 10.1 percent to 10.9

**2018 EARNINGS GUIDANCE**



	2017 EPS by Segment			2018 EPS Guidance	
	GAAP-Basis	Impact of Tax Reform	Before Impact of Tax Reform	Low	High
Electric	\$1.24	\$0.02	\$1.26	\$1.34	\$1.37
Manufacturing	\$0.28	(\$0.07)	\$0.21	\$0.26	\$0.30
Plastics	\$0.54	(\$0.08)	\$0.46	\$0.36	\$0.40
Corporate	(\$0.25)	\$0.18	(\$0.07)	(\$0.16)	(\$0.12)
<b>Total – Continuing Operations</b>	<b>\$1.81</b>	<b>\$0.05</b>	<b>\$1.86</b>	<b>\$1.80</b>	<b>\$1.95</b>
<b>Return on Equity</b>	<b>10.6%</b>		<b>10.8%</b>	<b>10.1%</b>	<b>10.9%</b>

Source: OTC Industry Presentation, April 13, 2018

percent that one might think the Value Line analyst relied directly on OTC's guidance. In any case, 10.45 percent is a completely reasonable estimate of what investors may be expecting OTTR to earn on the book value per share of its common equity. It bears noting that this expected rate of return on equity is associated with a market-to-book ratio for OTTR of 2.22 in the 2018 XROE analysis. Since that analysis was

1           undertaken, OTTR's market-to-book ratio has risen to 2.60.

2   **Q.   WHAT DO PERSISTANT EXCESS RETURNS (XROE) AND HIGH MAR-**  
3   **KET-TO-BOOK RATIOS TELL US ABOUT THE EFFECTIVENESS OF RATE**  
4   **OF RETURN REGULATION IN BALANCING CONSUMER INTERESTS?**

5   **A.**   They tell us that electric utility regulation is not doing a very good job in balancing  
6   consumer and investor interests. On balance, it *heavily* favors the investor interest  
7   over the consumer interest. While there may be a variety of reasons for this, two in  
8   particular probably account for most of the disparity. The first is that utilities are  
9   rarely held accountable for excess returns. If a utility is earning an excess return it is  
10   not going to voluntarily file for rate reductions. For the most part, rate filings occur  
11   only when initiated by the utility, and the utility is only motivated to initiate rate fil-  
12   ings if it thinks it is earning an inadequate return. This would be balanced out if rate  
13   filings were routinely initiated in the public interest when utilities are earning excess  
14   returns. But that rarely happens.

15           A second major structural impediment to correctly balancing consumer and  
16   investor interests is in the way rate of return testimony is adjudicated. It is not un-  
17   common for the difference between a consumer sponsored estimate of the cost of eq-  
18   uity and a utility sponsored estimate of the cost of equity to vary by 2 percent (200  
19   basis points) or more. Given the technical complexities of cost of equity estimation  
20   and the extreme variation between consumer and utility estimates, it is not at all un-  
21   common for utility commissions to conclude that they are "balancing" consumer and  
22   investor interests by *splitting the difference* (or adopting some kind of allowed rate of  
23   return between the two extremes). This imparts a fundamental bias in favor of the in-  
24   vestor interest.

1           To properly balance consumer and investor interests, the goal of rate of return  
2 regulation should *not* be to “split the difference” but to allow the *lowest* reasonable  
3 estimate of the cost of equity as the allowed rate of return. Splitting the difference in a  
4 range of *reasonable* estimates of the cost of equity merely imparts an upward bias in  
5 favor of the investor interest and will perpetuate excess returns on equity (XROE). As  
6 an illustration of my point I call attention to a 2015 KCP&L rate case before the Kan-  
7 sas State Corporation Commission. I use this particular case not because of any unu-  
8 sual conduct on the part of the participants in this litigation but because the facts of  
9 the case are all clearly spelled out in a decision on appeal to the Kansas Court of Ap-  
10 peals.<sup>10</sup> In that case three witnesses testified on cost of equity. The consumer witness  
11 recommended a cost of equity of 8.55 percent. A staff witness recommended a return  
12 on equity of 9.0 to 9.5 percent. And the utility witness recommended a return on eq-  
13 uity of 10.3 percent. The Commission “split the difference” and allowed a return on  
14 equity of 9.3 percent, which was upheld by the Kansas Court of Appeals.

15           On its face, I would suggest that this decision “baked in” an implicit XROE of  
16 at least 0.75 percent (9.3 – 8.55). I say “at least” because the consumer witness pre-  
17 sented testimony that a reasonable return on equity was in the range of 8.1 percent to  
18 8.55 percent. Based on evidence presented below, there was *reasonable* evidence  
19 available at the time that the cost of equity was even below the 8.1 percent estimated  
20 by the consumer witness in 2015. Moreover, it is not uncommon for consumer wit-  
21 nesses to go to the upper end of a range of what they have found to be reasonable

---

<sup>10</sup> Court of Appeals of Kansas, KANSAS CITY POWER & LIGHT, Petitioner/Appellant, v. The STATE CORPORATION COMMISSION OF THE OF THE STATE OF KANSAS, Respondent/Appellee, No. 114, 781, Decided: March 9, 2016. <https://caselaw.findlaw.com/ks-court-of-appeals/1728478.html> last accessed 9/17/2018.

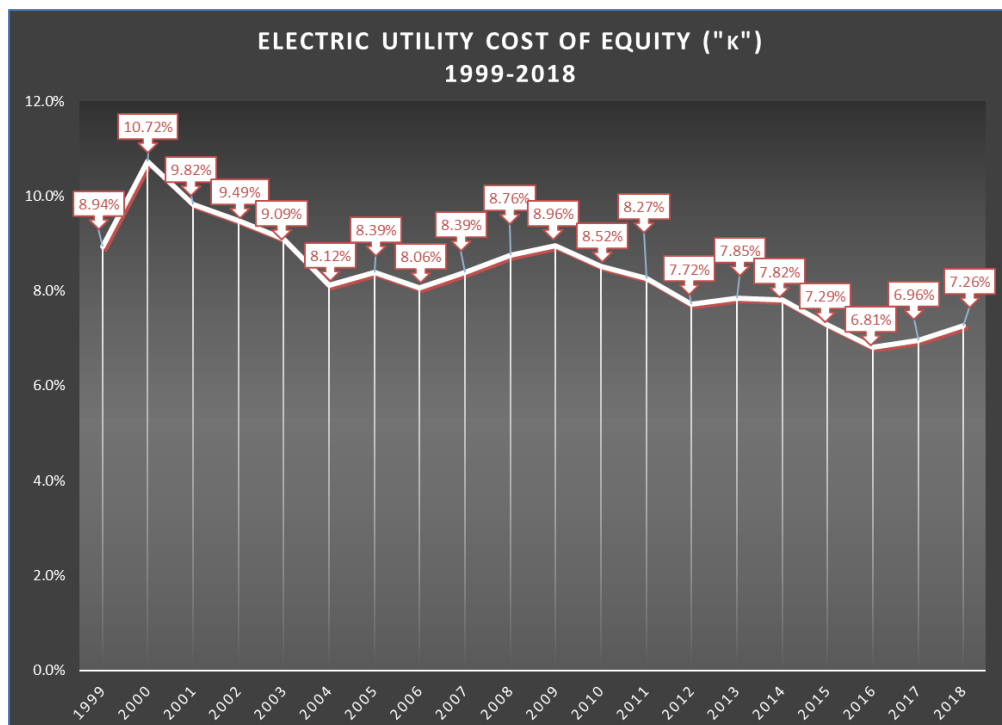
1       *precisely because the inherent bias of rate of return regulation is to discount the bot-*  
2       *tom end of such ranges.* On this basis, it would not be unreasonable to conclude that  
3       the Commission allowed a return on equity that would generate an XROE of at least  
4       1.2 percent (9.3 – 8.1, or 120 basis points). And again, I think the evidence shows that  
5       the excess return created by an allowed return on equity was even higher than 120 ba-  
6       sis points.

7               While commissions and courts of appeal seem to think that “splitting the dif-  
8       ference” is “balancing” investor and consumer interests, in truth it usually amounts to  
9       ignoring the consumer interest. The inherent adversarial approach to rate of return  
10       regulation induces both consumer and utility rate of return witnesses to strive for  
11       some semblance of credibility in their rate of return presentations. In the 2015  
12       KCP&L rate case the utility witness presented a wide range of evidence, including evi-  
13       dence that supported a cost of equity estimate below 9 percent (though he chose to  
14       ignore it). And as noted, while the consumer witness came up with an estimated cost  
15       of equity of 8.1 percent to 8.55 percent, he chose to moderate his recommendation by  
16       moving to the upper end of his range. Given the range of evidence in the case, a  
17       proper balancing of consumer and utility interests would have been to allow a rate of  
18       return based on the testimony of the consumer witness. From my reading of the case  
19       there was no credible evidence that the return recommended by the consumer wit-  
20       ness would result in a market-to-book ratio of less than 1.0. In fact, in hindsight, and  
21       again drawing on evidence presented below, a return on equity of 8.55 percent would  
22       have supported a market-to-book ratio of 1.35 in 2015 for the publicly traded owner  
23       of KCP&L (Great Plains Energy). The return on equity granted by the Commission in  
24       that case, 9.3 percent, would have supported a market-to-book ratio of 1.56 in 2015.

1 Even the lowest end of the consumer witness range, 8.1 percent, would have been suf-  
2 ficient to support a market-to-book ratio of 1.22 in 2015. The common practice of  
3 “splitting the difference” between consumer and investor rate of return testimony is  
4 tantamount to ignoring the consumer interest and perpetuating excess returns on eq-  
5 uity (XROE).

6 **Q. PLEASE DESCRIBE WHAT MARKET-TO-BOOK RATIOS IMPLY ABOUT**  
7 **THE HISTORICAL COST OF EQUITY.**

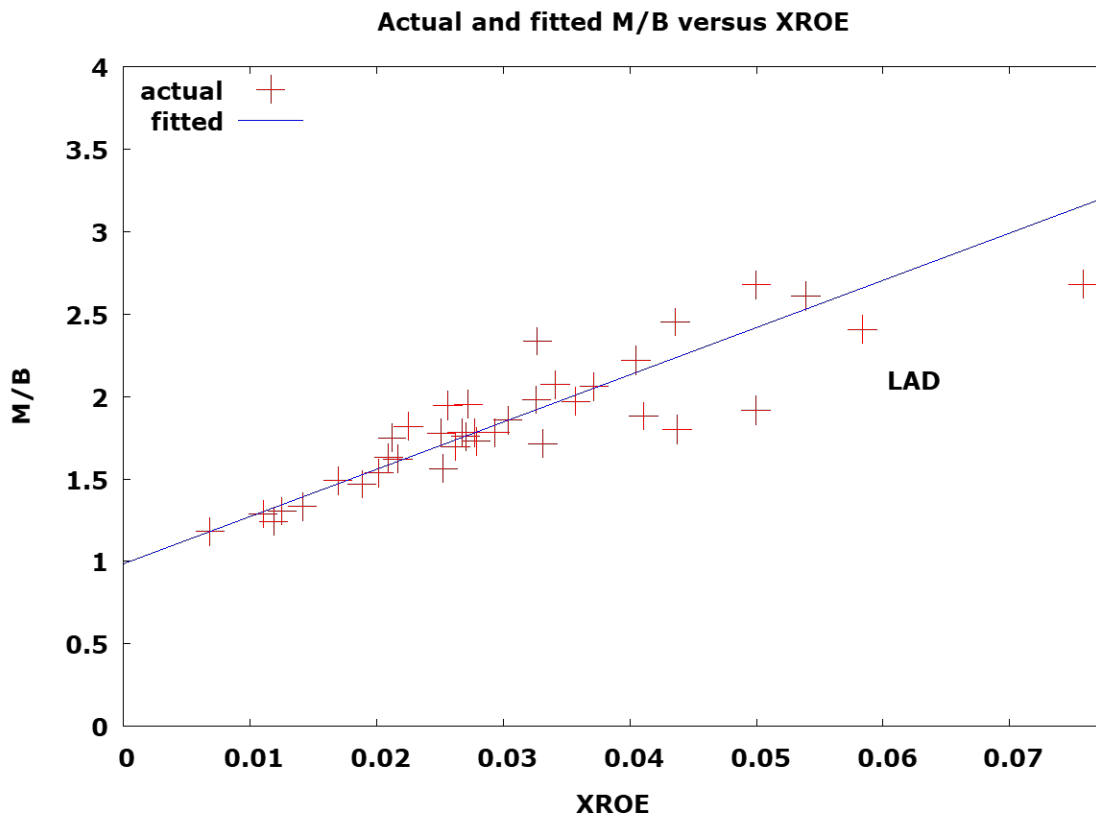
8 **A.** Estimates of the cost of equity for electric utilities for the period 1999-2018 are shown  
9 on the following chart. The general trend throughout the period, like capital costs



10 generally, has been downward. In keeping with our focus on market-to-book ratios,  
11 keep in mind that these are estimates of the rate of return on book equity that would  
12 maintain a market-to-book ratio of 1.0. Regarding the discussion just concluded  
13 about the KCP&L rate case where I noted that the low end of the consumer sponsored  
14 cost of equity estimate of 8.1 percent would have been sufficient to maintain a

1 market-to-book ratio of 1.22 in 2015, the rate of return that would, in a perfect world,  
2 result in a market-to-book ratio of 1.0, and yield a theoretical balance of consumer  
3 and investor interest, would have been 7.3 percent (rounded from 7.29%).

4 Exhibit\_\_\_\_(BLC-1), Schedule 4, Pages 2 and 3, present statistical results  
5 from the study for 2018. The discounted cash flow model predicts a specific and testa-  
6 ble relationship between market-to-book ratios (P/B) and excess returns on equity  
7 (XROE). Page 3 of Schedule 4, reproduced below, is a chart of the statistical relation-  
8 ship between electric utility market-to-book ratios and excess returns for the 2018  
9 data. Because the data are not “normal” (note how it becomes sparser and more varia-  
10 ble as M/B and XROE increase) I used a “robust” non-parametric regression method  
11 called Least Absolute Deviation (LAD) rather than the better known Ordinary Least  
12 Squares (OLS) regression method. *Theoretically* (according to the discounted cash



1 flow model) the slope of the regression line should equal the inverse of D/P (dividend  
2 yield), and the intercept – the point where XROE is zero – should be 1.0. The actual  
3 slope, coefficient, and confidence intervals for the regression were:

4 coefficient confidence intervals

5  $t(36, 0.025) = 2.028$

6 VARIABLE	COEFFICIENT	95% CONFIDENCE INTERVAL	
7 const	0.984813	0.773759	1.19587
8 XROE	28.6689	20.1970	37.1408

9 The inverse of the slope coefficient –  $1/28.6689$  – is 3.49 percent. The expected value  
10 of the slope coefficient based on the sample median D/P of 3.55 percent was 28.1690  
11 ( $1/3.55$ ). This represents a strong statistical corroboration of the discounted cash flow  
12 model. While the results were not always as “near perfect” in other years as they are  
13 here for 2018, in every year except 2009 the null hypothesis – that the intercept was  
14 not 1.0 and the slope coefficient not the inverse of the sample median dividend yield –  
15 was rejected (implying corroboration of the expected values).<sup>11</sup>

16 **Q. HOW IS THIS OF ANY PRACTICAL BENEFIT FOR ESTIMATING THE**  
17 **COST OF EQUITY OR A FAIR AND REASONABLE RATE OF RETURN ON**  
18 **EQUITY FOR OTP?**

19 **A.** Understanding how the allowed rate of return impacts a utility’s market-to-book ratio  
20 can help immensely in assessing how a proposed or recommended return on equity  
21 impacts the balancing of consumer and investor interests. The implied relationship  
22 between market-to-book ratios and excess returns can be easily used to develop esti-  
23 mates of the cost of equity. This is demonstrated with respect to the sample of

---

<sup>11</sup> In two years, 2015 and 2016, the fit was even better than in 2018. In 2009 the predicted intercept coefficient was just barely (1.00000 vs. 1.00027) outside the lower bound of the 95% Confidence Interval, while the predicted slope coefficient was within the 95% Confidence Interval. With 39 of 40 of the predicted values within the 95% Confidence Interval, this is impressive corroboration of the DCF/XROE hypothesis. See Schedule 4, Page 1, for a year-by-year statistical summary.



1 comparable risk companies used in my earlier DCF analysis in Exhibit \_\_\_\_ (BLC-1),  
2 Schedule 5.

3 Columns A, B, C (Company, dividends per share, and share price) use data im-  
4 ported from my Schedule 1. Column E (dividend yield) of Schedule 5 replicates Col-  
5 umn E of Schedule 1 as a cross-check. Column D is average book value per share for  
6 2018 as estimated from Value Line data. Column F (dividends divided by book value  
7 per share) is derived from Columns B and D. Column G (market-to-book ratio) is de-  
8 rived from Columns C and D. Column H (excess return) is derived from Columns F  
9 and E.

10 With all of these as inputs, we lack just one additional metric for estimating  
11 cost of equity: an estimate of what rate of return on book equity is expected by inves-  
12 tors. In Columns I and J, I show estimates of the expected return on equity based  
13 upon Value Line data, one for 2018, and the other for 2022. These estimates are simi-  
14 lar to what Value Line refers to as “Return on Com Equity,” except calculated more  
15 precisely. Since the discounted cash flow model is a forward-looking model, I have  
16 used the estimates for 2022 to develop the implied cost of equity. Thus, Column K  
17 (implied cost of equity) is Column J (expected return on equity) minus Column H (ex-  
18 cess return). Focusing on the median results for Columns J and H, the median ex-  
19 pected return on equity is 9.67 percent of which 2.64 percent is an *excess* return that  
20 accounts for the median market-to-book ratio of 1.85 shown in Column G. To derive  
21 the cost of equity, or the rate of return that would result in a market-to-book ratio of  
22 1.0, we subtract the excess return from the expected return:  $9.67\% - 2.64\% = 7.03\%$   
23 (the result shown in Column K).

24 This result, an estimated cost of equity of 7.03 percent, is almost identical to

1 the median 7.05 percent derived using the non-constant growth DCF model on my  
2 Schedule 2. If these seem implausibly low, they are *not* when viewed from the per-  
3 spective of market-to-book ratios (or, as we will see later, from a consensus of esti-  
4 mates of the current overall market return<sup>12</sup>). If a return on equity of 9.67 percent –  
5 the median expected rate of return on equity for the sample group of comparable  
6 companies – can support a market-to-book ratio of 1.85, then it is not at all implausi-  
7 ble that the rate of return required for a market-to-book ratio of 1.0 would be as low  
8 as 7.03 percent.

9 **Q. HOW MUCH WEIGHT SHOULD THE COMMISSION GIVE THIS RELA-**  
10 **TIONSHIP BETWEEN MARKET-TO-BOOK RATIOS AND RATE OF RE-**  
11 **TURN ON EQUITY IN ESTABLISHING A FAIR AND REASONABLE RATE**  
12 **OF RETURN ON EQUITY FOR OTP?**

13 **A.** It should give this relationship considerable weight. Before I suggest how it might do  
14 so specifically, I want to address objections that might be made to doing so. The ques-  
15 tion of the relationship between market-to-book ratios and rate of return was a mat-  
16 ter of considerable testimony in a recent New Hampshire PUC docket in which OTP's  
17 rate of return witness in this case, Mr. Hevert, participated.<sup>13</sup> Witnesses for the Office  
18 of Consumer Advocate (OCA) and Staff both presented testimony and analysis re-  
19 garding market-to-book ratios and return on equity; Mr. Hevert presented testimony  
20 and analysis in rebuttal to those witnesses. My aim here is to preemptively distin-  
21 guish what I am contending for from what the OCA and Staff witnesses did in the

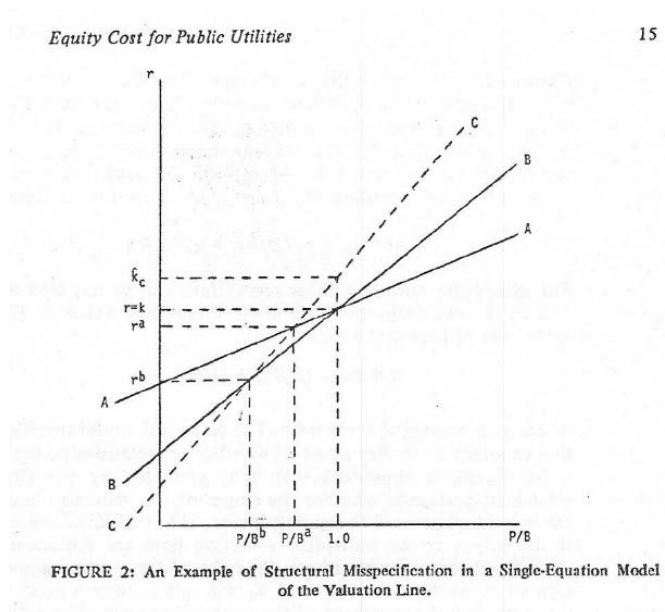
---

<sup>12</sup> See below, Page 60 ff., and the evidence for an overall market return on equity of 8.2 percent from Fernandez, et. al. An estimate of the cost of equity of 7.03 percent for electric utilities is not at all out of line with an overall market cost of equity of 8.2 percent.

<sup>13</sup> New Hampshire PUC Docket No. DG 17-048, Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities.

1 New Hampshire case. All three witnesses in that case demonstrated an inadequate  
2 understanding of the relationship between market-to-book ratios and returns on eq-  
3 uity.

4 Witnesses for OCA and Staff in the New Hampshire case both performed re-  
5 gression analyses in which they regressed market-to-book returns on returns on eq-  
6 uity and found “evidence” of a significant statistical correlation. In rebuttal, Mr. He-  
7 vert contended that Staff’s analysis resulted in a market-to-book ratio of 1.10 with a  
8 ROE of just 1.95 percent. OCA’s analysis fared better, resulting in a market-to-book  
9 ratio of 1.10 with a ROE of 5.89 percent. But none of the parties really understood  
10 what they were doing. For me, this is “dépà vu all over again.” Regressions like these  
11 were all the rage in the late 1970’s but at that time they were being championed by  
12 consultants for utilities. At that time the industry was struggling with market-to-book  
13 ratios *below* 1.0, and such regressions were implying the need for very *high* returns  
14 on equity to bring the market-to-book ratio back up to 1.0 (or 1.1, which was consid-  
15 ered an appropriate target at the time). Below is a diagram from my 1979 JBR paper  
16 (included in my workpapers) demonstrating the “structural misspecification” that



1 comes from regressions of returns on equity and market-to-book ratios. In the accom-  
2 panying text I said:

3 But unless the firms in the sample have comparable payout ratios and dividend  
4 yields, such a regression will be *structurally* misspecified. To illustrate the sig-  
5 nificance of this problem, consider Fig. 2 where we assume we are faced with  
6 the problem of specifying a cross-sectional model of valuation for a sample,  
7 which, for the sake of convenience, only contains two firms, A and B. The valu-  
8 ation of line A is drawn flatter than the valuation line of B on the assumption  
9 that A has a lower payout ratio; then, as the figure indicates, A has a lower divi-  
10 dend yield (slope) and a higher growth rate (intercept) than B. Now suppose  
11 that we observe the data points  $(P/B^a, r^a)$  for firm A, and  $(P/B^b, r^b)$  for firm B.  
12 A regression of  $r$  on  $P/B$  will result in the “perfect fit” indicated by the line CC.  
13 But the line CC does not bear any particular relationship to the structural rela-  
14 tions that are posited to actually exist between  $r$  and  $P/B$ . In particular neither  
15 the slope nor the intercept are useful for making inferences concerning the  
16 true slope or intercept of either AA or BB. This example illustrates that a re-  
17 gression of  $r$  on  $P/B$  can be “statistically significant” but tells us nothing about  
18 the *structural* relationships in the data being evaluated.

19 While circumstances have changed in that market-to-book ratios are now above 1.0  
20 (quite a bit above 1.0!) rather than below 1.0, the point is still the same: because utili-  
21 ties have varying payout ratios and dividend yields, simple linear regressions of mar-  
22 ket-to-book ratios and returns on equity of the kind that occupied the witnesses in the  
23 New Hampshire case are *structurally misspecified* and unless the data points are  
24 clustered around a market-to-book ratio of 1.0 are unable to produce valid inferences  
25 about what rate of return is required to produce a market-to-book of 1.0.

26 None of this has any bearing on the analysis I have performed in this case. The  
27 “XROE formula” – i.e.,  $XROE = D/B - D/P$  – is the same regardless of payout ratio  
28 and dividend yield; firms that follow a higher payout policy will have higher dividend  
29 yields but lower market-to-book ratios for the same return on equity with the differ-  
30 ence reflected in the dividend-to-book ratio than firms which have a lower payout ra-  
31 tio (but higher market-to-book ratios for the same return on equity as a result of  
32 greater expected growth). These differences will be reflected in their individual D/B

1 and D/P ratios. There is no “structural misspecification” here like there is in correla-  
2 tions of P/B and ROE.

3 Beyond this, Mr. Hevert launched an all-out assault in his New Hampshire re-  
4 buttal on the constant growth DCF model in order to deny any meaningful implica-  
5 tions regarding market-to-book ratios. In essence he contends that if the assumptions  
6 of the constant growth DCF model are not satisfied *perfectly* then we cannot draw  
7 any inferences from the model about the relationship between market-to-book ratios  
8 and returns on book equity. Mr. Hevert here is falling for the fallacy of “proving too  
9 much,” a form of the *reductio ad absurdum* argument. If anything less than *perfect*  
10 satisfaction of all theoretical assumptions means that we cannot draw any inferences  
11 about the relationship between market-to-book ratios and returns on book equity, it  
12 *also* means that we cannot draw any conclusions about the cost of equity or required  
13 rate of return either. In the early days of consideration and adoption of the constant  
14 growth DCF model for rate regulation, the same argument now being used by Mr. He-  
15 vert against using DCF theory to evaluate market-to-book ratios was used to oppose  
16 the constant growth DCF model *altogether*. But that tactic has been long relegated to  
17 the ash heap of regulatory practice, and while the constant growth DCF model does  
18 have known and recognized limitations, it remains useful and accepted by most regu-  
19 latory agencies (if often just as one of multiple methods of estimating the cost of eq-  
20 uity).

21 Mr. Hevert’s testimony in this docket is a case in point: he utilizes the constant  
22 growth DCF model along with several other methods of estimating the cost of equity.  
23 It is clear that he does not care much for the kind of cost of equity estimates it pro-  
24 duces – he arbitrarily rejects some of them as too low – but that is a matter I take up

1 later in my testimony when I review his testimony in this docket.<sup>14</sup> I acknowledge lim-  
2 itations in the constant growth form of the model as a reason to also employ a non-  
3 constant growth analysis of the DCF cost of equity. None of this negates the validity of  
4 inferences about the relationship between market-to-book ratio and return on equity  
5 that I made back in the very second Q&A of this section of my testimony on Page 18.  
6 That assessment remains true regardless of the specific valuation model one might  
7 use to estimate the cost of equity. Market-to-book ratios above 1.0, and especially well  
8 above 1.0, for *public utilities* are a clear indication that they are earning excess re-  
9 turns, returns above the required rate of return on equity.

10 That does not stop Mr. Hevert from trying to argue otherwise in his New  
11 Hampshire testimony. He devotes several pages against making any inference about  
12 excess returns from market-to-book ratios by pointing to the market-to-book ratios of  
13 *unregulated* firms. This, too, has a “déjà vu all over again” quality about it because it  
14 is essentially a “comparable earnings” argument. “Comparable earnings” refers to a  
15 standard or method of establishing a regulated rate of return on equity that was still  
16 around when I broke into the field back in the mid 1970’s. It essentially compared  
17 utility returns to the earned *book* returns of unregulated “comparable” companies. At  
18 the time, it was being displaced by greater reliance upon market-based methods, the  
19 most successful of which was the discounted cash flow method. Many of the argu-  
20 ments that Mr. Hevert now makes for why utilities should be allowed to have market-  
21 to-book ratios above 1.0 mimic the arguments that were made to justify “comparable

---

<sup>14</sup> There is actually a significant inconsistency on the part of Mr. Hevert about this: he does not care much for the low the estimates of the cost of equity produced by the constant growth model for his sample of electric utilities, but he thinks the outrageous market risk premium produced using the constant growth model for firms in the S&P 500 is just fine. I return to this later when I discuss his testimony in this case in more detail.

1 earnings.” So, it is no surprise, to me at least, that the arguments he makes to justify  
2 market-to-book ratios above 1.0 suffer from some of the same problems that the  
3 “comparable earnings” approach suffered.

4 I addressed some of the key problems in the “comparable earnings” approach  
5 in my 1978 *Land Economics* article on “Alternative Cost of Capital Concepts in Regu-  
6 lation.”<sup>15</sup> Some of the same arguments apply to Mr. Hevert’s attempt to justify utility  
7 market-to-book ratios above 1.0. The most important is probably the basic distinction  
8 in the way utility regulation works as opposed to how competitive markets operate.  
9 I’m referring here to competitive *product* markets, not financial markets (though  
10 competition there works similarly). In competitive product markets innovative firms  
11 will earn *economic profits* as new products and facilities to produce them are brought  
12 to market. The term “economic profit” has a very specific connotation and refers to  
13 returns that are *above* the “cost of equity capital.” In economic terms, the “required  
14 return” on capital is a *cost*, it is not “profit.” In competitive markets innovation would  
15 never occur without the attraction of earning *abnormal* rates of return (in relation to  
16 the cost of equity). It is the opportunity to earn those *abnormal* rates of return that  
17 encourages and provides incentives for exposing capital to *extraordinary* risk. But  
18 such abnormal rates of return are, in truly competitive markets, never permanent.  
19 When new technology and products capable of producing such returns come to mar-  
20 ket, competitors soon follow. Marginal costs rise (because competitive markets face  
21 rising cost curves, something else different with respect to traditional “natural

---

<sup>15</sup> "Alternative Cost of Capital Concepts In Regulation." *Land Economics* 54 (August 1978): 348-61. *Land Economics* was a major journal for publication of academic research on public utilities at the time.

1 monopolies” subject to rate of return recognition) and *economic profits* will begin to  
2 fall. “At the margin” economic profit dissipates. But because this process is continual  
3 and never ending (Joseph Schumpeter referred to this engine of capitalism as “the  
4 gale of creative destruction”) there are always competitive firms earning extraordi-  
5 nary returns or economic profits. In terms of market-to-book ratio the *average mar-*  
6 *ket-to-book ratio of competitive firms will always be above 1.0 and well above 1.0 for*  
7 *firms that are in dynamic and technologically innovative industries.*

8           The environment of the regulated firm is fundamentally different. Regulated  
9 industries are usually declining cost industries, meaning they have high startup costs  
10 so that average total costs decline as output increases. They are typically given char-  
11 ters to operate free from the pressure of competitors, which when allowed in the 19<sup>th</sup>  
12 century led to “ruinous competition.”<sup>16</sup> And most important, under rate of return reg-  
13 ulation they earn the return on each unit of capital invested. With the replacement of  
14 market-based methods of estimating rate of return, which *aims* (if often so poorly) to  
15 allow a return on equity just equal to the *cost* of equity, there is no reasonable expec-  
16 tation for the regulated firm to earn *economic profit*. For this reason, in the abstract,  
17 there is *never any reason or justification for a utility’s market-to-book ratio to be*  
18 *above 1.0*. Indeed, the essential “social contract” of rate of return regulation is that  
19 the public utility will have a reasonable opportunity to earn its *cost of capital* free  
20 from ruinous competition, but gives up the opportunity to earn *economic profit*.  
21 When all is said and done, Mr. Hevert’s special pleading for allowing regulated utili-  
22 ties to have market-to-book ratios above 1.0 is an argument for allowing utilities to

---

<sup>16</sup> For an explanation of the term “ruinous competition,” see:  
<https://stats.oecd.org/glossary/detail.asp?ID=3186>. Accessed 9/21/2018.



1       enjoy economic profit (excess returns) without being exposed to the kinds of risks  
2       that are ordinarily undertaken in the pursuit of economic profit.

3               Regulated utilities are not entitled, either by law or by analogy to competitive  
4       markets, to economic profits. They are essentially “cost plus” industries where “cost”  
5       includes the costs of capital *and no more*. When they earn the cost of capital, they  
6       earn it on all of the regulated investment. *Any earnings above* the cost of capital, if  
7       capitalized in *financial* markets, *will* be reflected in market-to-book ratios above 1.0.  
8       The only significant qualification to consider here is when regulated firms have oper-  
9       ations in unregulated markets where there is the opportunity to earn economic profit.  
10      In such cases, such firms might have a market-to-book ratio above 1.0 on the strength  
11      of their profits in unregulated operations. But nothing like that accounts for the level  
12      of market-to-book ratios we see for public utilities currently. Most of the “profit” of  
13      firms that are recognized as being in a regulated industry like the electric utility in-  
14      dustry comes from utility operations. In *some* cases, the earnings from unregulated  
15      operations may make a significant contribution to market-to-book ratio but the im-  
16      pact of this for developing a reasonable rate of return on equity can be minimized by  
17      judicious selection of “comparables” in developing the sample used to estimate the  
18      cost of equity. However, there is no warrant to adopt the agnosticism being promoted  
19      by Mr. Hevert about what we can infer from the relationship between market-to-book  
20      ratios and returns on equity.

21   **Q.   SHOULD UTILITY COMMISSIONS MAKE MARKET-TO-BOOK RATIOS**  
22   **OF 1.0 A POLICY GOAL?**

23   **A.**   In the late 1970’s and early 1980’s, a period where market-to-book ratios were often  
24       below 1.0, a market-to-book ratio of 1.1 was frequently used as a policy

1 recommendation in order to allow for the recovery of flotation costs and to prevent  
2 market-to-book ratios from falling below one because of “market pressure” when new  
3 shares are publicly issued.<sup>17</sup> The difference between the actual cost of equity and the  
4 required return on equity required to maintain share prices 10 percent above book  
5 value (i.e., market-to-book ratio = 1.1) is actually quite small especially in relationship  
6 to the range of uncertainty that exists when estimating cost of equity.

7 Equation 4 on my Schedule 3 showing the derivation of the XROE formula  
8 shows the relationship between return on equity and market-to-book ratios:

$$9 \quad r = k + \frac{\Delta\left(\frac{P}{B}\right)}{1/\left(\frac{D}{P}\right)}$$

10 where  $\Delta\left(\frac{P}{B}\right)$  is the premium above a market-to-book ratio of 1.0 that we wish to allow.

11 This relationship is non-linear and depends upon the inverse of the dividend yield. In  
12 my Schedule 5 the median estimate of the cost of equity in Column K is 7.03 percent,  
13 and the median dividend yield in Column E is 3.26 percent. Were we to decide that a  
14 market-to-book ratio of 1.1 is a reasonable policy goal, the incremental return on eq-  
15 uity above the cost of equity would be 0.33 percent:

$$16 \quad 0.1/(1/0.0326) = 0.1/30.67 = 0.0033$$

17 In other words, the  $r$  required to keep the market-to-book ratio at 1.1 when the cost of  
18 equity is 7.03 percent is 7.36 percent ( $0.0703 + 0.0033 = 7.36\%$ ).

19 To demonstrate the non-linearity involved let’s consider two other market-to-  
20 book ratios: 1.25 and 1.85. For 1.25 the incremental return on equity required over the

---

<sup>17</sup> “Market pressure” is the *theory* that when new shares are publicly issued that this causes some downward pressure on equilibrium share price. Ultimately this is an empirical issue that will depend on how large the new public issue is in relation to the number of shares previous outstanding.

1 cost of equity would be 0.82 percent:

2 
$$0.25/(1/0.0326) = 0.25/30.67 = 0.0082$$

3 for an  $r$  of 7.85 percent (7.03 + 0.82; cf. the 7.84 percent in Column L, Line 10, of my  
4 Schedule 5, the difference attributable to rounding), while for a market-to-book ratio  
5 of 1.85 the incremental return on equity over the cost of equity would be 2.77 percent:

6 
$$0.85/(1/0.0326) = 0.85/30.67 = 0.0277$$

7 for an  $r$  of 9.80 percent. The non-linearity observed here can be seen in the following  
8 table:

Market-to-Book Ratio	% $\Delta$ (P/B) above 1.0	% $\Delta r$ above $k$
1.10	10%	4.7%
1.25	25%	11.7%
1.85	85%	39.4%

9 The increment allowed on  $r$  above  $k$  produces a proportionately greater impact on  
10 market-to-book ratio. Presently the proxy group is earning about 40 percent above  
11 the indicated cost of equity, and this is producing an *85 percent* increase in market  
12 value relative to book value.

13 While a market-to-book ratio of 1.1 is an appropriate policy goal under normal  
14 circumstances, the present circumstances are not normal (the level of excess return  
15 on equity being capitalized in the market for utility stocks is simply too excessive to  
16 characterize current conditions as “normal” from a standpoint of what should be the  
17 “norm” for utility regulation), and in the next section I consider what might be an ap-  
18 propriate market-to-book ratio the Commission might wish to consider as a policy  
19 goal in this proceeding.

20 **C. CONCLUSIONS REGARDING COST OF EQUITY AND A FAIR AND**  
21 **REASONABLE RATE OF RETURN ON EQUITY**

22 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING OTP’S COST**

1           **OF EQUITY AND WHAT YOU RECOMMEND AS A FAIR AND REASONA-**  
2           **BLE RATE OF RETURN ON EQUITY.**

3   **A.**    The median estimate of the cost of equity from the constant growth model (Schedule  
4           1) was 7.71 percent. The median estimate of the cost of equity from the non-constant  
5           growth model (Schedule 2) was 7.05 percent. The median estimate of the cost of eq-  
6           uity implied by an analysis of market-to-book ratios and expected returns on book eq-  
7           uity (Schedule 5) was 7.03 percent. Taking all three together, but giving greater  
8           weight to the latter two estimates, I estimate the cost of equity for OTP at the present  
9           time to be about 7.0 percent. If this seems low, I would once again point out that  
10          Schedules 1 and 2 rely on exactly the same methodology that the Commission ap-  
11          proved and relied upon in Docket EL11-019 in 2012. In EL11-019 the constant and  
12          non-constant growth DCF models produced a median cost of equity 8.95 percent and  
13          8.42 percent; here they produced a median cost of equity of 7.71 percent and 7.05 per-  
14          cent, declines of 124 and 137 basis points. This is not out of line at all with the decline  
15          in capital costs discussed above in Part IV of my testimony. With the sample median  
16          market-to-book ratio of 1.85 shown in Schedule 5, a cost of equity as low as 7.0 per-  
17          cent at the present time is not implausible at all.

18                 The *big* question is what to do about it. What are we to do with a situation  
19                 where a median expected return on equity of 9.69 percent produces a market-to-book  
20                 ratio of 1.85 (Schedule 5, Line 10, Columns I and G)? A return on equity of 9.69 per-  
21                 cent would perpetuate the excess returns embodied in the market-to-book ratio of  
22                 1.85 and would be completely unacceptable from any standard of fairly balancing  
23                 consumer and investor interests. On the other hand, reducing the rate of return on  
24                 equity to 7.0 percent would *theoretically* drive the market-to-book price down to 1.0.

1 In this case, however, the impact is likely to be very small because South Dakota rep-  
2 represents such a small proportion of OTP's service territory.

3 But before we contemplate further any implied reduction in market-to-book  
4 ratio, I should address the concern always raised in a situation like this of the capital  
5 losses that would be experienced by investors from this decline in market-to-book ra-  
6 tio. There is no valid argument here that this is somehow "unfair" to investors. At the  
7 most, it merely offsets the excess returns that were earned from prices rising to such a  
8 high market-to-book ratio leaving investors *as a class* having still earned an adequate  
9 rate of return on balance. The "as a class" qualifier simply acknowledges that it is im-  
10 possible to determine how such a change would impact any given individual investor.  
11 In any case, any profit from excess returns investors earned in the past came with no  
12 guarantee. So, the mere existence of capital losses for investors does not impact the  
13 balancing of competing interests calculus at all. But for investors as a class, losses as  
14 market-to-book ratios get pushed back down to where they ought to be are simply a  
15 "refund" of the excess returns which they should not have received in the first place.  
16 And unless this "refund" is accompanied with interest, investors still come out ahead  
17 on a net present value basis. We should consider the excess returns that utility shares  
18 have earned as an interest free loan that it is now time to repay.

19 Still, I fully comprehend the situation as one where it is not practical to redress  
20 past wrongs all at once. But a *significant* reduction in return on equity of some kind is  
21 essential if the concept of balancing investor and consumer interests is to have any  
22 meaning at all in this matter. Columns L and M of my Schedule 5 show (1) the implied  
23 return on equity required to maintain a market-to-book ratio of 1.25, and (2) the im-  
24 plied market-to-book ratio if the return on equity is 8.25%. A return on equity of 7.84

1 percent would be required to produce a market-to-book ratio of 1.25; my recom-  
2 mended rate of return on equity would maintain a market-to-book ratio of 1.37 at the  
3 present time. I think a market-to-book ratio of 1.25 should be a stated goal to strive  
4 for *at the present time*.<sup>18</sup> It is more than fair to investors. In fact, in the early years of  
5 the adoption of the Gordon constant growth model it was customary to use a target  
6 market-to-book ratio of 1.10. This was considered an ample cushion for recovery of  
7 flotation costs and to prevent stock prices from falling below book value per share  
8 from “market pressure” when new shares are issued. A target of 1.25 provides for that  
9 and even more. But I recognize that it is a road too far to travel all at once. A return  
10 on equity of 8.25 percent would imply a reduction in market-to-book ratio from 1.85  
11 to 1.37, bringing it closer to where it should be (which would give fuller effect to the  
12 consumer interest) but still giving greater weight to the investor interest by leaving  
13 the market-to-book ratio higher than investors really have any right to expect.

14           Given my practice of recommending a range around the recommended rate of  
15 return on equity, I recommend a rate of return on equity of 8.0 to 8.5 percent at the  
16 present time. In my view this is the *very minimum* that the consumer interest is enti-  
17 tled to under any meaningful balancing of consumer and investor interests. It is a sig-  
18 nificant reduction, but the elevated market-to-book ratios and implied excess returns  
19 that exist in the electric utility industry at the present time are a significant *problem*  
20 and deserve to be taken seriously (contra Mr. Hevert). Absent any other specific con-  
21 siderations, I recommend a rate of return on equity at the middle of this range, or  
22 8.25 percent.

---

<sup>18</sup> In the future this could be revisited and a lower target market-to-book ratio like the one discussed in the following sentences might be warranted.

1 **Q. HAVE YOU NOT IN PAST CASES RECOMMENDED A RANGE OF 50 BA-**  
 2 **SIS POINTS ON EITHER SIDE OF YOUR POINT ESTIMATE, RATHER**  
 3 **THAN THE RANGE OF 25 BASIS POINTS THAT YOU ARE RECOMMEND-**  
 4 **ING IN THIS CASE?**

5 **A.** Yes, I have. That is my practice when the point estimate is an estimate of the cost of  
 6 equity or required rate of return on equity. In that case the broader range is to recog-  
 7 nize the range of *uncertainty* in estimating the cost of equity. But my recommended  
 8 rate of return on equity of 8.25 percent is not an estimate of the cost of equity. Were I  
 9 recommending a rate of return based on my estimate of the cost of equity I would be  
 10 recommending a ROE of 7.0 percent. In that instance, to be consistent with my past  
 11 practice, I would recommend a range of 50 basis points on either side of that esti-  
 12 mate, i.e., 6.50 percent to 7.50 percent. In *this* instance, however, my recommended  
 13 rate of return is already above the upper end of a range that would reflect uncertainty  
 14 in estimating the cost of equity. Thus, the broader range is not appropriate or re-  
 15 quired. Instead, the range I am using recognizes the degree of *judgment* involved in  
 16 deciding what the allowed ROE should be in relation to market-to-book ratio. Here  
 17 the objective is to recommend a ROE that will move the market-to-book ratio *closer*  
 18 to a value that more reasonably balances utility and ratepayer interests, for which I  
 19 have suggested 1.25 as a reasonable policy goal at the present time.

20 Perhaps the following table, derived from the results of my market-to-  
 21 book/XROE analysis in my Schedule 5 will help to illustrate the matter:

Utility Sample					
7.03%	8.25%	8.50%	8.75%	9.25%	10.30%
1.00	1.37	1.45	1.53	1.68	2.00
Otter Tail					
7.03%	8.25%	8.50%	8.75%	9.25%	10.30%
1.00	1.42	1.51	1.60	1.77	2.14

22  
 23 For the utility sample as a whole, the indicated cost of equity, i.e., the rate of return

1 on equity that will result in a market-to-book ratio of 1.00, is 7.03 percent. The mar-  
2 ket-to-book ratio associated with my recommended ROE of 8.25 percent is 1.37. Were  
3 the Commission to allow an ROE at the top of my recommended range, i.e., 8.50 per-  
4 cent, the resulting market-to-book ratio would be 1.45. In balancing ratepayer and  
5 utility interests I think that enough consideration has already been given to the inves-  
6 tor interest that there is no need to add another 25 basis points to my range, taking  
7 the ROE up to 8.75 percent and the market-to-book ratio to 1.53. If the target market-  
8 to-book ratio is 1.25, as I think it should be, I think a market-to-book ratio of 1.45 is a  
9 more than adequate consideration of the utility interest, and a higher ROE and mar-  
10 ket-to-book ratio would simply continue to disadvantage the ratepayer and unfairly  
11 favor the investor. I have shown numbers for Otter Tail based on its dividend yield,  
12 which is lower than the dividend yield for the utility sample. But the point remains  
13 the same: whether the market-to-book ratio is 1.45 or 1.51, I consider 8.50 percent as  
14 an upper bound to a balancing of utility and ratepayer interests at the present time.

15 **Q. YOUR MARKET-TO-BOOK RATIO/XROE ANALYSIS IS BASED ON THE**  
16 **MATHEMATICAL PROPERTIES OF THE CONSTANT GROWTH DCF**  
17 **MODEL. HOW IS THAT AFFECTED IF THE STRICT ASSUMPTIONS OF**  
18 **THE CONSTANT GROWTH DCF MODEL ARE NOT ALWAYS MET IN**  
19 **“THE REAL WORLD?”**

20 **A.** The effect this might have is “lost in the noise,” by which I mean that given a plausible  
21 range of uncertainty in estimating the DCF cost of equity either by the constant  
22 growth DCF model or by the more flexible non-constant growth model any effect is  
23 statistically indiscernible. In other words, the effect is too small to measure. This is  
24 demonstrated on the record in this case by the fact that the market-to-book ra-  
25 tio/XROE analysis produced almost the exact same estimate of the cost of equity as



1 the *non-constant growth* DCF model, 7.03 percent versus 7.05 percent. It is also  
2 demonstrated by the empirical data plotted in the chart on Page 3 of my Schedule 4  
3 (and also referenced and reproduced above on Page 27). Regardless of whether the  
4 constant growth or the non-constant growth form of the DCF model is the more accu-  
5 rate reflection of how investors actually value utility stocks, the data show that mar-  
6 ket-to-book ratios behave in the manner predicted by the constant growth DCF  
7 model.

8           Whenever attention is called to the high market-to-book ratios of utilities as  
9 evidence of excess returns, voices can be found to challenge this relationship. Almost  
10 always the basis for pushing back is to make the perfect the enemy of the good. That  
11 is to say, various *theoretical* issues will be raised to call into question this relation-  
12 ship, but if the theoretical arguments are carried to their logical conclusion, regula-  
13 tion would have to disavow use of the DCF methodology altogether. In other words, if  
14 the DCF methodology cannot be trusted to give reliable inferences about how ROE  
15 will influence P/B, it cannot be trusted to give reliable inferences about how dividend  
16 yield and expected growth can tell us anything about the total return expected by in-  
17 vestors. A good economic model or theory is one that both helps explain or provide  
18 insight into economic behavior *and* yields assumptions that are empirically testable.  
19 The DCF model succeeds on both fronts. It posits a certain kind of behavior or rela-  
20 tionship between market prices and book value depending on what the expected book  
21 equity return is in relationship to the required rate of return (“cost of equity”) and  
22 what we see in the market (empirically) is consistent with what the theory predicts.  
23 Attempts to discredit or deny any useful inferences at all from market-to-book ratios  
24 are simply resorts to special pleading.

1 **VI. ANALYSIS OF COMPANY TESTIMONY ON RATE OF RETURN ON EQ-**  
2 **UITY**

3 **Q. PLEASE DESCRIBE THE BASIS FOR OTP'S REQUESTED RETURN ON**  
4 **EQUITY OF 10.3 PERCENT.**

5 **A.** Testimony in support of OTP's request is presented by Robert B. Hevert. Mr. Hevert  
6 recommends that OTP be allowed a 10.3 percent return on equity, but only after tak-  
7 ing us along on an exhausting road tour of two different *basic* approaches to estimat-  
8 ing the cost of equity which is multiplied into *thirteen* different cost of equity esti-  
9 mates which, when further iterated into "low," "medium," and "high" results along  
10 with other input choices yields a staggering 29 different cost of equity estimates rang-  
11 ing from a low of 7.91 percent to a high of 13.13 percent. And this only after Mr. He-  
12 vert decides to ignore certain results on the low side of all of this, which would drive  
13 the "low" down to 7.49 percent (while apparently never experiencing a result so high  
14 that he would consider ignoring it).<sup>19</sup> If we throw all these results into a blender to  
15 produce a smoothie *median*, the result is 9.97 percent (which is not changed if we re-  
16 place the low end with 7.49 percent). But where do we begin to make heads or tails of  
17 all this?

18 In my experience, differences in rate of return recommendations between staff  
19 or consumer advocate witnesses and utility witnesses usually boil down to a few *key*  
20 differences in methodology. So rather than fret over the minutiae (should we use 30  
21 days, 60 days, or 180 days of stock prices to calculate dividend yield?) I propose to  
22 zero in on these key differences. To organize my overall response to Mr. Hevert's

---

<sup>19</sup> The full panoply of results is in the tables on pp. 67 and 68 of his direct testimony. The lowest result shown there, 7.91 percent includes flotation costs. When the excluded results are added back the corresponding result is 7.49, found on his Exhibit\_\_\_\_(RBH-1), Schedule 1, Page 3 of 3. As for the remark about never seeing a return too high to ignore, see Page 57 of my testimony.

1 testimony, I will do so under the following headings:

2 A. Discounted Cash Flow Methodologies

3 B. Risk Premium Methodologies

4 C. Size Premium

5 D. Flotation Costs

6 E. Impact of Tax Cuts & Jobs Act (TCJA)

7 Exhibit\_\_\_\_ (BLC-1), Schedule 10, is a one-page synopsis of eight “major issues” with  
8 respect to Mr. Hevert’s efforts to justify the reasonableness of a 10.3 percent return  
9 on equity.

10 **A. Discounted Cash Flow Methodologies**

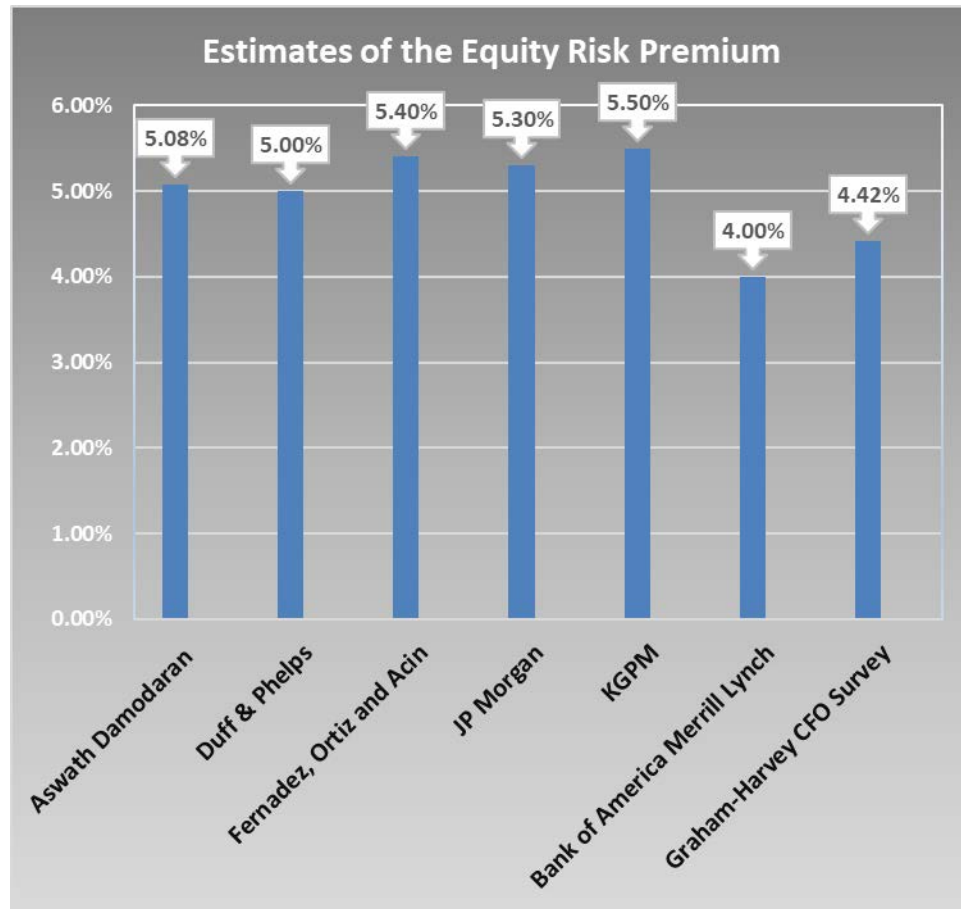
11 **Q. WHAT ARE THE KEY ISSUES WITH RESPECT TO DISCOUNTED CASH**  
12 **FLOW METHODOLOGIES IN ESTIMATING THE COST OF EQUITY CAPI-**  
13 **TAL?**

14 **A.** The first key issue where Mr. Hevert and I disagree is in the choice of inputs to esti-  
15 mate the growth rate in the constant growth form of the DCF model. If we look at  
16 Pages 1, 2, and 3 of Mr. Hevert’s Schedule 1, we see that he has relied entirely on  
17 *earnings* growth projections (from three different sources). In my Exhibit\_\_\_\_ (BLC-  
18 1), Schedule 1, I employ earnings growth projections along with three other metrics of  
19 future growth relevant to estimating the cost of equity using the DCF constant growth  
20 model: (1) dividend growth, (2) book value per share growth, and (3) the Value Line  
21 metric of “% Retained to Common Equity.” The latter two are conceptually the same,  
22 but one is a forecast of book value growth in the near term, and the other is a pro-  
23 jected growth beyond the near term. In my discussion of the implementation of the  
24 constant growth model I discuss thoroughly the reasons not to rely solely upon

1 earnings growth and why it is appropriate or even necessary to consider other growth  
2 estimates. Bottom line? Relying solely upon earnings projections, the median ex-  
3 pected growth rate in Mr. Hevert's analysis is 5.20 percent. In my implementation the  
4 median expected growth rate is 4.56 percent, lower by 64 basis points.

5 A second key issue here is Mr. Hevert's decision to ignore any cost of equity es-  
6 timate below 8 percent. As a result, he eliminated a *third* of his sample from consider-  
7 ation (El Paso Electric Company, IDACORP, Inc., and Northwestern Corporation).  
8 The only reasons he gives for rejecting these results as too low is by reference to *al-*  
9 *lowed* rates of return. Would anyone ever think that maybe allowed rates of return  
10 are way too high? (I would.) A more substantive evaluation would be whether they are  
11 too low in terms of *investor* perceptions and considerations. To address that I will in-  
12 troduce here some evidence that I will be making use of again in my evaluation of Mr.  
13 Hevert's CAPM (Capital Asset Pricing Model) estimates of the cost of equity. The  
14 threshold question here is "just *how low* might investors think a reasonable rate of  
15 return on equity is in today's capital markets?"

16 To address this question, I would call attention to the estimates of the market  
17 risk premium in the chart on the next page. I will describe the sources in more detail  
18 later when I address Mr. Hevert's estimate of the market risk premium. For now, this  
19 suffices to show that many knowledgeable market analysts would consider 4.0 to 5.5  
20 percent a reasonable premium for equity market risk. Presently, yields on long-term  
21 treasury bonds, a standard metric for the "risk-free rate of return," are about 3.0 per-  
22 cent. Taken together we have a range of experienced and knowledgeable market



1  
2 analysts who would consider a return of 7.0 to 8.5 percent to be a reasonable rate of  
3 return for an equity investment of *average market risk*. As we will see when we con-  
4 sider Mr. Hevert’s various risk premium approaches, utility stocks are of *below aver-*  
5 *age market risk*. Thus, expected returns on equity for electric utilities below 8 percent  
6 are not only reasonable, but *expected* on the basis of current norms regarding ex-  
7 pected capital market returns. Not only is there no objective basis for excluding re-  
8 turns on equity below 8 percent for electric utilities, if we are going to take a scalpel to  
9 our data, we should be ignoring anything above 8.5 percent! But rather than go there,  
10 I suggest that the Commission simply ignore the truncated results of Mr. Hevert’s  
11 constant growth DCF model.

12 Doing that, we get the following three ranges of “low, mean, and high” from his

1           Schedule 1:

	<b>Proxy Group Median</b>		
	<b>No Flotation Costs</b>		
	<b>Low</b>	<b>Mean</b>	<b>High</b>
<b>Page 1</b>	7.71%	8.70%	9.53%
<b>Page 2</b>	7.49%	8.45%	9.29%
<b>Page 3</b>	7.52%	8.44%	9.30%

2

3           And when we “adjust” these results by 64 basis points to account for relying solely  
4           upon earnings growth rates we get:

	<b>Proxy Group Median</b>		
	<b>No Flotation Costs</b>		
	<b>Less 64 Basis Points</b>		
	<b>Low</b>	<b>Mean</b>	<b>High</b>
<b>Page 1</b>	7.17%	8.16%	8.99%
<b>Page 2</b>	6.95%	7.91%	8.75%
<b>Page 3</b>	6.98%	7.90%	8.76%

5

6           Two of the means (Page 2 and Page 3 of Hevert’s Schedule 1) now produce returns –  
7           7.91 percent and 7.90 percent – close to my median constant growth DCF estimate of  
8           7.71 percent.

9           What this indicates, clearly, is that the only real difference in our implement-  
10          ations of the constant growth DCF is Mr. Hevert’s exclusive reliance upon analysts’  
11          EPS forecasts, and my use of other growth measures (Value Line DPS, BVPS, and %  
12          Ret to Com Equity) in addition to analysts’ EPS forecasts. It bears noting here Mr.  
13          Hevert is employing the same approach that the Commission considered and rejected  
14          in Docket No. EL11-019, whereas I am employing the same approach that the Com-  
15          mission adopted in that docket.

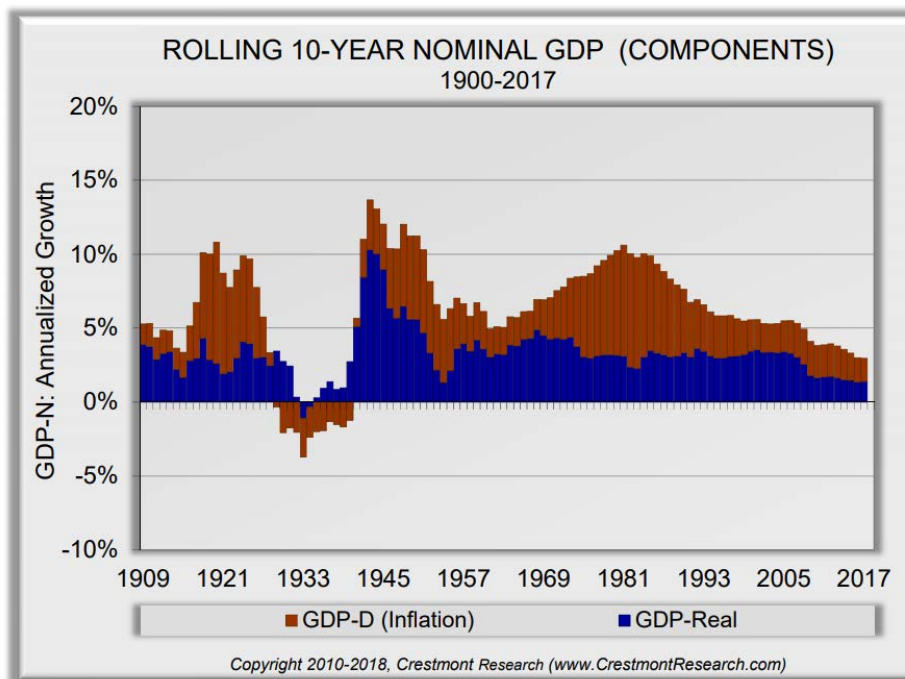
16          Finally, in this assessment of Mr. Hevert’s constant growth DCF analysis I  
17          would return to the point made earlier in my testimony that to properly *balance* con-  
18          sumer and investor interest the Commission should be looking for *the lowest*

1        *reasonable estimate of the required rate of return on equity.* With that in mind we  
2        should be focusing on the columns labeled “low” in the above two matrices. Taking a  
3        blunt instrument to the data in the bottom table above, the “low” estimates are about  
4        7 percent. If experienced and knowledgeable market analysts think that 7 to 8.5 per-  
5        cent is a reasonable return for equity investments of average market risk, it is not  
6        hard to believe that 7 percent is a reasonable return for utility equity investments. Mr.  
7        Hevert has no good reason to eliminate returns below 8 percent from his analyses.

8        **Q.    MOVING ON TO MR. HEVERT’S MULTI-STAGE DCF ANALYSIS, WHAT**  
9        **ARE THE KEY ISSUES WITH THAT APPROACH?**

10      **A.**    Far and away the key issue with this approach is the growth rate assumed for the ter-  
11      minal stage of the analysis, 5.45 percent. Mr. Hevert puts this forth as an estimate of  
12      long-term future growth in gross domestic product (GDP). While it is not uncommon  
13      to see GDP used as a terminal growth rate in multi-stage DCF models for *unregulated*  
14      firms, it is wholly inappropriate for use in a multi-stage DCF model *for public*  
15      *utilities.* I’ll explain why below. But first I want to address whether 5.45 percent is  
16      even reasonable for a projected rate of growth in GDP for unregulated firms in today’s  
17      economic environment. Mr. Hevert explains the basis for his 5.45 percent estimate of  
18      growth in GDP on lines 4-5 of Page 28 of his Direct Testimony: “The long-term  
19      growth rate of 5.45 percent is based on the real GDP growth rate of 3.21 percent from  
20      1929 through 2017, and an inflation rate of 2.16 percent.” The embedded inflation  
21      rate is not particularly unreasonable (though a bit on the high side) but the expecta-  
22      tion of future real GDP growth is certainly unreasonable.

23                    Note the pattern of historical real and nominal GDP shown in the following  
24      chart:



1 Any realistic expectation of long-term nominal GDP above 5 percent or real GDP  
2 above 2 percent collapsed with the 2008-2009 recession. While some might be opti-  
3 mistic about the chances for economic growth under President Trump, the latest Con-  
4 gressional Budget Office update to its economic outlook as of August 2018 projects  
5 real GDP growth for the period 2023-2028 (as far out as the projection goes, and the  
6 projection most appropriate for a terminal growth rate for a multi-stage DCF model)  
7 is just 1.7 percent and the nominal GDP growth rate is 3.9 percent.<sup>20</sup> Substituting 3.9  
8 percent for 5.45 percent in Mr. Hevert’s multi-stage DCF analyses will result in sub-  
9 stantially lower estimates of the multi-stage DCF cost of equity. As an example, the  
10 mean DCF cost of equity shown on his Schedule 3, Page 1 of 19 using a 30-Day Aver-  
11 age Stock Price is 9.20 percent. When 3.9 percent is used for the terminal stage  
12 growth rate, the mean DCF cost of equity falls to 7.95 percent and the median to 7.60

---

<sup>20</sup> CBO, “An Update to the Economic Outlook:2018-2028,” August 2018, P. 12.  
<https://www.cbo.gov/system/files?file=2018-08/54318-EconomicOutlook-Aug2018-update.pdf>, ac-  
cessed 02/02/2019. The relevant chart is reproduced in my testimony below on Page 65.



1           percent. I did not do the same calculation for the other 17 iterations of his estimation  
2           procedure but they would all be off (which is to say, “too high”) by a similar order of  
3           magnitude. But if 3.9 percent is what we might expect for the economy overall, we  
4           must expect something less for public utilities.

5           **Q. PLEASE EXPLAIN WHY THAT IS.**

6           **A.** Long-term growth in GDP will be determined in large part by the earned returns on  
7           equity and earnings retention rates of unregulated companies. Unregulated compa-  
8           nies typically have a life cycle and financial characteristics completely different from  
9           the typical regulated public utility. During the early stages of the life cycle of a typical  
10          unregulated company, the company will grow rapidly, paying little or no dividend to  
11          its investors and reinvesting (retaining) all of its earnings to fuel this period of rapid  
12          growth. In time, it begins to pay a dividend, and to adopt a dividend payout ratio and  
13          earnings retention rate more typical of the unregulated sector of the economy. Few  
14          unregulated firms will ever adopt long-term dividend payout ratios and earnings re-  
15          tention rates that are common among regulated public utilities. As illustration of  
16          this, according to data using Bloomberg in Mr. Hevert's Exhibit \_\_\_\_\_ (RBH-1),  
17          Schedule 4, Pages 1-6, 94.4 percent (472 of 500) of the companies in the S&P 500  
18          have dividend yields below 4 percent, and the median dividend yield for those compa-  
19          nies is 1.83 percent. Clearly the S&P 500, and the market as a whole, is dominated by  
20          companies which have higher earnings retention rates than the typical public utility.  
21          To the extent that these unregulated companies drive the expected rate of growth in  
22          GDP, the expected rate of growth in GDP will always exceed the long-term growth ex-  
23          perienced by a regulated public utility.

1           Differences with respect to earnings retention between unregulated companies  
2 and regulated public utilities are only part of the reason why the long-term growth of  
3 a typical public utility can *never* equal the long-term rate of growth in GDP. Just as  
4 important are differences in returns on equity. Utilities are less risky than the market  
5 as a whole. This is unequivocal from the consistently lower beta coefficients we see  
6 for public utility stock. If regulation is effective, then utilities will consistently earn  
7 somewhat lower returns on equity than are typically earned by unregulated compa-  
8 nies. When you combine lower expected returns on equity with higher dividend pay-  
9 out ratios, it is *impossible* for the long-term growth of a normal public utility to equal  
10 the long-term growth of GDP.

11           The issues here can be demonstrated further with some simple numerical anal-  
12 ysis. Mr. Hevert's long-term growth rate based on GDP is 5.45 percent. His multi-  
13 stage DCF models show long-term earnings retention converging on 34.1 percent  
14 (100 minus the 65.91 percent payout ratio shown in his Schedule 3, Column [9]).  
15 With long-term earnings retention of 0.341 public utilities would have to earn a re-  
16 turn on equity of about 16.0 percent ( $5.45/0.341 = 15.9824$  to be more precise) to pro-  
17 duce a growth rate of 5.45 percent. So implicitly Mr. Hevert is projecting a long-term  
18 return on equity for public utilities of nearly 16 percent. Without that kind of return,  
19 there is no way for public utilities to produce a growth rate close to the rate of growth  
20 in GDP.

21           Therefore, Mr. Hevert's long-term growth rate based on an estimate of growth  
22 in GDP requires one of two equally implausible assumptions. It either requires that  
23 public utilities earn a higher return on equity than is even typical of unregulated com-  
24 panies or it requires public utilities to have an earnings retention rate that far exceeds

1 the norm for public utilities. Since neither of these conditions is likely or even plausi-  
2 ble, Mr. Hevert's long-term GDP growth rate is completely inappropriate for any kind  
3 of DCF analysis for OTP or any other typical public utility. Thus, the results of his  
4 multi-stage DCF analyses should be rejected.

5 I should note, however, that when a 3.50 percent long term growth rate (the  
6 long-term growth I used in my nonconstant growth analysis, based on Value Line  
7 projections) is substituted for the 5.45 percent figure that Mr. Hevert used, the me-  
8 dian nonconstant DCF cost of equity for Mr. Hevert's Schedule 3, Page 1, drops to  
9 7.28 percent. This is not too far off the 7.05 percent median shown in my Schedule 2.  
10 The remaining difference is probably attributable entirely to the fact that prices rose  
11 and dividend yields fell between the time Mr. Hevert performed his analysis and the  
12 time I performed mine. The point of which is to say that when a reasonable long-term  
13 growth rate is used in Mr. Hevert's worksheets, the result is not significantly different  
14 than what I have found to be the case. The current cost of equity for the sample of  
15 comparable companies based on this approach and using more recent and appropri-  
16 ate data is close to 7 percent, and provides no justification whatsoever for Mr. He-  
17 vert's recommended return on equity of 10.3 percent.

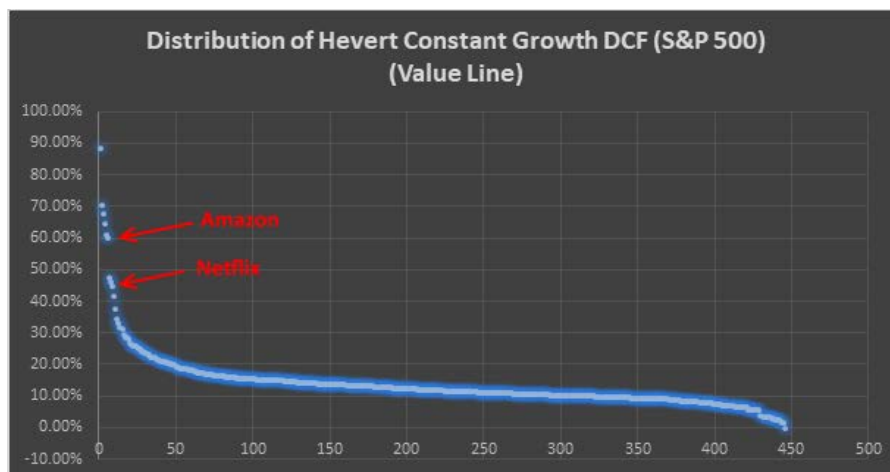
18 **B. Risk Premium Methodologies**

19 **Q. WHAT IS THE KEY CONCERN OR ISSUE WITH RESPECT TO MR. HE-**  
20 **VERT'S CAPM ESTIMATES OF THE COST OF EQUITY?**

21 **A.** By far the key issue here is his attempt to estimate the required return on the market  
22 as a whole and, as a derivative, his resulting estimate of the equity risk premium. His  
23 initial description of what he did, from lines 10-11 of Page 32 of his testimony, dooms  
24 his analysis from the very start: "I calculated the market capitalization weighted

1 average total return based on the *Constant Growth* DCF Model.” (Emphasis mine.)  
2 He performed what is known as a “bottom up” forecast. That is, he estimated the DCF  
3 cost of equity for each firm in the S&P 500 for which there are earnings forecasts.  
4 Then he calculated a weighted average based on their relative market capitalization.  
5 Right off we have the problem of using only earnings forecasts. But in this case the  
6 problem is compounded by the fact that if any firms call for the use of a *non-constant*  
7 growth DCF analysis it is *most of the firms in the S&P 500*. In fact, in one of the most  
8 bizarre things I’ve ever seen, he included numerous companies that do not pay any  
9 dividend at all! How are we to imagine that a constant growth *dividend* discount  
10 model can account for how stocks that pay no dividend are valued? A normal ap-  
11 proach here would be to use a two-stage model in which dividends are not paid in the  
12 initial stage, but begin to be paid “down the road” and then those dividends are dis-  
13 counted back to derive a present value to associate with the stock. But to think we can  
14 use the constant growth model for such companies is just unreal.

15 This is no small concern. The following image shows the distribution of Mr.  
16 Hevert’s DCF constant growth estimates for his Value Line analysis of the S&P 500,  
17 Exhibit\_\_\_\_(RBH-1), Schedule 4, Pages 7-12:



1 The results are definitely skewed with a longer “tail” at the high end than at the low  
2 end. Moreover, many of the estimates at the high end of the distribution have greater  
3 market weight than those at the low end of the distribution, and this imparts a sub-  
4 stantial upward bias to his results that I will describe in a moment.

5 But I first want to call attention to the sheer absurdity of the numbers at the  
6 high end. Note that I’ve called attention to Amazon and Netflix. That is for two rea-  
7 sons. First because they are so high, but second because together they make up over 2  
8 percent of Mr. Hevert’s estimate because of their massive market value. Both pay no  
9 dividend, so Mr. Hevert’s “DCF estimate” is simply the current analysts’ expected  
10 earnings growth rate *for the next 3 to 5 years*. For Amazon this estimated earnings  
11 growth rate is 60.0 percent, and in Mr. Hevert’s simplistic application of the constant  
12 growth rate DCF model this becomes his estimate of Amazon’s cost of equity – 60.0  
13 percent! But who in their right mind would expect Amazon to produce earnings  
14 growth of 60 percent *perpetually*? Remember, no firm can grow *perpetually* at a rate  
15 of growth faster than the rate of growth in GDP. Netflix is another example of a com-  
16 pany which pays no dividend, and has a high projected EPS growth rate over the next  
17 3 to 5 years: 44.50 percent. So, in Mr. Hevert’s constant growth DCF analysis of the  
18 S&P 500 it is given an estimated cost of equity of 44.50 percent. Once again, such  
19 numbers are impossible. Yet, while Mr. Hevert removes from his proxy group DCF  
20 analysis any result below 8 percent, here he retains results that are simply impossible.

21 The median DCF constant growth rate cost of equity for the 446 companies in-  
22 cluded in Mr. Hevert’s Value Line constant growth DCF analysis was 11.63 percent  
23 while his market-weighted average cost of equity for the 446 companies was 15.54  
24 percent. That is a *huge* upward bias attributable directly to the high market value of

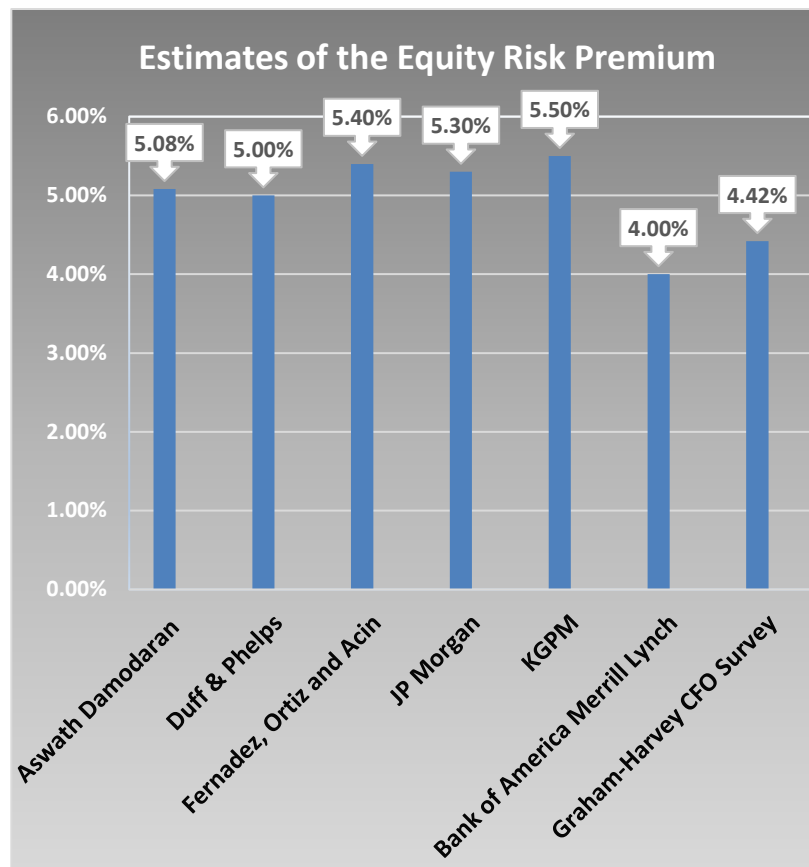
1 many low or zero dividend paying utilities with extremely high expected earnings  
2 growth rates over the next 3 to 5 years. The constant growth DCF model is simply in-  
3 appropriate to estimate the cost of equity for the S&P 500. With problems like this we  
4 should not be surprised if Mr. Hevert's bottom up effort to estimate the market risk  
5 premium should overestimate what could be considered a *reasonable* estimate of the  
6 premium. I would point out that in his testimony itself on Pages 32 and 33, he does  
7 not specifically mention the estimates of the market risk premium produced by his  
8 bottom up methodology. But they are found on his Schedule 4, Pages 1 and 7: 11.78  
9 percent using Bloomberg data and 12.49 percent using Value Line data. For discus-  
10 sion purposes, let us just round this off to 12 percent. Is there any possibility whatso-  
11 ever that this is even plausible, let alone *reasonable*? No. Remember, this is an esti-  
12 mate of the premium on common stock versus long-term government bonds. Anyone  
13 with any familiarity with long-term historical stock returns vis-à-vis long-term gov-  
14 ernment bond returns will realize that stocks have *never even come close* to produc-  
15 ing an average return premium of this magnitude. Not even *close*. Here is a spread-  
16 sheet output of S&P 500 total returns versus long-term government bonds over three  
17 different lengths of time:

	<i>Arithmetic Average</i>		<i>Geometric Average</i>	
	Stocks - T. Bills	Stocks - T. Bonds	Stocks - T. Bills	Stocks - T. Bonds
1928-2017	8.09%	6.38%	6.26%	4.77%
Std Error	2.10%	2.24%		
1968-2017	6.58%	4.24%	5.28%	3.29%
Std Error	2.39%	2.70%		
2008-2017	9.85%	5.98%	8.01%	4.56%
Std Error	6.12%	8.70%		

18  
19 (For the source of this data see the footnote on Page 63.) The relevant data for the  
20 present discussion are the two columns headed "Stocks – T. Bonds." There is a debate

1 over whether the appropriate basis for calculating the historical risk premium is an  
2 arithmetic basis or a geometric basis but that is irrelevant here. Even on an arithmetic  
3 basis, the *highest* historical risk premium shown in the data above is 6.38 percent. Yet  
4 Mr. Hevert would have us to think that rational investors are expecting stocks to earn  
5 an average premium of *12 percent* over long-term government bonds for the foreseeable  
6 future. Again, seriously, where is the sanity check here? This is not to say that  
7 there are not a *few* market analysts who might be predicting return premiums on this  
8 order of magnitude, but I am sure the Commission is not interested in what a *few*  
9 market analysts might think about the matter, but what *most* analysts think about it.

10 So, what do *most* analysts think about what is the expected equity market risk  
11 premium? First, I would begin by presenting again the chart that appeared above on  
12 Page 49, shown again below. The estimates of the equity market risk premium



1 shown here range from a low of 4.0 percent to a high of 5.5 percent. But it is worth  
 2 looking a little more closely at some of these sources and what they have to say about  
 3 current market expectations regarding the equity risk premium.

4 The first I would call attention to is the estimate attributed to “Fernandez,  
 5 Ortiz and Acin.” Pablo Fernandez has been producing research papers surveying  
 6 various estimates of the market risk premium for a number of years. In the most  
 7 recent survey, Fernandez (assisted by Alberto Ortiz and Isabel F. Acin) requested  
 8 information from a variety of academics and professionals.<sup>21</sup> Results for the US,  
 9 based on replies from 1,348 respondents, are shown in the following image:

Pablo Fernandez, Vitaly Pershin and Isabel F. Acin  
 IESE Business School

Market Risk Premium and Risk-Free Rate used for  
 59 countries in 2018

**Table 2. Market Risk Premium (MRP) used for 59 countries in 2018**

MRP	Number of Answers	Average	St. Dev.	Median	MAX	min	St.Dev. / Average
USA	1348	5,4%	1,7%	5,2%	17,8%	1,3%	32,1%

**Table 3. Risk Free Rate (RF) used for 59 countries in 2018**

RF	Number of Answers	Average	St. Dev.	Median	MAX	min	St.Dev. / Average
USA	1348	2,8%	0,8%	2,8%	7,0%	-0,3%	30,0%

**Table 4. Km [Required return to equity (market): RF + MRP] used for 59 countries in 2018**

Km	Number of Answers	Average	St. Dev.	Median	MAX	min	St.Dev. / Average
USA	1348	8,2%	2,0%	8,3%	19,8%	2,4%	23,9%

10

---

11 The average market risk premium (“MRP”) of 1,348 respondents was 5.4 percent. Not  
 12 12 percent, and not even close to 12 percent. Moreover, Fernandez and his coauthors  
 13 have a chart that allows us to assess just how far from the norm Mr. Hevert’s estimate  
 14 of the market risk premium and expected total market return used in his CAPM anal-  
 15 ysis actually are:

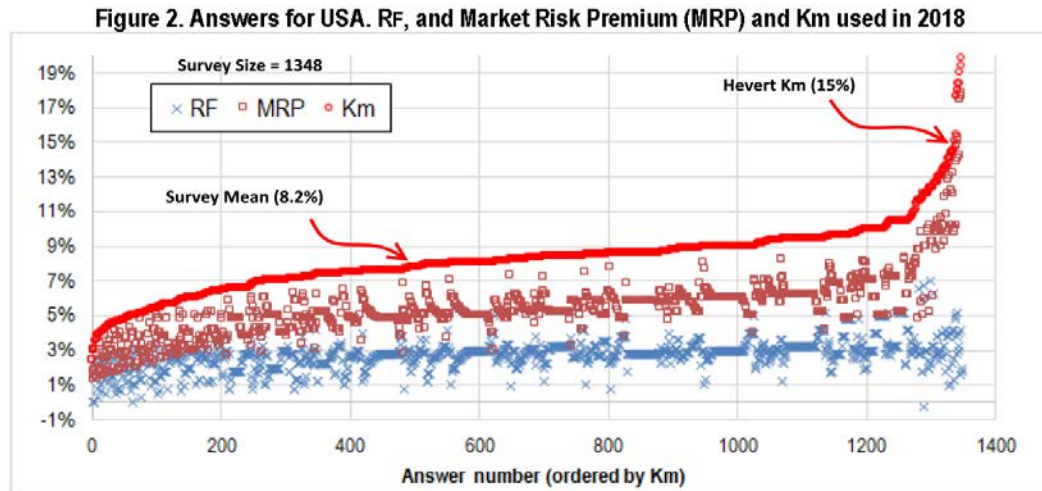
---

<sup>21</sup> Pablo Fernandez, Alberto Ortiz, Isabel F. Acin. “Market Risk Premium and Risk-Free Rate used for 59 countries in 2018: a survey.” Electronic copy available at: <https://ssrn.com/abstract=3155709>



1

## 2. Distribution of the answers for the USA



2 I have annotated the chart to call attention to Mr. Hevert's estimate of the total mar-  
3 ket return ("Km" in the chart) and will say more about that in a minute. But first no-  
4 tice the distribution of the equity market premium ("MRP") estimates: I count about  
5 20 that are 12 percent or higher which would put Mr. Hevert above the 98<sup>th</sup> percentile  
6 in his estimate of the market risk premium. That is a measure of how far out of the  
7 norm he is. The same holds true of his estimate of the total expected market return in  
8 his CAPM model, which is 15 percent. Here, I only count about 10 out of 1,348 at 15  
9 percent or above, that would place him above the 99<sup>th</sup> percentile. Note as well that  
10 when looking at the expected total return (the top row of data points in the chart), it  
11 does not begin its sharp turn upward at the end (to the right) until the survey count  
12 passes 1,200. At that point, the expected total market return (Km) is about ten per-  
13 cent. To make the point perfectly clear, 1,200 of 1,348 respondents think that the total  
14 expected market return is no more than 10 percent, and a majority of those think it is  
15 less: the survey average is 8.2 percent. Note also that with a standard deviation of 2.0  
16 percent around the sample mean of 8.2 percent, the 95<sup>th</sup> percentile for the maximum

1 estimate of the expected total market return would be 12.2 percent. At 15 percent, Mr.  
2 Hevert is well, well, outside any “zone of reasonableness.”<sup>22</sup>

3 All of this has a profound and significant impact on the credulity (or *incredu-*  
4 *lity*) of Mr. Hevert’s CAPM estimates of the cost of equity. Suppose we accept the up-  
5 per limit of what 1,200 analysts think and presume that the expected total market re-  
6 turn is 10.0 percent. The current 30-year Treasury bond rate is about 3 percent, leav-  
7 ing us with an expected market risk premium of 7.0 percent. Mr. Hevert uses beta co-  
8 efficients from two different sources, one (Bloomberg) averaging 0.634 for his sample  
9 and the other (Value Line) averaging 0.778. I have problems with these estimates of  
10 the beta coefficients to use with public utility stocks, but I will ignore that for now and  
11 for purposes of this back of the napkin analysis use a beta coefficient of 0.70. Given  
12 all these assumptions, the CAPM estimate of the cost of equity for Mr. Hevert’s sam-  
13 ple would be about 7.9 percent:

$$k = 3\% + (0.7 \times 7.0\%) = 3\% + 4.9\% = 7.9\%$$

14 Under the most favorable assumptions imaginable, the CAPM cost of equity for Mr.  
15 Hevert’s sample is no more than 7.9 percent. But the more plausible expectation is  
16 that it is something less than this. Assuming that the expected market return is only  
17 8.2 percent, the equity market risk premium is only 5.2 percent and the CAPM esti-  
18 mate of the cost of equity for the sample falls to 6.64 percent:

$$k = 3\% + (0.7 \times 5.2\%) = 3\% + 3.64\% = 6.64\%$$

---

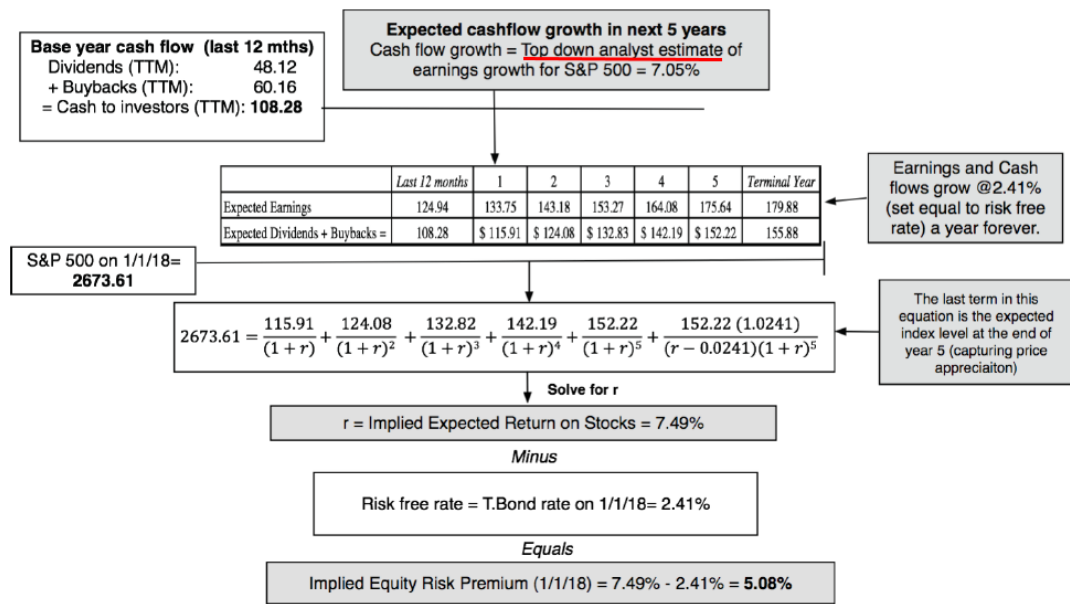
<sup>22</sup> In round numbers, the 95<sup>th</sup> percentile would be two standard deviations above the mean:

$$8.2\% + (2 \times 2\%) = 8.2\% + 4\% = 12.2\%$$

Mr. Hevert’s estimate of the expected market return, about 15 percent, is more than *three* stand-  
ard deviations above the mean ( $8.2\% + (3 \times 2\%) = 14.2\%$ ).

1 These estimates corroborate the reasonableness of my three estimates of the cost of  
 2 equity: 7.71 percent (Schedule 1), 7.05 percent (Schedule 2), and 7.03 percent (Sched-  
 3 ule 5). Any estimate of the cost of equity much above 8 percent for the sample of utili-  
 4 ties under consideration in this proceeding is beyond the realm of reason.

5 This contention, that 8 percent is an upper limit of a reasonable estimate of the  
 6 cost of equity for this proceeding, is reinforced when looking at the other sources of  
 7 market risk premium estimates shown in the chart above. For example, the market  
 8 risk premium estimated by Professor Aswath Damodaran is 5.08 percent:<sup>23</sup>



9  
 10 Professor Damodaran is using a two-stage DCF model to estimate the expected total  
 11 return on the S&P 500. If we did not know better we *might* think that it should pro-  
 12 duce a result similar to Mr. Hevert’s constant growth DCF model of the average cost  
 13 of equity for the S&P 500. But it does not. Damodaran’s expected total return on the

<sup>23</sup> Aswath Damodaran, “Equity Risk Premiums (ER): Determinants, Estimation and Implications, The 2018 Edition,” (Updated: March 14, 2018), P. 87. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3140837](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3140837) accessed 02/02/2019.

1 S&P 500 is almost exactly *half* of Mr. Hevert's estimate: 7.49 percent, rather than 15  
2 percent. The reason for this dramatic difference is that Damodaran's method is "top  
3 down" rather than "bottom up" like Mr. Hevert's. (Notice the red underscore in the  
4 preceding image.) That is, rather than apply the DCF methodology to *individual com-*  
5 *panies* like Mr. Hevert does (and we saw above how that produces results that are  
6 simply not credible), Professor Damodaran is using expected earnings forecasts for  
7 the S&P 500 *as a whole*. Analysts who estimate expected earnings on the S&P 500 as  
8 a whole typically do so in a framework that is *macroeconomic*. In other words, they  
9 will take into account such factors as expected GDP growth, interest rates, and similar  
10 variables that are macroeconomic and consider how these will impact the S&P 500,  
11 i.e., they consider the market and the economy "as a whole." This is known as "top  
12 down" analysis.

13 We should be able to understand the value of this top down approach over the  
14 bottom up approach simply by looking at the results of the two approaches. Mr. He-  
15 vert's approach produced an average expected total return of about 15 percent. Of  
16 this, about 1.8 percent was from the dividend yield, leaving an implied expected earn-  
17 ings growth rate for the S&P of about 13.2 percent. No one, looking at the S&P 500 in  
18 a macroeconomic context, would ever anticipate earnings growth of *anywhere near*  
19 13.2 percent. Recall the discussion above where I noted that for unregulated compa-  
20 nies the expected rate of growth in GDP is a plausible upper limit for a terminal  
21 growth rate in a multi-stage DCF model. It would be ludicrous to use 13.2 percent as  
22 the terminal or long-term growth rate for the S&P 500 because the economy could  
23 never sustain such a growth rate.

24 Now, I will point out that Professor Damodaran may go too far to the other

1 extreme, and uses an implausibly low 2.41 percent for the terminal earnings growth  
 2 rate of his two-stage DCF analysis of the S&P 500. In Damodaran’s defense, he uses  
 3 this because it was the long-term treasury bond rate at the time he did his analysis,  
 4 and in macroeconomic *theory* the long-term treasury bond rate is equal to inflation  
 5 plus the real rate of growth in GDP. But presently, any linkage between long run GDP  
 6 and long-term treasury bond rates seems broken by Federal Reserve interest rate pol-  
 7 icy. Recall from the discussion above about long-term GDP growth that the present  
 8 CBO forecast for GDP nominal growth is 3.9 percent. This is the product of an ex-

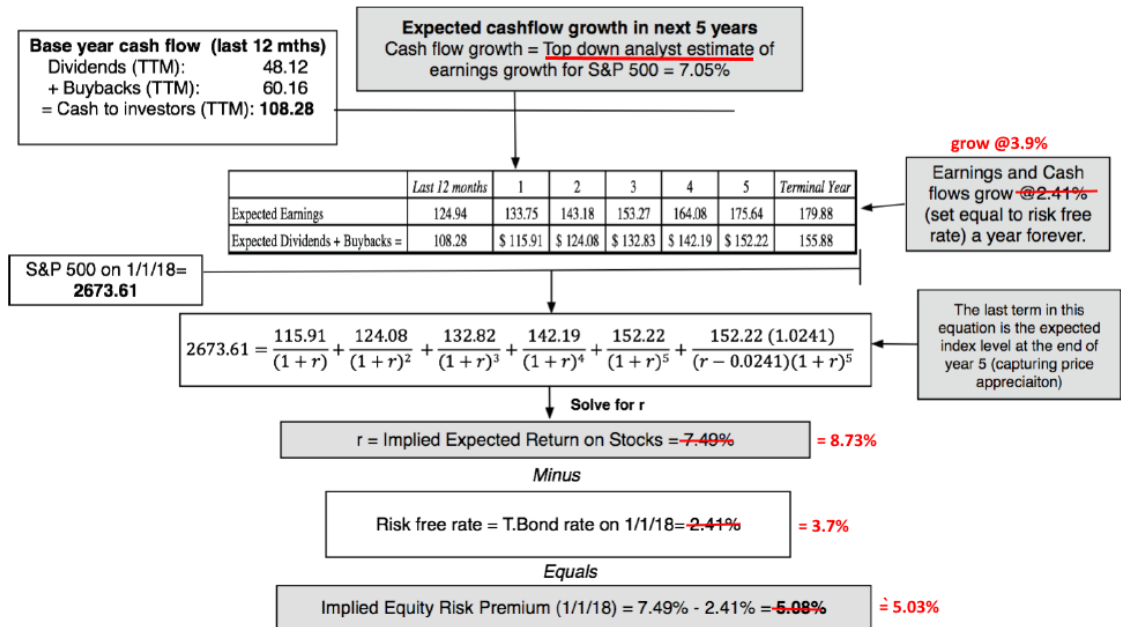
Table 1.  
**CBO’s Economic Projections for Calendar Years 2018 to 2028**

	Actual, 2017	2018	2019	2020	Annual Average	
					2021– 2022	2023– 2028
<b>Percentage Change From Year to Year</b>						
<b>Gross Domestic Product</b>						
Real <sup>a</sup>	2.3	3.0	2.8	1.9	1.6	1.7
Nominal	4.1	5.1	4.9	4.1	3.8	3.9
<b>Inflation</b>						
PCE price index	1.7	2.1	2.0	2.1	2.1	2.0
Core PCE price index <sup>b</sup>	1.5	1.9	2.1	2.2	2.1	2.0
Consumer price index <sup>c</sup>	2.1	2.5	2.2	2.5	2.5	2.4
Core consumer price index <sup>d</sup>	1.8	2.2	2.4	2.7	2.6	2.4
GDP price index	1.8	2.0	2.1	2.2	2.2	2.1
<b>Annual Average</b>						
<b>Interest Rates (Percent)</b>						
Three-month Treasury bills	0.9	1.9	2.8	3.1	3.2	2.8
Ten-year Treasury notes	2.3	3.0	3.6	3.9	3.9	3.7

9 pected inflation rate of 2 percent and expected real growth of about 1.7 percent:

10 Note well that there is a rough internal consistency to the CBO numbers that is con-  
 11 sistent with Professor Damodaran’s use of a risk-free rate (in CBO numbers, the Ten-  
 12 Year Treasury notes) to approximate nominal GDP: for the period 2023-2028 in the  
 13 table above, the Ten-year treasury rate is 3.7 percent vs. 3.9 percent for nominal GDP  
 14 growth. As shown in the markup on the next page (which comes from replicating Pro-  
 15 fessor Damodaran’s methodology as shown on Exhibit\_\_\_\_\_ (BLC-1), Schedule 6),

1 changing the long-term growth rate from 2.41 percent to 3.9 percent, and the Treas-



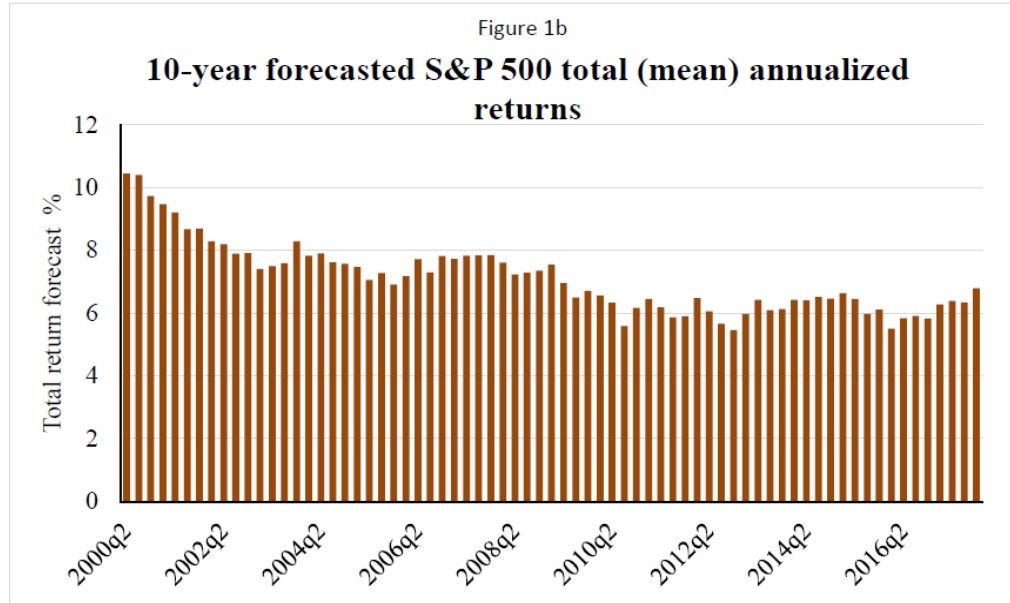
2  
 3  
 4  
 5  
 6  
 7  
 8  
 9  
 10  
 11  
 12  
 13

ury bond rate for determining the risk premium to 3.7 percent, the implied market risk premium (MRP) falls from 5.08 percent to 5.03 percent. So, despite my objection to Professor Damodaran’s inputs, selecting what I consider to be more plausible inputs does not significantly change the output. We are still in a completely different ballpark than the one Mr. Hevert is playing in.

Before leaving this long discussion of Mr. Hevert’s 12 percent market risk premium, I would call particular attention to a third source shown on the chart of market risk premium estimates on Page 60, the Graham-Harvey CFO Survey. Professors Graham and Harvey have been analyzing results of a quarterly survey of CFOs by Duke University since 2001. In each survey, they ask the respondents what they think the expected return over 10-years on the S&P 500 will be. The following chart tracks the average responses from all surveys:<sup>24</sup>

<sup>24</sup> John R. Graham and Campbell R. Harvey, “The Equity Risk Premium in 2018.” [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3151162](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3151162) accessed 02/02/2019.

*Graham-Harvey: The equity risk premium in 2018*



1 Since 2010 the expected total return on the S&P 500 reported by CFOs has hovered  
 2 around 6 percent. Note well that this not the expected *risk premium*, it is the ex-  
 3 pected *total return*. Assuming an efficient market, the expected return will equal the  
 4 required return, and the expected *risk premium* can be implied by subtracting the  
 5 current “risk-free rate” from the expected total return. Graham and Harvey use the  
 6 10-year Treasury bond rate as the risk-free rate. In the most recent survey the average  
 7 expected 10-year total return on the S&P 500 was 6.79 percent while the 10-year  
 8 Treasury bond rate was 2.72 percent, leaving an implied risk premium of 4.42 per-  
 9 cent. The following excerpt from their Table 1 summarizes results from the most re-  
 10 cent quarter and averages for all quarters:

Table 1  
**Summary statistics based on the responses from the  
 71 CFO Outlook Surveys from June 2000 to Sept 2017 (Maximums in red, minimums in green)**

A. By quarter

#	Survey date	Survey quarter	Number of survey responses	10-year bond yield	Total market return forecast	Average risk premium	Median risk premium	Disagreement (standard deviation of risk premium estimates)	Average of individual standard deviations	Average of individuals' worst 10% scenario	Average of individuals' best 10% scenario	Skewness of risk premium estimates	Average of individuals' asymmetry	% who forecast negative excess return
71	12/7/2017	2017Q4	212	2.37	6.79	4.42	3.63	3.49	3.80	0.85	10.97	2.06	-0.66	4.25
	Average of quarters		351	3.48	7.11	3.63	3.39	2.81	3.56	1.46	10.90	1.58	-0.48	5.73
	Standard deviation			1.20	1.13	0.58	0.62	0.38	0.33	1.29	0.81	0.66	0.14	3.03

1 Admittedly, the CFO based estimates are lower than what a majority of indi-  
2 vidual analysts and academics are projecting (based on the larger survey results of  
3 Fernandez, et al). But it is not the only *informed* estimate of the expected annualized  
4 10-year return on the S&P 500 to fall this far on the low side of the bell curve. The  
5 most recent forecast of the annualized 10-year return on the S&P 500 by the Society  
6 of Professional Forecasters conducted by The Federal Reserve Bank of Philadelphia is  
7 even lower than the 6.79 percent expected by CFOs, 6 percent:<sup>25</sup>

*Survey of Professional Forecasters*

Median Long-Term (10-Year) Forecasts (%)		
	First Quarter 2017	Current Survey
Real GDP Growth	2.45	2.15
Productivity Growth	1.60	1.50
<u>Stock Returns (S&amp;P 500)</u>	6.00	6.00
Rate on 10-Year Treasury Bonds	3.86	3.70
Bill Returns (3-Month)	2.50	2.75

8 I would not suggest that the Commission use these lower estimates of expected  
9 returns on the S&P 500 to estimate the risk premium. I *would* suggest that they sup-  
10 port the reasonableness of an expected overall market return suggested by the Fer-  
11 nandez, et al, survey, i.e., 8.2 percent, and the associated estimate of the market risk  
12 premium of 5.4 percent. I would further suggest that Mr. Hevert's estimate of the  
13 overall market return, 15 percent, and corresponding risk premium of 12 percent, are  
14 simply not even in the realm of reasonableness and should be ignored.

15 **Q. BEFORE LEAVING YOUR DISCUSSION OF MR. HEVERT'S CAPM ANAL-**  
16 **YSIS, WHAT ARE YOUR CONCERNS ABOUT THE BETA COEFFICIENTS**

---

<sup>25</sup> Survey of Professional Forecasters, First Quarter 2018, February 9, 2018. Electronic copy available at: <https://www.philadelphiafed.org/-/media/research-and-data/real-time-center/survey-of-professional-forecasters/2018/spfq118.pdf> accessed: 9/19/2018.



1       **HE USES?**

2       **A.**    Mr. Hevert describes the beta coefficients he used on Pages 32-33 of his Direct Testi-  
3       mony:

4                As shown in Exhibit \_\_\_(RBH-1), Schedule 5, I considered the Beta coefficients  
5                reported by Bloomberg and Value Line. Both services adjust their calculated  
6                (or “raw”) Beta coefficients to reflect the tendency of the Beta coefficient to re-  
7                gress to the market mean of 1.00, although Value Line calculates the Beta coef-  
8                ficient over a five-year period, whereas Bloomberg’s calculation is based on  
9                two years of data.

10              The use of betas adjusted this way is a common but not universal practice in invest-  
11              ment finance. My concern is that there is evidence to suggest that “the tendency of the  
12              Beta coefficient to regress to the market mean of 1.00” does not apply to public utili-  
13              ties and thus the adjustment is improper and leads to an overestimate of the cost of  
14              equity for a public utility when using the CAPM methodology.

15              The following is from the abstract of a 1998 University of Oklahoma Ph.D. dis-  
16              sertation by Michael Kent Knapp entitled "Observations of the Empirical Capital As-  
17              set Pricing Model in Estimating a Public Utility's Cost of Equity Capital:"

18                    The literature of the Capital Asset Pricing Model describes a fundamental bias  
19                    in its empirical application. The most notable problem is that the Empirical  
20                    Capital Asset Pricing Model which overestimate the returns of high-beta stocks  
21                    and underestimate the returns of low-beta stocks. This has proven problem-  
22                    atic in estimating public utilities' stocks expected returns in regulatory pro-  
23                    ceedings. The literature prescribes the use of a shift parameter, alpha, to cor-  
24                    rect for this bias. This dissertation aims to find the value of alpha and its sta-  
25                    tistical significance. In contrast to the literature, the following empirical analy-  
26                    sis finds that alpha is statistically insignificant [for public utilities].<sup>26</sup>

27  
28              I added the “for public utilities” for clarification. If the “alpha” parameter of the secu-  
29              rity market line for public utilities is not significant, there is no basis for “adjusting”  
30              the betas of public utilities. The finding reported in this dissertation supports what

---

<sup>26</sup> <https://shareok.org/handle/11244/5726> accessed 9/19/2018.

1 has long been observable by casual empiricism about public utility betas: they do not  
2 tend to revert to the norm for the market as a whole (which is a beta of 1.0). As long  
3 as I can remember, Value Line betas for public utilities have averaged about 0.75, or  
4 between 0.70 or 0.80. Individual public utility betas fluctuate around this industry  
5 average, but the industry average shows no tendency to regress toward 1.0. This indi-  
6 cates that in a CAPM estimate of the cost of equity for public utilities that we should  
7 give preference to unadjusted betas.

8 Exhibit \_\_\_\_\_ (BLC-1), Schedule 7, shows beta coefficients from Value Line,  
9 Reuters, and Zacks for the sample of companies being used to estimate a fair rate of  
10 return for OTP in this proceeding. I show two values for Value Line: the adjusted  
11 beta, and the adjusted beta "de-adjusted." Value Line does not publish "raw" betas,  
12 but it is believed that the following formula describes the Value Line adjustment pro-  
13 cess:

$$\text{Adjusted beta} = 0.67(\text{Raw beta}) + 0.35(1.0)$$

14 I have used this formula to "de-adjust" the published Value Line betas, with the re-  
15 sults in Column C.<sup>27</sup> The salient results are the sample medians at the bottom of  
16 Schedule 7:

18	Value Line Adjusted	0.70
19	Value Line De-adjusted	0.52
20	Reuters Raw	0.26
21	Morningstar Raw	0.27

22 Using the "back of the napkin" CAPM estimates performed earlier (on Page 62) but

---

<sup>27</sup> The formula is presented in Michael C. Ehrhardt & Eugene F. Brigham, *Financial Management Theory and Practice*, 13th Edition (2010), p. 950.

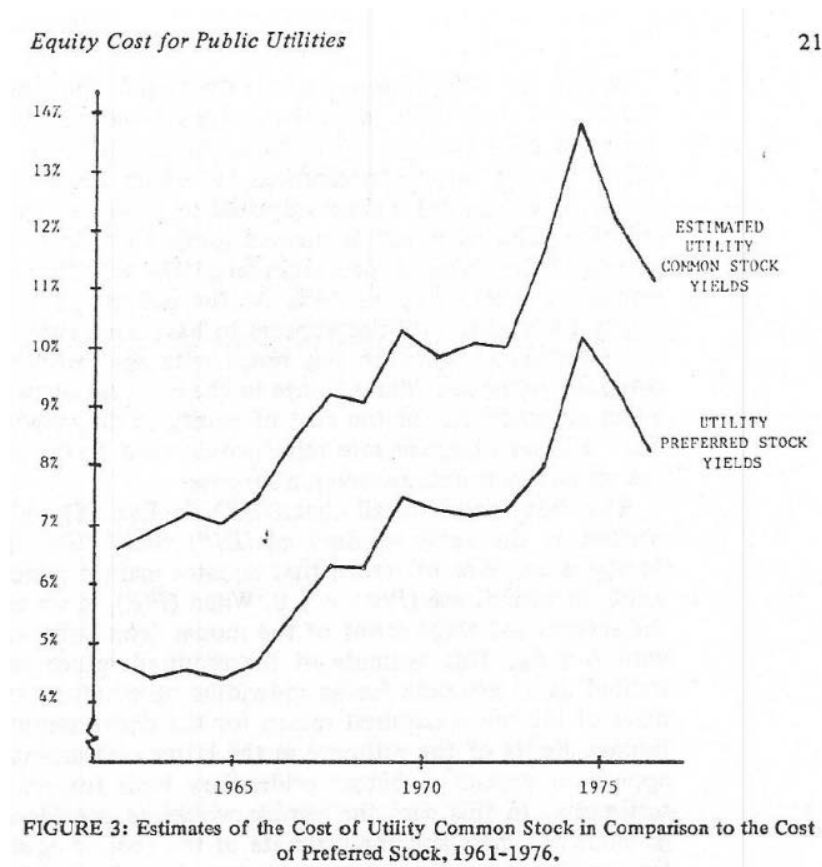
1 substituting 0.52 (the Value Line de-adjusted beta) for 0.70 we get:

2 
$$k = 3\% + (0.52 \times 7.2\%) = 3\% + 3.74\% = 6.74\%$$

3 Using a "raw" beta of 0.27 we get:

4 
$$k = 3\% + (0.27 \times 7.2\%) = 3\% + 1.94\% = 5.94\%$$

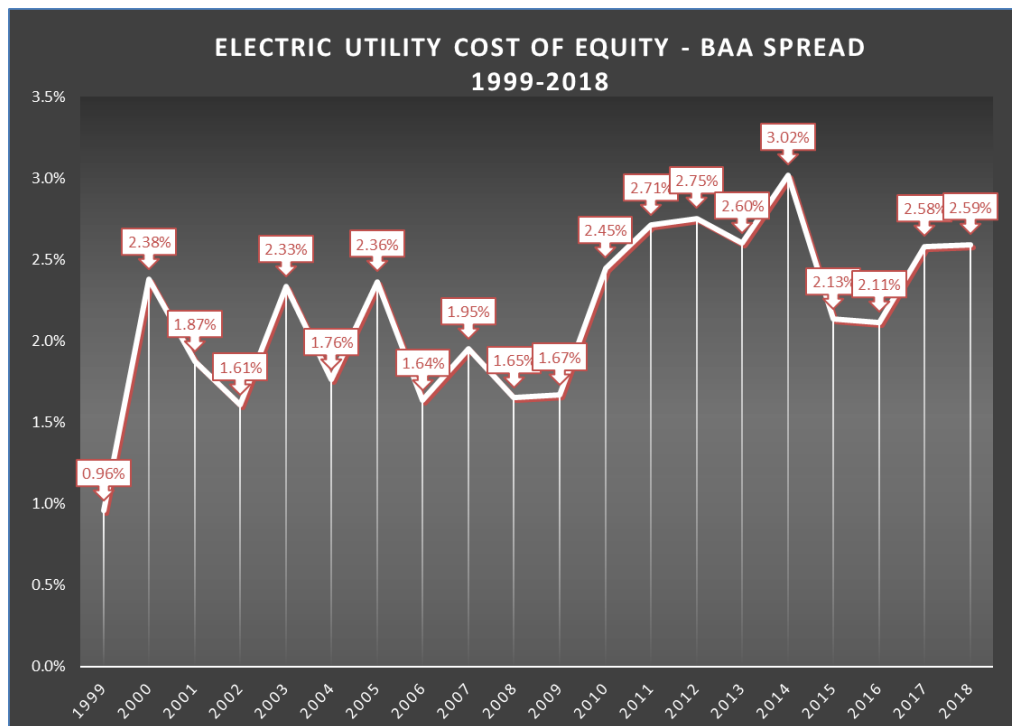
5 If 5.94 percent seems implausibly low for a cost of equity estimate for electric  
6 utilities at the present time, 6.74 percent certainly is not. The following image is a  
7 chart comparing estimates of the cost of equity for public utilities versus utility pre-



8 ferred stock yields published in my 1979 article in the *Journal of Business Research*:

9 The use of preferred stock is no longer widespread, but a comparison of estimates of  
10 the cost of equity to corporate BAA bond yields shows a similar spread:

11



1 I have long – ever since my analysis of equity capital costs in the late 1970’s – casually  
2 observed a spread between utility cost of equity and utility or corporate BAA debt of  
3 about 200 basis points. In the chart tracking this spread for 1999-2018, it hovers  
4 around 200 basis points until 2008. It creeps upwards, hovering around 250 basis  
5 points, after the 2008-2009 recession. This is not likely caused by an increase in risk  
6 differential raising the cost of equity relative to corporate debt, but to the effect of  
7 Federal Reserve monetary policy pushing down interest rates.

8 In any case it suggests that a CAPM estimate of the cost of equity of 6.74 per-  
9 cent is not out of line with historical spreads between the cost of equity and BAA bond  
10 yields. Before I leave this topic and move on, I have one other point I would like to ad-  
11 dress in this regard. Mr. Hevert eliminated three companies from his DCF analyses  
12 because he did not consider their results reasonable. These were El Paso Electric,  
13 IDACORP, and Northwestern. Using the results shown on his Schedule 1, Page 2, the  
14 mean estimates of the cost of equity for these three firms were 7.59 percent, 6.23

1 percent and 6.99 percent respectively, for an average of 6.94 percent. These are *com-*  
2 *pletely reasonable* returns on equity for an electric utility in the current market envi-  
3 ronment. For the past few months BAA yields have hovered around 4.8 percent. A  
4 return on equity of 6.94 percent would provide a risk premium for utility equity of  
5 214 basis points. The average spread in the chart above for the two decades is 222 ba-  
6 sis points, with a standard deviation of 0.44 percent. The current spread of 214 basis  
7 points is a completely reasonable reward for the risk associated with utility equity vis-  
8 à-vis corporate bonds. Keep in mind that utility equity, using a Value Line de-ad-  
9 justed beta of 0.52, only has about *half* the systematic risk of the average (beta = 1.0)  
10 common stock. Mr. Hevert's belief that a return on equity for a public utility of less  
11 than 8 percent is unbelievable can only be explained by a lack of understanding what  
12 is an adequate premium for equity risk in current (and past) capital markets. The  
13 Commission could well dispense with all of his testimony *and all of mine* and simply  
14 set the allowed rate of return on equity for utilities in its jurisdiction at 200 basis  
15 points over the corporate BAA yield and utility investors would receive a rate of re-  
16 turn on equity that is fair and reasonable in relation to what they can expect to earn  
17 on investments of comparable risk. I have shown that to be the case from two long-  
18 term studies, one for the years 1961-1976 and more recently 1999-2018.

19 I will just offer one more argument on this point. *Assume* for the moment that  
20 utilities were to earn 200 basis points over the yield on corporate BAA bonds. The  
21 present yield spread between Corporate BAA and the 10-Year Treasury bond is about  
22 200 basis points, so we are implicitly assuming a yield for utilities of 400 basis points  
23 over the risk-free rate. Further assume that the total expected market return is 8.2  
24 percent based upon the abundant evidence presented above. Presently the 180-day

1 moving average of the 10-Year Treasury bond is 2.9 percent. A return of 400 basis  
 2 points above the 10-Treasury bond would be 6.9 percent. A return on the market as a  
 3 whole of 8.2 percent yields a premium relative to 2.9 percent of 530 basis points. Di-  
 4 viding 400 by 530 we have an *implied beta coefficient* of 0.75. Even using Value  
 5 Line’s adjusted betas this indicates that 200 basis points above the yield of Corporate  
 6 BAA provides a perfectly reasonable premium for risk in today’s capital market. And  
 7 then to turn all of this on its head, suppose the Commission were to follow Mr. He-  
 8 vert’s recommendation and allow a 10.3 percent return on equity. That would pro-  
 9 duce a premium of 740 basis points over the 10-year Treasury bond rate. Dividing  
 10 740 by 530 would yield an implicit beta coefficient of 1.40. Utilities are not that risky,  
 11 and thus 10.3 is not a fair and reasonable rate of return on equity in relation to risk.

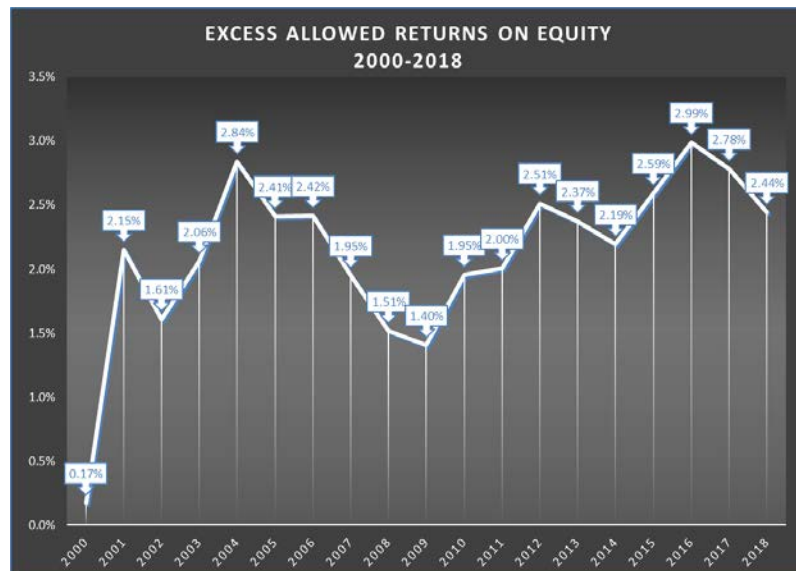
12 So, a return on equity of 200 basis points over the corporate BAA yield pro-  
 13 duces a *reasonable* return on relation to risk (as measured by beta). But Mr. Hevert’s  
 14 recommended ROE is a return far above anything reasonable in relation to risk. His  
 15 CAPM estimates are even higher and amount to implied betas of 1.44 to 1.93:

Figures in parentheses are implied betas relative to an 8.2% overall market cost of equity and 2.9% risk-free rate.	<i>Bloomberg Derived Market Risk Premium</i>	<i>Value Line Derived Market Risk Premium</i>
<i>Average Bloomberg Beta Coefficient</i>		
Current 30-Year Treasury (3.05%)	10.52% <b>(1.44)</b>	10.97% <b>(1.52)</b>
Near Term Projected 30-Year Treasury (3.42%)	10.89% <b>(1.51)</b>	11.33% <b>(1.59)</b>
<i>Average Value Line Beta Coefficient</i>		
Current 30-Year Treasury (3.05%)	12.22% <b>(1.76)</b>	12.76% <b>(1.86)</b>
Near Term Projected 30-Year Treasury (3.42%)	12.58% <b>(1.83)</b>	13.13% <b>(1.93)</b>

16  
 17 The bottom line is that Mr. Hevert’s CAPM estimates do not provide the Commission  
 18 with any viable information on what is a reasonable return on equity in relation to  
 19 risk.

1 **Q. ARE THERE ANY PROBLEMS OR ISSUES WITH RESPECT TO MR. HE-**  
2 **VERT’S OTHER “RISK PREMIUM” APPROACH WHICH HE CALLS A**  
3 **“BOND YIELD PLUS RISK PREMIUM APPROACH?”**

4 **A.** Yes, there are. First and most important is the proxy that Mr. Hevert uses for the risk  
5 premium: allowed returns on equity. This lands us squarely back with the issue al-  
6 ready discussed at length about the abundant evidence of excess returns from histori-  
7 cal earned rates of return on equity reflected in market-to-book ratios. The evidence  
8 is clear that *earned* rates of return in the past were producing excess returns, so that  
9 using earned rates of return to imply a risk premium would overstate the actual risk  
10 premium. Now we have Mr. Hevert using allowed rates of return to calculate an im-  
11 plied risk premium. *That just makes matters worse.* It is well known that earned  
12 rates of return lag allowed rates of return so that utilities often fail to earn their al-  
13 lowed rates of return. Using data from the Edison Electric Institute on allowed rates  
14 of return the following chart depicts the annual excess *allowed* rate of return in rela-  
15 tion to the required rate of return in the previous year<sup>28</sup>:



16

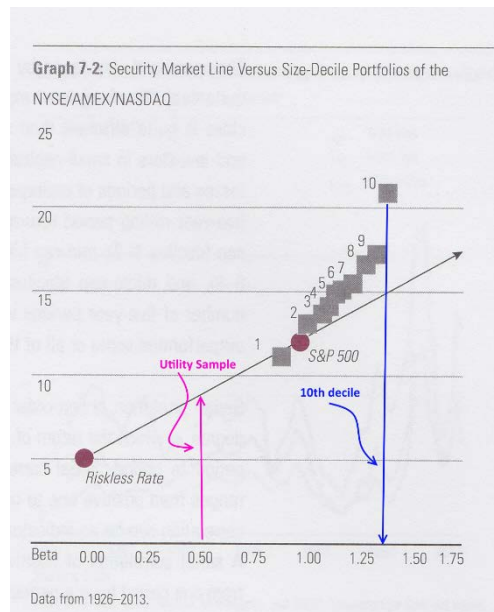
<sup>28</sup> The one-year lag is to recognize “regulatory lag.”

1 The median excess *allowed* return for the past two decades has been 2.2 percent. The  
2 average (and median) “risk premium” since 1999 in Mr. Hevert’s “bond yield plus risk  
3 premium” analysis is 6.2 percent. This is the average spread between allowed returns  
4 and the 30-Year Treasury yield. If we remove the 2.2 percent median *excess allowed*  
5 return we have an implied equity risk premium of 400 basis points relative to a “risk-  
6 free rate.” With the 30-Year Treasury yield presently about 3.0 percent, the resulting  
7 cost of equity estimate is 7.0 percent (3.0% plus the 4% “risk premium”). This is right  
8 in line with the other estimates of the cost of equity in my affirmative testimony and  
9 in the techniques applied by Mr. Hevert when appropriate adjustments are made.

10 **C. Size Premium**

11 **Q. MR. HEVERT DISCUSSES EVIDENCE FOR A SIZE PREMIUM FOR**  
12 **SMALL COMPANIES. IS THERE GOOD EVIDENCE FOR THIS?**

13 **A.** No. With respect to public utilities there is none whatsoever. What evidence that does  
14 exist, for unregulated “small cap” equities, is disputed. The following chart illustrates  
15 the purported evidence upon which the claim for a size effect has been thought to ex-  
16 ist:





1 When ex post equity returns are grouped into deciles based upon market capitaliza-  
2 tion, the smallest companies have, in the past, seemed to have higher returns than  
3 can be explained on the basis of their systematic risk (the risk measured by a stock's  
4 "beta coefficient"). This is illustrated in the chart above by the squares representing  
5 returns by size classes showing a steeper pattern than the straight line that represents  
6 the theoretically correct relationship between risk and return. The distance between  
7 the straight line and the return represented by a size class's diamond is the supposed  
8 "size premium." Mr. Hevert cites evidence from the 2017 edition of Duff & Phelps'  
9 *Valuation Handbook* of a size premium of 0.98 percent for the companies that make  
10 up his proxy group based on their median capitalization putting them into the 4<sup>th</sup> dec-  
11 ile. Otter Tail Corporation is much smaller, falling into the 10<sup>th</sup> decile, which is pur-  
12 ported to have a 5.59 percent size premium. The following chart summarizes the data  
13 that Mr. Hevert is using:

<u>Decile</u>	<u>OLS Beta</u>	<u>Size Premium (%)</u>
1-Largest	0.92	-0.35
2	1.04	0.61
3	1.11	0.89
4	1.13	0.98
5	1.17	1.51
6	1.17	1.66
7	1.25	1.72
8	1.30	2.08
9	1.34	2.68
10-Smallest	1.39	5.59

14  
15           Whatever merit these results have, and as I stated above the matter is dis-  
16 puted, *they do not apply to public utilities*. Note how in this chart that the companies  
17 in the 10<sup>th</sup> decile have a beta coefficient of 1.39. *This is not the case with utilities*,  
18 which typically have betas below one. I have illustrated the issue here in the chart on

1 Page 76 by showing where utilities in the sample under consideration in this case fall  
2 on the security market line. Just as important, the size premium is an “alpha” factor  
3 and so it is relevant to recall here the dissertation cited above on Page 69 which found  
4 that public utilities do not have statistically significant alpha coefficients. Since “al-  
5 pha” may not be as familiar to some as the “beta” coefficient is, “alpha” is simply the  
6 excess return on an equity investment that is not explained by its systematic risk. In  
7 CAPM, if markets are efficient, alpha is expected to be zero. The size premium is an  
8 attempt to explain what appear to be systematic excess returns (“alpha”) for small  
9 firms that are not accounted for by beta risk. But if public utilities do not have statisti-  
10 cally significant alphas, then there is no CAPM excess return to attribute to something  
11 like a size premium. So whatever merit the size effect may have for small capitaliza-  
12 tion companies that are unregulated, it has no merit in the case of public utilities.

13 Before leaving this, I will offer my explanation for why there is no size effect for  
14 public utilities. Systematic risk, measured by beta, is affected by the earnings reten-  
15 tion rates and payout ratios that companies employ. Public utilities typically pay out a  
16 large fraction – about 65 percent on average – of their earnings as dividends. This,  
17 along with the relatively predictable earnings stream utilities generate, leads to their  
18 having beta coefficients below 1.0, and well below 1.0 on an adjusted or “raw” basis.  
19 Small capitalization unregulated companies on the other hand often, and in fact usu-  
20 ally, pay no dividends and reinvest all of their earnings. Such companies trade on the  
21 basis of expected price appreciation driven entirely by highly unpredictable earnings  
22 and so their stock prices are more typically extremely volatile and are stocks with high  
23 beta coefficients. If there are in fact statistically significant “size effects” in market re-  
24 turns this is most likely due to survivorship bias, a bias that reflects that the high

1 returns of the companies in the 10<sup>th</sup> decile are the returns of the small capitalization  
2 firms that survive and omit the returns of the companies that have gone out of busi-  
3 ness. In any case, the literature on the size effect suggests a lack of agreement on what  
4 it means and there is even evidence that if it once existed it does not exist any longer.

5 **D. Flotation Costs**

6 **Q. MR. HEVERT APPLIES AN ADJUSTMENT OF 0.13% TO HIS ESTIMATES**  
7 **OF THE COST OF EQUITY FOR FLOTATION COSTS. IS THIS ADJUST-**  
8 **MENT REASONABLE?**

9 **A.** No, it is not. The formula that Mr. Hevert uses *is* suggested in some financial manage-  
10 ment textbooks as a way to recover flotation costs, but the formula presumes that new  
11 stock is being issued every year. In response, some may contend that this does not  
12 matter but it does. On my Exhibit\_\_\_\_(BLC-1), Schedule 8, I show mathematically  
13 that the appropriate adjustment is “ $zf$ ” where  $f$  is the flotation cost percentage and  $z$  is  
14 the rate of growth in new shares. I have no problem with Mr. Hevert’s estimate of  
15 3.60 percent shown on his Schedule 2 as the flotation cost percentage. Value Line is  
16 projecting an increase in the number of shares for OTTR from 2018 to 2022 (the mid-  
17 dle of its 2021-2023 forecast range) of 4 million shares, from 40 million to 44 million.  
18 This works out to a compound annual growth rate of 1.9 percent. From 2004 to 2018  
19 (the time frame used by Mr. Hevert in his Schedule 2 to estimate average flotation  
20 costs for OTTR) Value Line records an historical increase in the number of shares  
21 from 29 million to 40 million, a compound annual increase of 2.3 percent. If we use  
22 the projected rate of growth of 1.9 percent, the required adjustment would be 7 basis  
23 points; if we use the historical projected rate of growth, the required adjustment

1 would be 9 basis points.<sup>29</sup> Thus, 13 basis points is higher than what is necessary to re-  
2 cover flotation costs. Were I recommending a rate of return on equity equal to the  
3 cost of equity, I would recommend a flotation cost allowance of 7 to 9 basis points.  
4 But since I am recommending a rate of return on equity that is substantially greater  
5 than the cost of equity, there is no need for a specific flotation cost adjustment. My  
6 recommended rate of return on equity will more than compensate OTTR and its in-  
7 vestors for flotation costs.

8 **E. Tax Cuts & Jobs Act (TCJA)**

9 **Q. WHAT ARE YOUR CONCERNS WITH MR. HEVERT’S THOUGHTS**  
10 **ABOUT THE IMPLICATIONS OF THE TAX CUTS & JOBS ACT FOR A FAIR**  
11 **AND REASONABLE RETURN ON EQUITY?**

12 **A.** Mr. Hevert begins with this dire assessment:

13 Since shortly before the TCJA was signed, electric utilities (as measured by my  
14 proxy group) have significantly underperformed the overall market. As Chart 7  
15 (below) demonstrates, from November 1, 2017 through February 28, 2018 the  
16 S&P 500 gained about 5.21 percent in value. In stark contrast, my proxy group  
17 lost about 12.95 percent, underperforming the overall market by more than  
18 18.00 percentage points.<sup>30</sup>

19 If this was indeed a market reaction to the TCJA, the market has since shrugged off  
20 any concern about the TCJA. Since February 1 of last year, every single utility in Mr.  
21 Hevert’s proxy group has *outperformed* the market. Before I show that, however, I  
22 want to express a caveat. Over any long period of time, we should *expect* the stocks in  
23 Mr. Hevert’s proxy group to *underperform* the market. That is a fundamental “take  
24 away” from their having stock betas below 1.0. So, it will take more than evidence of  
25 “underperforming” the market to demonstrate that the TCJA has had a significant or

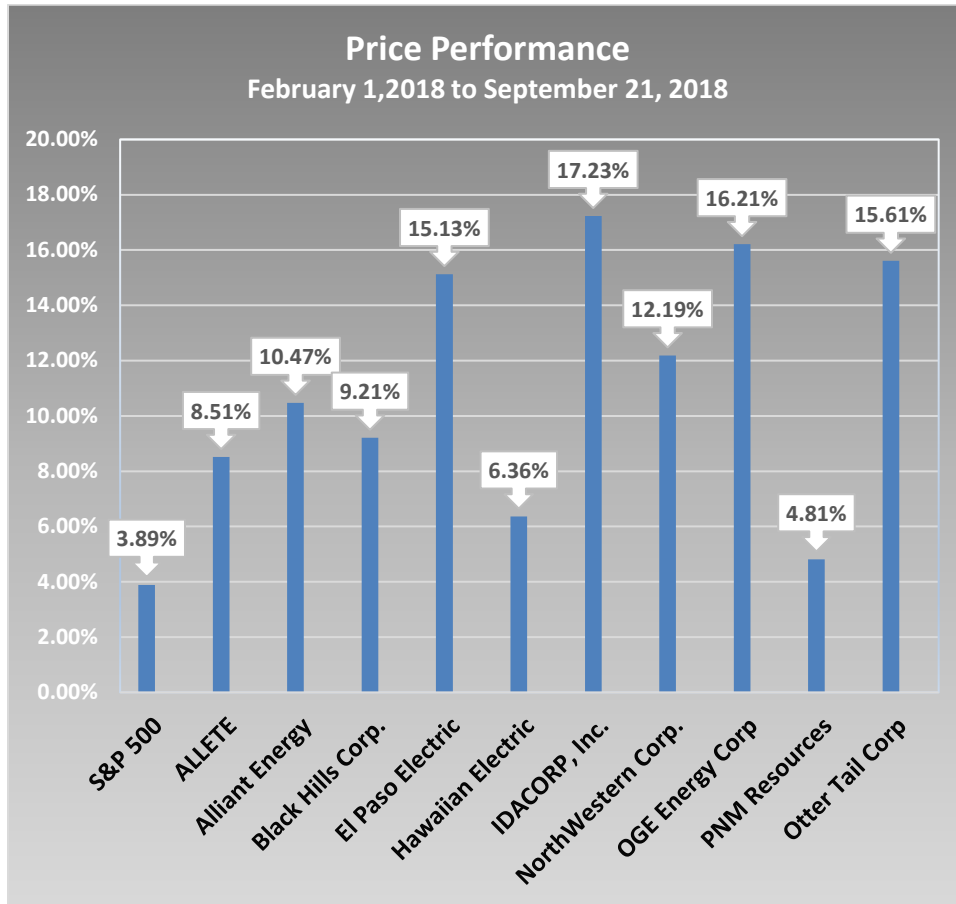
---

<sup>29</sup> 0.036 x 0.019 = 0.000684  
0.036 x 0.023 = 0.000897

<sup>30</sup> Hevert Direct, Page 49, Lines 20-24.

1 meaningful impact upon their performance.

2 The following chart shows the performance of the S&P 500, the electric utili-  
3 ties in the proxy group, and OTTR since February 1, 2018, through September 21,  
4 2018:<sup>31</sup>



5

<sup>31</sup> The relative performance of Otter Tail and most of the comparable companies relative to the S&P 500 has only improved since September of last year. Exhibit \_\_\_ (BLC-1), Schedule 9, is a performance chart updating the time period under consideration from February 1, 2018 through January 29, 2019. In the chart below the spread between OTTR and the S&P 500 through September 21, 2018 was 11.72 percent (15.61% - 3.89%). Through January 29, 2019, the spread increased to 21.26 percent (14.81% minus -6.45%). The increase in the spread is primarily due to an overall decline in the S&P 500 since September of last year that did not have a comparable impact upon OTTR or most of the comparable companies. At the end of January 2019, OTTR and most of the comparable companies were in about the same situation as in September 2018, and did not experience the recent market downturn experienced by the market as a whole.

1           There is no evidence that the TCJA is having a measurable impact on the cost of eq-  
2           uity for OTTR or the proxy group we are using to estimate the cost of equity.

3   **Q.   BUT MR. HEVERT CLAIMS THAT THE TCJA IS IMPACTING UTILITY**  
4   **VALUATIONS TO SUCH AN EXTENT THAT “WE SHOULD RECOGNIZE**  
5   **THE MEAN DCF RESULTS LIKELY ARE NOT RELIABLE INDICATORS**  
6   **OF THE COMPANY’S COST OF EQUITY.”<sup>32</sup> WHAT IS YOUR RESPONSE?**

7   **A.**   When Mr. Hevert wrote this, dividend yields were rising. Since then they have fallen  
8           as suggested by the strong price performance. Mr. Hevert also wrote:

9                   the results of the DCF model should be viewed with caution when they change  
10                  significantly over short periods of time, because the model assumes that cur-  
11                  rent market conditions will exist on an ongoing basis.<sup>33</sup>

12           To assume “that current market conditions will exist on an ongoing basis” is not just a  
13           feature of DCF methodologies, it is a feature of all methodologies used to estimate  
14           cost of equity. But the DCF approach is not as frail as Mr. Hevert wants us to believe.  
15           One way we deal with this is by looking at dividend yields over various lengths of time  
16           rather than use the latest “spot” yield. In the CAPM approach, with the risk-free rate  
17           measured by some long-term government bond yield, we have the same issue, and  
18           there too we can look at yields over various periods of time rather than rely on the lat-  
19           est number. These practices go a long way to making DCF and other cost of equity  
20           methodologies less sensitive to sudden changes in share valuations. All that said, sig-  
21           nificant movements in dividend yield most likely do *not* signal a change in the cost of  
22           equity but a change in investor expected growth rates. If, for instance, dividend yields  
23           suddenly rise because of changes in valuation fundamentals, say by something like  
24           the TCJA, that should be accompanied in short order by *declines* in the expected

---

<sup>32</sup> Hevert Direct, Page 62, Lines 1-2.

<sup>33</sup> Loc cit., Lines 4-6.

1 growth rate. We cannot look just to the dividend yield to divine what effect the TCJA  
2 might be having on utility capital costs. In looking over the Value Line reports for the  
3 companies in Mr. Hevert's proxy, I do not see any indication that expected growth  
4 rates are expected to take a hit from the TCJA. I think that the TCJA is a non-issue  
5 with respect to cost of equity at the present time.

6 **Q. WHAT ABOUT CONCERNS THAT THE TCJA MIGHT NEGATIVELY IM-**  
7 **PACT CASH FLOW?**

8 **A.** Rating agencies have expressed some concerns about this impacting the credit quality  
9 of corporate debt but have also acknowledged that this will be company specific and  
10 may not seriously impact all electric utilities to the same degree. Rather than use  
11 something like this as justification for a higher rate of return on equity, a more appro-  
12 priate and measured response is to consider whether it (e.g., TCJA) will negatively  
13 impact utilities' capital structure. Specifically, in the case of OTC there is no indica-  
14 tion that the effect of the TCJA will negatively impact its capital structure.

15 **VIII. CONCLUSIONS AND RECOMMENDATIONS**

16 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.**

17 **A.** The purpose of my testimony is to provide the Commission with a recommendation  
18 as to what would be a fair and reasonable rate of return on equity for Otter Tail  
19 Power. The aim in being "*fair and reasonable*" is to strike a balance between the com-  
20 peting interests of the Company's customers and ratepayers and its shareholders and  
21 investors. From the point of view of the Company's customers and ratepayers the re-  
22 turn should be as low as possible, consistent with the ability of Otter Tail Power to  
23 continue to provide safe and reliable electric service. Implicit in this is a need to en-  
24 sure that Otter Tail Power can attract the capital necessary to provide safe and relia-  
25 ble service. By longstanding practice and legal precedent, the interest of Otter Tail

1 Power's shareholders and investors is satisfied if the return on rate base and its con-  
2 stituent elements are commensurate with the returns that investors could expect to  
3 earn elsewhere on investments of comparable risk.<sup>34</sup> And by equally longstanding  
4 practice and legal precedent, utility regulation has recognized that what investors  
5 could expect to earn elsewhere on investments of comparable risk is a *market-based*  
6 *rate of return*.

7 As usual, in this case the issue of what is a fair and reasonable rate of return  
8 from the investor point of view is focused upon return on equity. And as if this were  
9 not enough, I have put before the Commission for its consideration the implication of  
10 utility market-to-book ratios in determining the cost of equity capital and the return  
11 that OTP's investors could expect to earn *on investments of comparable risk*. Though  
12 I discussed this at length earlier in my testimony, I would like to drive home the im-  
13 portance of considering market-to-book ratios in light of the accepted standard of  
14 "what can be earned on investments of comparable risk." The Company's witness, Mr.  
15 Hevert, has proposed the use of 9 companies as the standard in this case for "invest-  
16 ments of comparable risk", and I have accepted that group of companies as an appro-  
17 priate standard. So, the question is simply "*what return could OTP's investors expect*  
18 *to earn if they sold their shares in OTTR and invested in the shares of the nine com-*  
19 *parable companies?*" That's the question of the day. *And this question cannot be*

---

<sup>34</sup> This is *not* to say that investors are *entitled* under all circumstances to the opportunity to earn a return commensurate with the return on they could earn elsewhere on investments of comparable risk. The U.S. Supreme Court has recognized that under some circumstances that the balancing of customer and investor interests might well justify a return lower than this as "fair and reasonable." I discussed this at length in the 1991 *Energy Law Journal* article I co-authored (as senior author). But nothing in this case warrants considering a return less than what investors could earn elsewhere on investments of comparable risk.



1        *answered correctly without considering the implications of market-to-book ratios.*<sup>35</sup>

2            As shown on my Exhibit \_\_\_\_\_ (BLC-1), Schedule 5, Columns I and J, using  
3        Value Line estimates and projections, the expected return on *book* equity for the sam-  
4        ple of comparable returns is just a little bit under 9.7 percent. The question of the mo-  
5        ment is “What return on equity would OTTR investors earn if they sold their shares  
6        and bought a ‘portfolio’ of these comparable companies?” Could they earn the 10.3  
7        percent that Mr. Hevert says is “fair and reasonable?” No. They could not even earn  
8        the (approximately) 9.7 percent that these companies are expected to earn on their  
9        book equity. Why? *Because they will have to pay market value for the shares they*  
10       *buy; they cannot buy the shares for book value.* That is why understanding the sig-  
11       nificance of market-to-book value is so important.<sup>36</sup> As shown in Column G of my  
12       Schedule 5, the median market to book ratio for the sample of comparable companies  
13       is 1.85. This means that they will pay 85 percent more than book value for the shares  
14       of these comparable companies were they to sell their OTTR stock and buy the hypo-  
15       thetical portfolio. Since they are paying 85 percent more than book value, there is no  
16       way they will earn anything close to 9.7 percent from selling their OTTR shares and  
17       buying shares in the comparable companies.

18            The only question that remains is *how much less* than 9.7 percent will they  
19        earn? That question is answered with the “XROE” formula ( $D/B - D/P$ ). In Columns  
20        F and E of my Schedule 5,  $D/B$  is 5.89 percent and  $D/P$  is 3.26 percent, producing an

---

<sup>35</sup> The *emphasis* in using italics here is directed toward those, like Mr. Hevert, who would claim that market-to-book ratios do not matter, or cannot be used to make inferences regarding expected returns in relation to risk. The following two paragraphs show clearly why market-to-book ratios matter.

<sup>36</sup> It is also the hill on which dies any argument that market-to-book ratios are irrelevant to a determination of the relationship between  $r$  (return on book equity) and  $k$  (cost of equity).

1 XROE of 2.6 percent (rounding downwards from 2.64 percent). In other words, 2.6  
2 percentage points of the 9.7 percent return on *book* equity is the excess return driving  
3 the market-to-book ratio to 1.85. Thus, the return on *market* value that OTTR inves-  
4 tors could expect to earn selling their shares and investing in the comparable compa-  
5 nies is only 7.1 percent (9.7% - 2.6%), not the 9.7 percent return on book value.<sup>37</sup>

6 I have demonstrated with abundant evidence that this – 7.1 percent – is a rea-  
7 sonable estimate of what investors could expect to earn were they to sell their shares  
8 in OTTR and invest in the comparable companies. Below I repeat the table shown on  
9 Page 4 of my testimony summarizing the evidence that I have presented:

Methodology	Result	Testimony Page Reference
Constant Growth Discounted Cash Flow (DCF)	7.71%	15
Non-Constant Growth Discounted Cash Flow (DDM)	7.05%	17
Market-to-Book/Excess Returns Analysis (XROE)	7.03%	29
Capital Asset Pricing Model (CAPM)	6.74%	71
Bond Yield Plus Risk Premium	7.00%	76

10 In addition to this direct evidence, I have demonstrated that a return on equity on  
11 this order of magnitude is reasonable in relation to the abundance of evidence show-  
12 ing an overall expected market return of about 8.2 percent (see Page 59 and following  
13 of my testimony).

14 In the final analysis I believe that the evidence presented is clear, and even be-  
15 yond reasonable doubt: the rate of return on equity requested by OTP and recom-  
16 mended by its rate of return witness – 10.3 percent – is unjust and unreasonable. It  
17 would not just perpetuate a market-to-book ratio on the level enjoyed by the compa-  
18 rable utilities, 1.85, it would drive it even higher. On no reasonable calculus

---

<sup>37</sup> The 7.1 percent result here differs from the 7.03 percent shown in Column K of Schedule 5 only because of rounding.

1       whatsoever can this said to be a return that fairly balances consumer and investor in-  
2       terests. The evidence is clear and indisputable that the fair *market* return on equity is  
3       even less than 9.7 percent. The only question is how much less, and I have shown it to  
4       be on the order of about 7.0 percent. I have acknowledged the problem of trying to re-  
5       duce elevated market-to-book ratios down closer to 1.0 (in my view 1.25 would consti-  
6       tute a proper balance of consumer and investor interests at present), and have recom-  
7       mended a rate of return on equity of 8.0 – 8.5 percent. As shown in Column M of my  
8       Schedule 5, this would still leave the market-to-book ratio at an elevated level of 1.37.  
9       In effect, I am still giving greater weight to the investor interest than to the consumer  
10      interest. But OTP’s request, in effect, gives no weight to the consumer interest at all  
11      and is unreasonably biased in favor of the investor interest.

12             One final observation. I have testified that the economic and legal considera-  
13      tions for a fair and reasonable rate of return are met by allowing the *lowest* reasona-  
14      ble rate of return. A first step in doing this is to define a reasonable *range* of returns.  
15      On the matter of return on equity, I have shown that a reasonable estimate of the cost  
16      of equity at the present time is on the order of about 7 percent. OTP is requesting 10.3  
17      percent. These two “extremes” do not define a reasonable range for return on equity. I  
18      have shown over and over, and over again, that 10.3 is well outside any reasonable es-  
19      timate of the cost of equity in this case. Even 9.7 percent (the approximate average  
20      ROE of the sample of comparable companies) would not be reasonable, because that  
21      would only perpetuate an elevated and unreasonable market-to-book ratio of 1.85.  
22      Not even the rate of return on equity allowed in EL11-019, 9.25 percent, would be a  
23      reasonable return on equity at the present time, first because of the evidence showing  
24      a decline in capital market costs since 2012 (Part IV of my testimony, above), and

1 because it would not move the market-to-book ratio enough to more fairly balance  
2 ratepayer and investor interests. On that, I would repeat here the table showing the  
3 market-to-book ratios associated with various ROE's from Page 43 of my testimony:

<b>Utility Sample</b>					
<b>7.03%</b>	<b>8.25%</b>	<b>8.50%</b>	<b>8.75%</b>	<b>9.25%</b>	<b>10.30%</b>
<b>1.00</b>	<b>1.37</b>	<b>1.45</b>	<b>1.53</b>	<b>1.68</b>	<b>2.00</b>
<b>Otter Tail</b>					
<b>7.03%</b>	<b>8.25%</b>	<b>8.50%</b>	<b>8.75%</b>	<b>9.25%</b>	<b>10.30%</b>
<b>1.00</b>	<b>1.42</b>	<b>1.51</b>	<b>1.60</b>	<b>1.77</b>	<b>2.14</b>

4  
5 I would suggest, respectfully, that in determining a range for a reasonable ROE in this  
6 case, that the Commission will need to start at 9.25 percent *and work down from*  
7 *there* to determine the upper end of a reasonable range. My recommendation is that  
8 the Commission find that the upper end of a reasonable range is 8.50 percent. This  
9 would support a market to book ratio of approximately 1.5 for Otter Tail. More is not  
10 needed, and less would more fairly balance ratepayer interests with the interests of  
11 Otter Tail and its shareholders and investors.

12 **Q. DOES THAT CONCLUDE YOUR TESTIMONY?**

13 **A.** Yes, except for the list of publications on the following page.

14