



**BEFORE THE NORTH DAKOTA PUBLIC SERVICE COMMISSION OF
THE STATE OF NORTH DAKOTA**

In the Matter of the Application of Otter Tail Power Company
For Authority to Increase Rates for
Electric Utility Service in North Dakota
Case No. PU-17-398

**DIRECT TESTIMONY OF
AARON L. ROTHSCHILD**

**ON BEHALF OF THE
NORTH DAKOTA PUBLIC SERVICE COMMISSION ADVOCACY STAFF**

May 18, 2018

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1 **Q. PLEASE STATE YOUR NAME AND ADDRESS.**

2 A. My name is Aaron L. Rothschild and my address is 15 Lake Road, Ridgefield, CT
3 06877.

4 **Q. WHAT IS YOUR OCCUPATION?**

5 A. I am a financial consultant specializing in cost of capital.

6 **Q. WHAT IS YOUR EDUCATION AND EXPERIENCE?**

7 A. I hold a B.A. (1994) degree from Clark University in mathematics and an M.B.A.(1996)
8 from Vanderbilt University. I provided financial analysis in the telecom industry in the
9 United States and Asia Pacific from 1996 to 2001 and I have prepared rate of return
10 testimonies since 2002. See Appendix A for my resume.

11 **Q. HOW IS YOUR TESTIMONY STRUCTURED?**

12 A. First, I show a summary of my cost of capital recommendations for Otter Tail Power
13 Company ("OTP" or "the Company"). Second, I discuss the cost of capital in current
14 capital markets. Third, I discuss why a market-based cost of equity is appropriate and
15 then estimate the cost of equity of the proxy group of electric companies. Fourth, I
16 evaluate firm specific risk factors. Finally, I evaluate the cost of capital testimony
17 provided by OTP's witnesses, Mr. Hevert and Mr. Moug.

18 **I. PURPOSE OF TESTIMONY AND SUMMARY OF RECOMMENDATIONS**

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

20 A. I am testifying on behalf of the North Dakota Public Service Commission Advocacy Staff
21 to provide my recommendation to the Commission in the Otter Tail Power Company rate
22 proceedings regarding the appropriate cost of capital to set rates for the Company's North
23 Dakota electric operations.

1 A. PLEASE SUMMARIZE YOUR RECOMMENDATIONS REGARDING THE
2 APPROPRIATE COST OF CAPITAL FOR OTP.

3 A. Table 1 below shows my cost of capital and equity (“COE”) recommendation for OTP:

	Capital Structure Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	45.86%	5.35%	2.45%
Short-Term Debt	1.64%	3.84%	0.06%
Common Equity	<u>52.50%</u>	8.31%	<u>4.36%</u>
	100.0%		6.88%

4 Source: Schedule ALR 1

5 Q. PLEASE SUMMARIZE HOW YOU DETERMINED YOUR 8.31% COST OF
6 EQUITY RECOMMENDATION.

7 A. To arrive at my recommendation, I applied the following three models to the same proxy
8 group of nine publically-traded electric utilities (“Proxy Group”) used by OTP’s cost of
9 capital witness:

- 10 1. Constant Growth Discounted Cash Flow Model (“DCF”);
- 11 2. Non-Constant Growth DCF;
- 12 3. Capital Asset Pricing Model (“CAPM”).

13 I also applied my CAPM to an additional proxy group of the 28 utility companies in the
14 S&P 500 (“S&P Utility Group”).

1 Because the cost of equity is not a published figure like a bond yield, some
2 interpretation is required to determine the appropriate equity cost rate. My cost of equity
3 recommendation is based on my computation of what the market indicates investors
4 require (return on investment) to provide capital to companies with comparable risk to
5 OTP. In my CAPM, I use current market data, which measures investors' expectations
6 directly. Instead of using interest rate forecasts, historical data or forecasts of any kind,
7 my market-based perspective CAPM uses the forecasts represented in market data (e.g.
8 stock prices, options prices and bond yields). When incorporating published forecasts, I
9 considered the evidence regarding the accuracy of how investors perceive them. This is
10 superior to approaches that use "expert" forecasts instead of what the market actually
11 expects for the following two reasons: 1) the actual cost of equity OTP will pay when
12 they raise money will be determined by the market and not by financial publications and
13 2) evidence supports that predicting changes in capital markets (e.g. interest rates, stock
14 prices) is not an achievable skill.¹

15 I determined that the cost of equity for OTP is 8.31%.² I determined that OTP's
16 cost of equity is less than the Proxy Group (8.5%)³ because OTP's requested capital
17 structure has a significantly higher common equity ratio (52.5%)⁴ than the Proxy Group
18 (47.85%)⁵. A higher common equity ratio means its financial risk is lower. My 8.31%
19 recommendation, after the downward adjustment to account for the Company's requested
20 equity rich capital structure, remains above my highest cost of equity model result

¹ Daniel Kahneman, *Thinking Fast and Slow* (New York: Farrar, Straus and Gigoux, 2011): 215.

² Schedule ALR 2.

³ *Ibid.*

⁴ Schedule ALR 1.

⁵ Schedule ALR 8.

1 of 8.21%⁶. My Constant Growth and Non-Constant Growth DCF results are between
 2 8.00% and 8.21%⁷ and my CAPM result of 8.59%. My cost of equity recommendation
 3 recognizes that long-term interest rates have increased since the stock price data I used to
 4 prepare this testimony.⁸

	Stock Price	
	Average for Year 04/30/18	As of 04/30/18
DCF - CONSTANT GROWTH	8.00%	8.16%
DCF - NON-CONSTANT GROWTH	8.21%	8.17%
CAPM	8.59%	

5 Source: Schedule ALR 2

6 As explained in my general assessment of capital markets (See Section IV below),
 7 market data supports a historically low cost of equity for regulated utility companies like
 8 OTP. The following capital market conditions indicate that my 8.31% cost of equity
 9 recommendation for OTP is consistent with market data:

- 10 • High stock prices relative to book value and earnings;
- 11 • Historically low long-term interest rates;
- 12 • Low credit spreads;
- 13 • High U.S. Capacity Utilization.

⁶ Schedule ALR 2.

⁷ Ibid.

⁸ 30-Year U.S. Treasury bonds have increased from 3.10% to 3.25% from April 30, 2017 to May 17, 2018.

1 **Q. HOW DOES THE COMPANY'S PROPOSED COST OF EQUITY COMPARE TO**
2 **MARKET EXPECTATIONS?**

3 A. As shown in Table 3 below, Mr. Hevert's 10.30%⁹ cost of equity recommendation is
4 considerably higher than my recommended 8.31%. It is also substantially above the
5 return expectations (6.2% - 8.9%) published by major consulting firms, brokerage houses
6 and market data publications. As I will explain further, Mr. Hevert's cost of equity
7 recommendation is above current investor expectations. This is because of flawed models
8 (e.g. DCF, CAPM) and an analytical approach inconsistent with his own stated principles
9 (e.g. the cost of equity is market based). I show in Chart 6 and Chart 11 later in my
10 testimony that these non-market-based forecasts used by Mr. Hevert have been
11 inaccurate. Furthermore, analysts' earnings forecasts used by Mr. Hevert¹⁰ in his DCF
12 analyses have been shown to be overly optimistic.¹¹

13 As explained below, although I have used OTP's requested capital structure to
14 calculate my overall cost of capital recommendation, the request includes a common
15 equity ratio over 400 basis points higher than the Proxy Group. I have lowered my cost
16 of equity recommendation from 8.5% to 8.31% because of this lower financial risk
17 relative to the Proxy Group.

⁹ Mr. Hevert's direct testimony, page 2, lines 9-11.

¹⁰ As shown on Schedule ALR 3, page 2 and 3, I include Value Line's future expected return on book equity and Zacks consensus 5-year EPS growth rate forecast into my analysis but I also consider recent actual returns on book equity because, as the cited study shows, investors know these forecasts can be overly optimistic.

¹¹ Marc H. Goedhart, Rishi Raj and Abhishek Saxena, *Equity Analysts: Still too bullish*, Spring 2010.

TABLE 3: COST OF EQUITY COMPARISON						
	Nominal		Relative Market Risk (Beta)			
			Historical	Market-Based		
OTP Witness Hevert Recommendation (March 2018)	10.30%	[1]	0.75	[2]	N/A	[3]
ND PSC Witness Rothschild Recommendation (May 2018)	8.31%	[4]	0.75	[2]	0.96	[3]
Charles Schwab - Long-term Market Returns (March 2017)						
U.S. Large Capitalization Stocks	6.70%	[5]	1.00		1.00	
U.S. Small Capitalization Stocks	7.50%	[5]	N/A			
McKinsey Global Institute (May 2016)	6.20-8.90%	[6]	1.00		1.00	

Sources:

[1] Mr. Hevert's direct testimony, page 2, lines 9-11

[2] Schedule ALR 3, page 3

[3] 3 of the 9 companies in the Proxy Group.

[4] Schedule ALR 2

[5] <http://www.schwab.com/public/schwab/nn/articles/Why-Market>Returns-May-Be-Lower-in-the-Future>

[6] Diminishing Returns: Why Investors May Need to Lower Their Expectation, McKinsey Global Institute, May 2016, Exhibit A4

Real returns are presented at 4.0 to 5.0 (slow growth scenario) and 5.5 to 6.5 (Growth-recovery scenario).

Adding a 2.20% inflation expectation puts McKinsey's return estimates at 6.6 to 8.7

Nominal cost rate - 2.20% Inflation Expectation based on April 30, 2018 market data (U.S. Department of the Treasury)

2.20% = 30-Year U.S Treasury Yield (3.11%) - 30-Year U.S. Treasury Inflation Protected Bonds (0.91%)

1

2 **Q. MR. HEVERT HAS SUBMITTED SUPPLEMENTAL DIRECT TESTIMONY**
3 **REGARDING MARKET DEVELOPMENTS IN REACTION TO THE TAX CUTS**
4 **AND JOBS ACT OF 2017 ("TCJA"). HOW DO YOU RESPOND?**

5 A. Mr. Hevert claims in his supplemental direct testimony that the TCJA increases cash
6 flow-related risks for OTP¹², supporting an ROE at the high end of his model cost of
7 equity model results¹³. He supports his claim with the following information:

- 8
- Proxy Group stock price under performance;

9

 - Proxy Group dividend yields have increased;

10

 - Comments made by credit rating agencies.

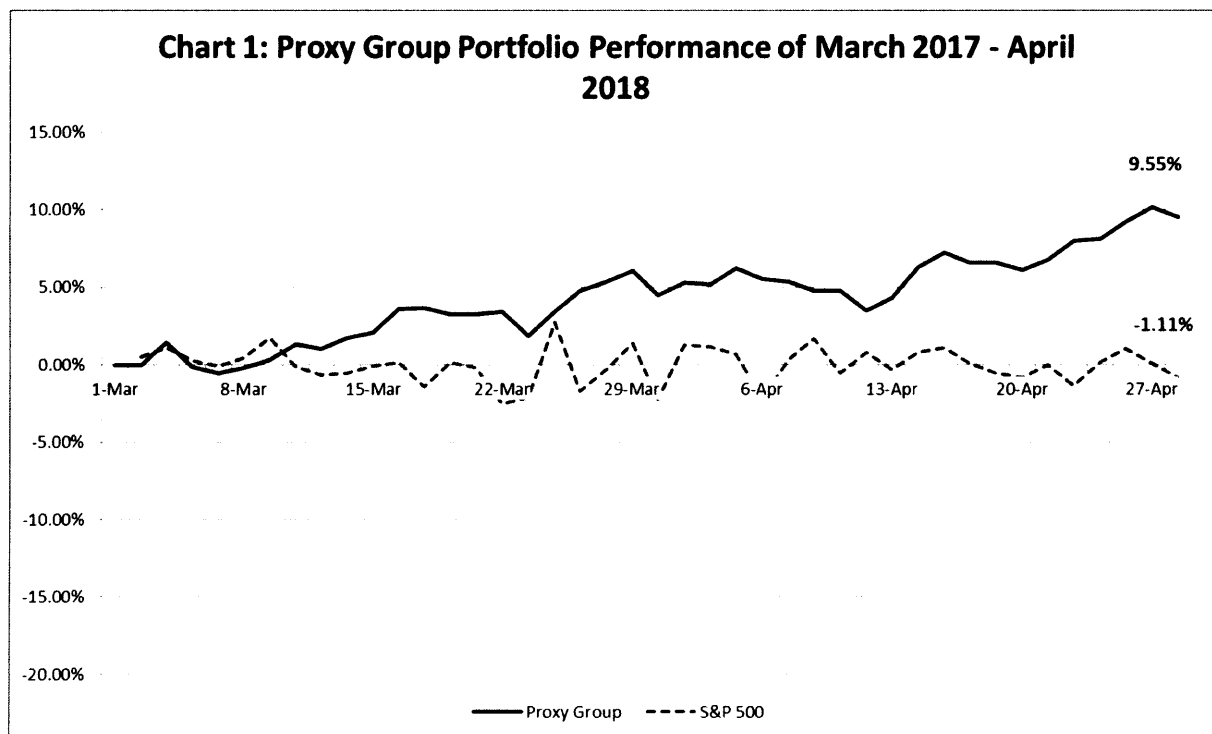
11 **Q. MR. HEVERT CLAIMS THAT THE RELATIVE POOR PERFORMANCE OF**
12 **THE PROXY GROUP INDICATES THAT OTP'S COST OF EQUITY HAS**

¹² Mr. Hevert's supplemental direct testimony, page 6, lines 9-10.

¹³ Ibid. Page 6, lines 18-21.

1 **INCREASED. HOW HAVE THE STOCK PRICES OF THE PROXY GROUP**
2 **PERFORMED SINCE MR. HEVERT FILED HIS SUPPLEMENTAL DIRECT**
3 **TESTIMONY?¹⁴**

4 A. As shown in Chart 1 below, the stock prices of the Proxy Group have increased by nearly
5 10% since Mr. Hevert filed his supplemental direct testimony while the S&P 500 has
6 decreased by over 1%. The relative performance of the Proxy Group compared to other
7 market sectors (S&P 500) since Mr. Hevert filed his supplemental direct testimony
8 indicates utility stocks remain in demand and Mr. Hevert's suggestion that utility
9 company dividend yields are on the rise¹⁵ is unfounded.



¹⁴ The stock price data presented in Mr. Hevert's filed his supplemental direct testimony covers stock price activity until February 28, 2018.

¹⁵ Mr. Hevert's supplemental direct testimony, page 2, lines 5-7.

1 **Q. PLEASE COMMENT ON MR. HEVERT'S CLAIM THAT RECENT FEDERAL**
2 **TAX LAW CHANGES HAVE INCREASED OTP'S COST OF EQUITY.**

3 A. The strong relative performance of the Proxy Group shown in Chart 1 indicates, by Mr.
4 Hevert's own criteria, that the cost of equity of the Proxy Group has not increased
5 because of the tax law changes. Mr. Hevert's claim the tax law change deserves
6 consideration above and beyond the results of his cost of equity models is unjustified
7 because of the following:

- 8 • The tax law change was enacted long enough ago (December 22, 2017) to
9 have been incorporated in investor expectations, the stock prices of the Proxy
10 Group and the results of cost of equity models (e.g. DCF, CAPM);
- 11 • The reduction in OTP's cash from deferred income taxes from lowering the
12 corporate tax rate from 35% to 21% is offset by OTP's increased rate base
13 (deferred income taxes are a rate base item). There are less deferred taxes but
14 they also have a higher rate base and the higher the rate base, everything else
15 equal, the higher the cash flow.

16 **Q. DOES OTTER TAIL POWER COMPANY AGREE THAT TAX REFORM WILL**
17 **INCREASE ITS RATE BASE?**

18 A. Yes. OTTR CEO Chuck MacFarlane recently stated the following regarding how tax
19 reform will impact the Company:

20 Tax reform will benefit Otter Tail Power Company's rate base growth.¹⁶
21

¹⁶ Otter Tail Corporation Press Release, <http://www.ottertail.com/file/Index?KeyFile=392156139>, February 12, 2018

1 **III. CAPITAL STRUCTURE, COST OF DEBT AND OVERALL RATE OF RETURN**

2 **Q. WHAT IS THE COMPANY'S REQUESTED CAPITAL STRUCTURE?**

3 A. The Company is requesting a projected 2018 Test Year capital structure consisting of
4 45.86% long-term debt, 1.64% short-term debt and 52.50% common equity.¹⁷

5 **Q: IS THE COMPANY'S REQUESTED CAPITAL STRUCTURE APPROPRIATE**
6 **FOR OTP?**

7 A. OTP's requested capital structure ratio is on the high end of reasonable. The requested
8 capital structure does not reflect the capital structure ratios of the Proxy Group. The
9 average common equity ratios for the Proxy Group is 47.85%.¹⁸ At the 2018 Annual
10 Shareholder Meeting, OTTR's CFO Keven Moug showed investors that the industry
11 common equity ratio was 43.8% in 2017 while OTTR had a common equity ratio of
12 53.6%.¹⁹

13 **Q. WHAT CAPITAL STRUCTURE HAVE YOU USED TO COMPUTE THE**
14 **OVERALL COST OF CAPITAL FOR THE COMPANY?**

15 A. As shown on Schedule ALR 1, page 1, I used the Company's requested capital structure
16 ratios consisting of 45.86% long-term debt, 1.64% short-term debt and 52.50% common
17 equity.

18 **Q. DID THE COMPANY PROVIDE A RATIONALE FOR ITS CAPITAL**
19 **STRUCTURE RECOMMENDATION?**

¹⁷ Mr. Moug's supplemental direct testimony, page 4, Table 1.

¹⁸ Schedule ALR 8, page 1.

¹⁹ 2018 Annual Shareholder Meeting, Kevin Moug, CFO Presentation, page 4.

1 A. Yes. Mr. Hevert claims the Company's requested capital structure is reasonable because
 2 it is similar to the Proxy Group. However, he does not provide the apples to apples
 3 comparison because the Proxy Group capital structure ratios do not include short-term
 4 debt. As discussed above, Mr. Moug told investors at their 2018 Annual Shareholder
 5 Meeting that Otter Tail Power Corp has a significantly higher common equity ratio than
 6 the industry. As shown in Table 4 below, the Company's requested capital structure
 7 ratios, consistent with Mr. Moug's comments to investors, includes a common equity
 8 ratio that is over 400 basis points higher than the average for the Proxy Group:

	<u>Long-Term Debt</u>	<u>Short-Term Debt</u>	<u>Preferred Stock</u>	<u>Common Equity</u>
OTP Requested [1]	45.86%	1.65%	0.00%	52.50%
Proxy Group [2]	45.39%	6.19%	0.56%	47.85%

[1] Mr. Moug's supplemental direct testimony, page 4, Table 4

9 [2] Schedule ALR 8, page 1

10 **Q. WHAT DID YOU USE FOR THE COST OF DEBT?**

11 A. I used the Company's proposed cost of long-term debt and short-term debt of 5.35% and
 12 3.84% respectively²⁰.

13 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.**

14 A. My overall recommendations for the Company's capital structure and rate of return are
 15 provided in Table 1 above.

²⁰ Mr. Moug's supplemental direct testimony, page 4, Table 1.

1 **IV. COST OF EQUITY IN TODAY'S FINANCIAL MARKET**

2 **Q. HOW DOES YOUR COST OF EQUITY RECOMMENDATION RELATE TO**
3 **THE CURRENT FINANCIAL MARKET?**

4 A. We have been experiencing high stock prices, low unemployment, reasonable global
5 growth, low bond yields, and low inflation expectations. According to a 2017 Wall Street
6 Journal (WSJ) article "We're in what's increasingly being called a 'Goldilocks'
7 economy."²¹ As I will explain below, despite increased market volatility at the end of
8 2017 and early 2018 the favorable times for raising capital (including for regulated
9 electric utility companies) remain. The current capital markets indicate that an 8.31%
10 return on equity for investing in a regulated utility like OTP is conservatively high.
11 Equity investors are paying a higher price for earnings than the historical average, interest
12 rates remain low by historical standards, and yield spreads are low. Lower than average
13 yield spreads indicate a cost of equity lower than the historical average. As discussed
14 below, despite some increased investor volatility expectations earlier this year²², as
15 indicated by the VIX index²³, all other major market indicators support a relatively low
16 cost of equity. Later in my testimony I present the results of financial models (e.g. DCF,
17 CAPM). It is important to consider these results in the context of current financial market
18 conditions as follows:

- 19
20 1. **STOCKS ARE EXPENSIVE.** As the S&P 500, Dow Jones Industrial Average
21 and other stock indices increase, investors are paying more for the same earnings,

²¹ "Everything Is Awesome! Now Is the Time to Sell", Wall Street Journal, July 6, 2017.

²² As shown in Chart 8A and Chart 8B, investors' volatility expectations have been decreasing recently.

²³ The VIX index is a market indicator that allows us to see what investors expect volatility to be in the future, as discussed in more detail later in my testimony.

1 including for utility stocks²⁴, than average indicating that the cost of equity is
2 lower than average.

3 **2. INTEREST RATES.** Long-term U.S. Treasury yields are near historic lows (See
4 Chart 5 in “Interest Rates” section of by testimony below), and Federal Reserve
5 Chair Jerome Powell said in a press release conference on March 21, 2018 that
6 when the Fed starts to raise interest rates, “We’re trying to take the middle
7 ground, and the committee continues to believe that the middle ground consists of
8 further gradual increases in the federal-funds rate.”²⁵ Before the Fed
9 announcement about the recent rate increase, traders in futures markets already
10 anticipated the Fed would raise rates a total of three times this year and placed a
11 roughly 40% probability on at least four interest-rate increases this year.²⁶

12 **3. LOW CREDIT SPREADS.** The spread between the yield investors demand to
13 purchase U.S. Corporate Bonds and U.S. Treasury bonds remain at historical lows
14 which is consistent with relatively high U.S. capacity utilization. Low credit
15 spreads and high capacity utilization indicate a low cost of equity.

16 **4. VOLATILITY EXPECTATIONS.** Historically low credit spreads and high
17 U.S. capacity utilization²⁷ (see Chart 9) persist despite some increased investor
18 volatility expectations. As explained below, this indicates the cost of equity
19 remains at historically low levels.

²⁴ Mr. Hevert acknowledges that stock prices are high stating, “major market indices market-to-book rates are well above unity”. See page 21, lines 12-13 of Mr. Hevert’s direct testimony.

²⁵ “Fed Raises Rates and Signals Faster Pace in Coming Years” The Wall Street Journal March 21, 2018

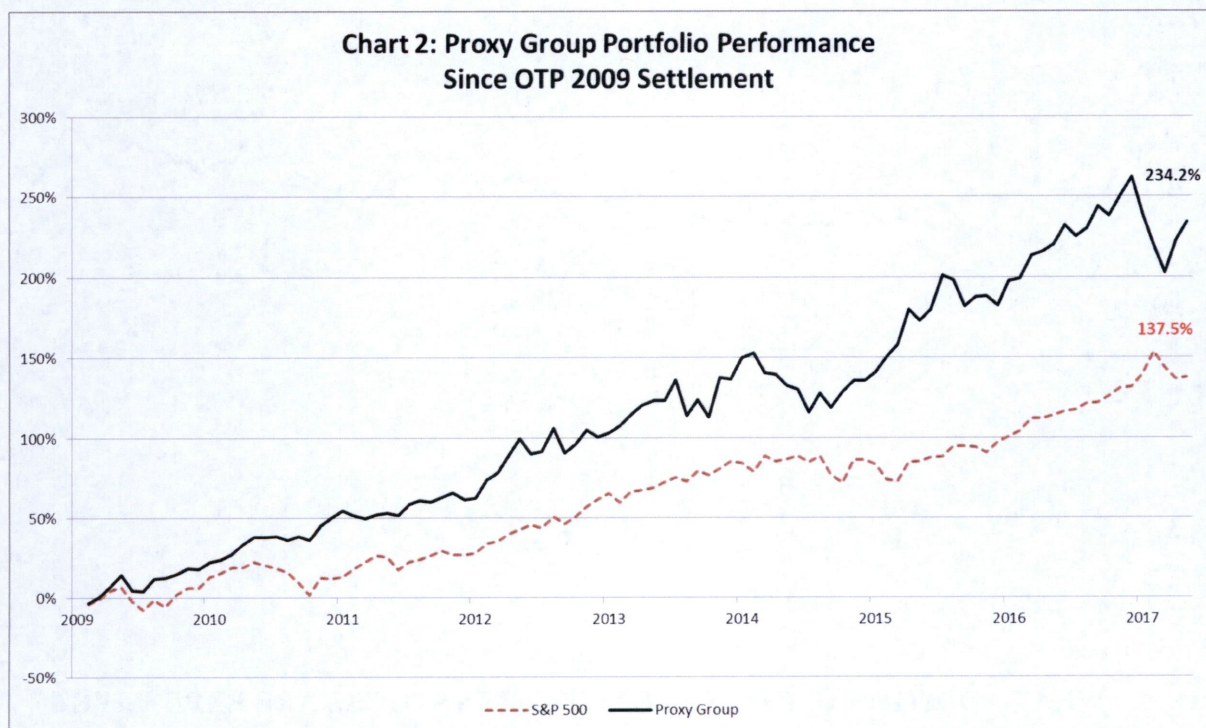
²⁶ “Fed Raises Rates and Signals Faster Pace in Coming Years” The Wall Street Journal March 21, 2018

²⁷ The percentage of resources used by manufacturing, mining, and electric and gas utilities companies for their facilities in the United States.

1 **A. Stocks Price Trends**

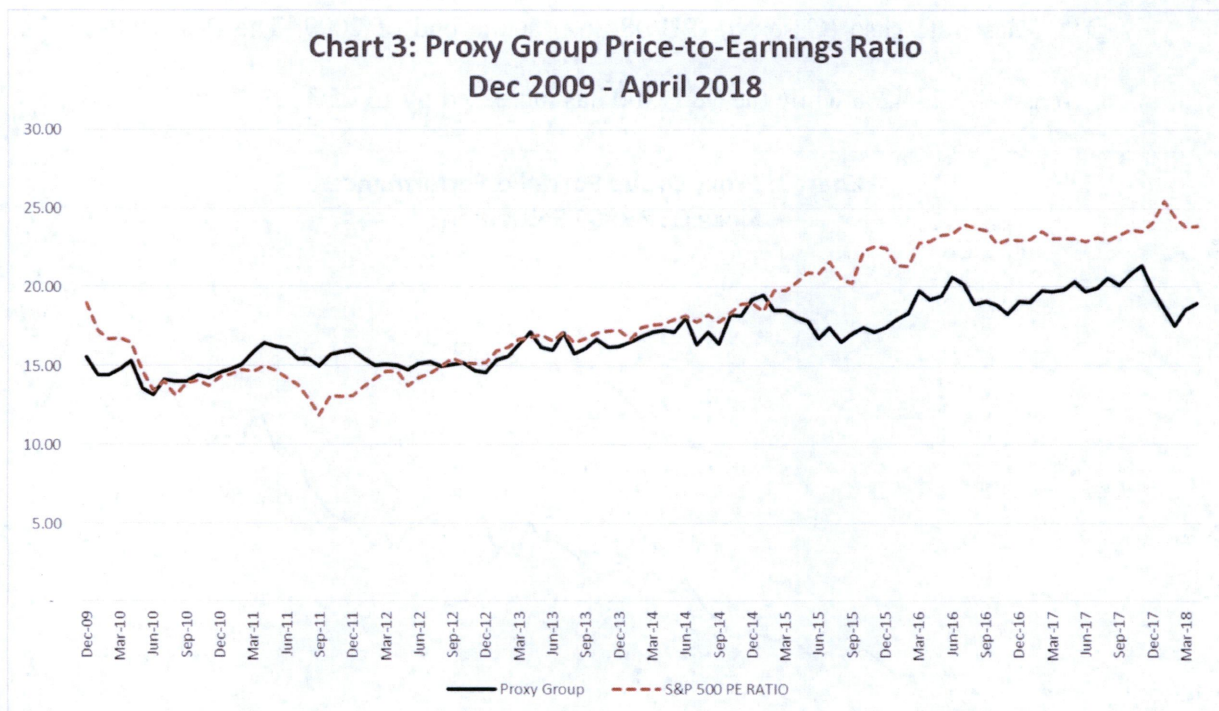
2 **Q. WHAT, IF ANYTHING, DOES THE STOCK MARKET DATA INDICATE WITH**
3 **REGARD TO THE COST OF EQUITY?**

4 A. As stock prices have increased significantly in recent years, the price-to-earnings ratios
5 have increased as well. This indicates that the cost of equity may be decreasing along
6 with the higher stock prices. As shown in Chart 2 below, the S&P 500 and the Proxy
7 Group have increased significantly since the Order on Settlement was filed regarding
8 OTP's last rate case (Case No. PU-08-862) at the end of 2009. The Proxy Group has
9 increased by 234.2% while the S&P 500 has increased by 137.5%.



14 **Q. WHAT ARE THE PRICE-TO-EARNINGS RATIOS INDICATING FOR THE**
15 **BROADER MARKET AND THE PROXY GROUP?**

1 A. As shown in Chart 3 below, the current price-to-earnings ratio of the S&P 500 is about
 2 24. The long-term (1917-2017) average of the S&P's price-to-earnings ratio is under
 3 16²⁸, indicating investors are willing to pay more for the same earnings, a result
 4 consistent with a cost of equity that is lower than OTP's. As shown in Chart 3 below, the
 5 price-to-earnings ratio of the Proxy Group has increased from about 15 in 2009 to about
 6 19 as of April, 2018 indicating that the cost of equity for the Proxy Group has been
 7 decreasing as well.



8

9

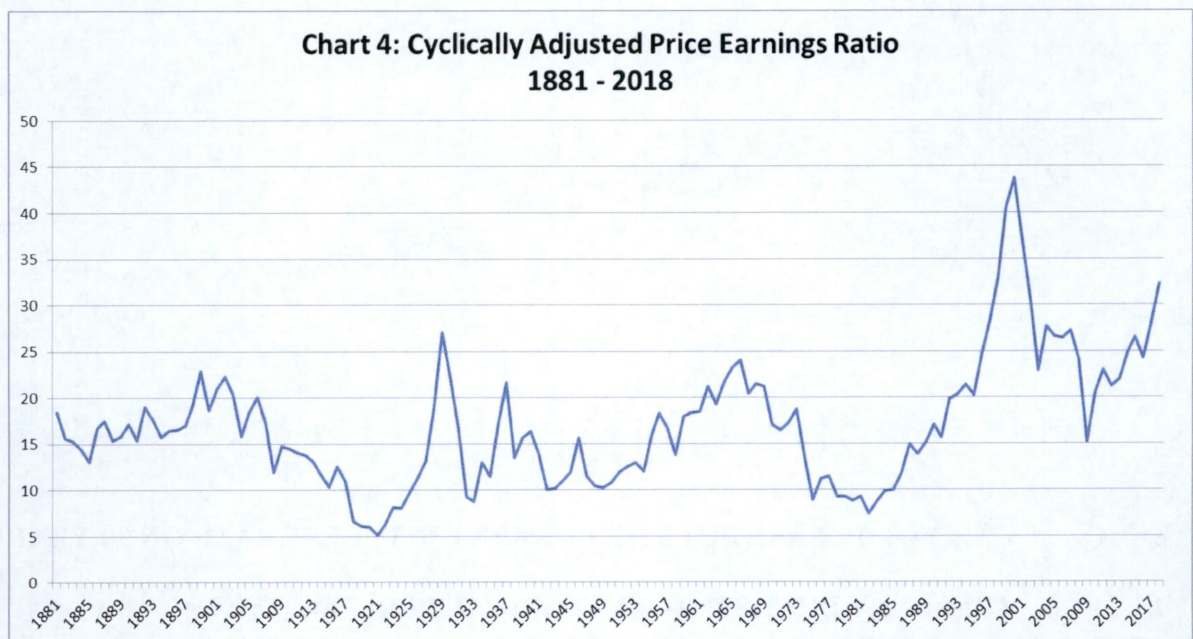
10 **Q. WHAT ADDITIONAL EVIDENCE INDICATES STOCKS ARE EXPENSIVE?**

11 A. The Shiller ratio is a common way to measure if stock return expectations are relatively
 12 high or low. A Wall Street Journal article stated the Shiller ratio is “one of the most

²⁸ www.multiple.com

1 widely followed ways of measuring stock valuations.”²⁹ The Shiller ratio is known as the
2 cyclically adjusted price to earnings ratio and is the price-to-earnings ratio based on
3 average inflation-adjusted earnings from the previous 10 years.

4 As shown in Table 3 below, the Shiller ratio (currently over 30) is high by
5 historical measures and has been increasing in recent months. The long-term average of
6 the Shiller Ratio since 1881 is 16.76.³⁰



8 **B. Interest Rates**

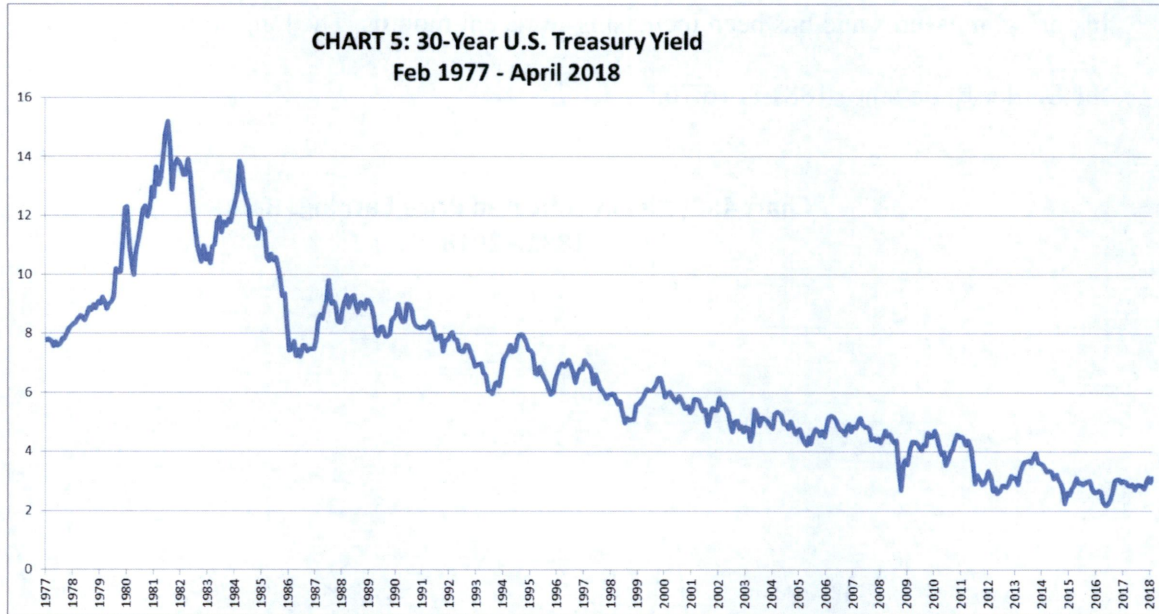
9 **Q. DO INVESTORS EXPECT LONG TERM U.S. GOVERNMENT BOND YIELDS**
10 **TO STAY AT THESE LOW LEVELS?**

11 A. Yes. The Fed has been gradually increasing the yields on short term U.S. Treasuries and
12 although there were increases in yields on long-term U.S. government bonds in the recent

²⁹ “Stock Prices: Is ‘Quite High’ Too High?, Wall Street Journal, May 15, 2015.

³⁰ <http://www.gurufocus.com/shiller-PE.php>

1 months, it is still within the range it has been in within the past three years, which has
2 been between 2.18 and 3.12. As of April 30, 2018 the yield on the 30-Year U.S. Treasury
3 bond is at 3.11%, nearly 150 basis points lower than OTP's 2009 rate case.³¹ As shown
4 in Chart 5 below, yields on 30-year U.S. treasuries remain low by historical measures:



5

6 **Q. CAN YOU PLEASE PUT THE CURRENT INTEREST RATE ON 30-YEAR U.S.**
7 **TREASURY BONDS INTO HISTORICAL PERSPECTIVE?**

8 A. Chart 5 above shows that the yield on 30-year U.S. Treasury bonds has been in a long-
9 term downward trend since the very early 1980's when the annual yield peaked just
10 below 14%. As of April 30, 2018 the yield on 30-year Treasury bonds remains at the
11 historical yield of near 3.0% since end of 2016.

³¹ The yield on 30-Year U.S. Treasury bond averaged 4.64% in December, 2009.

1 **Q. PLEASE COMMENT ON HOW RECENT ACTION TAKEN BY THE FEDERAL**
2 **RESERVE TO RAISE THE FEDERAL FUNDS RATE RELATE TO BOND**
3 **YIELDS SHOWN IN CHART 5?**

4 A. The yields on 30-year U.S. Treasury bonds are market based and therefore reflect
5 investors' expectations. An investor who expected long-term interest rates to increase
6 soon would not purchase 30-year U.S. treasuries because they would lose money. Bond
7 prices and yields are inversely related. In a liquid market like those for 30-Year U.S.
8 Treasury bonds the yield reflects interest rate forecasts of the market place. The current
9 yield on 30-year U.S. Treasury bonds is based upon a market with investors who are
10 aware of the comments by the Federal Reserve. On March 21, 2018 the Federal Reserve
11 stated the following in their press release:

12 The Committee expects that economic conditions will...warrant further gradual
13 increases in the federal funds rate.³²

14 Fed-funds futures are indicating that investors believe there is roughly 40%
15 chance that the Federal Reserve will increase rates at least 4 times in 2018³³. However, it
16 is important to recognize that current long-term interest rates represent a direct
17 observation of investor expectations and there is no need to use "expert" forecasts.
18

19 **Q. DO YOU KNOW WHAT INTEREST RATES WILL BE IN THE FUTURE?**

20 A. No. Although Jerome Powell, the Federal Reserve Board Chair, has said that he expects
21 further gradual increases in federal fund rates, he emphasized the uncertainty surrounding
22 forecasting the economy and the financial markets in a recent speech stating:

³² <https://www.federalreserve.gov/newsevents/pressreleases/monetary20180321a.htm>.

³³ "Fed Raises Rates and Signals Faster Pace in Coming Years" The Wall Street Journal March 21, 2018.

1 You could imagine narratives in which that (forecast) would make sense, but
2 honestly, I wouldn't put too much on that.³⁴

3 Many economists and forecasters will continue to be quoted in the press even regarding
4 developments that are unpredictable. The Nobel Laureate Economist Daniel Kahneman
5 stated the following regarding forecasting:

6 It is wise to take admissions of uncertainty seriously, but declarations of high
7 confidence mainly tell you that an individual has constructed a coherent story in
8 his mind, not necessarily that the story is true.³⁵

9 Kanheman also found that the trading industry is based on an "allusion of skill."

10 OTP's cost of capital is based on the current capital markets and we should not
11 fall into the trap of giving weight to forecasts that claim to be smarter than the market
12 Such forecasts have been found to be inaccurate. In addition, the utilization of these
13 forecasts violate rate making principles; namely that the cost of equity should be market
14 based.

15 **Q. ARE YOU AWARE OF STUDIES THAT HAVE SHOWN THE CHALLENGES**
16 **OF FORECASTING FINANCIAL MARKETS?**

17 A. Yes. A Duke University study demonstrated U.S. financial executives were over-
18 confident in their ability to predict financial markets. The Chief Financial Officers
19 (CFOs) in the study estimated the returns of Standard and Poor's Index over the
20 following year. The 80% confidence interval provided by the CFOs contained only 33%
21 of the realized returns.³⁶ The correlation between their estimates and true value was
22 slightly less than zero.

³⁴ "Fed Raises Rates and Signals Faster Pace in Coming Years" The Wall Street Journal March 21, 2018.

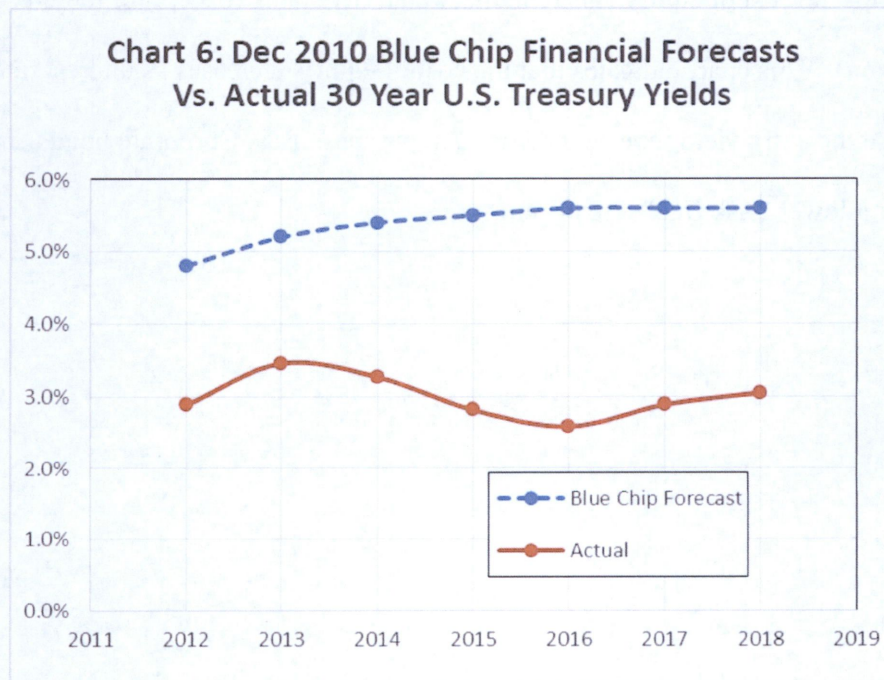
³⁵ Daniel Kahneman, *Thinking Fast and Slow* (New York: Farrar, Straus and Gigoux, 2011): 212.

³⁶ Itzhak Ben-David, John R. Graham, Campbell R. Harvey, *Managerial Miscalibration*, July 2010, page 30.

1 An additional study conducted by McKinsey and Company to determine the
2 accuracy of analysts' earnings forecasts found that the analysts were overly optimistic,
3 slow to revise their forecasts, and prone to making increasingly inaccurate forecasts
4 during economic downturns. Moreover, as indicated by P/E ratios, investors'
5 expectations were more conservative.³⁷

6 **Q. HAVE THE BLUE CHIP INTEREST-RATE FORECASTS USED BY MR.**
7 **HEVERT BEEN ACCURATE?**

8 A. No. As Chart 6 below shows, the Blue Chip Financial forecasted in 2012 that 30-Year
9 U.S. Treasury bonds would be over 5% by 2018 when they are only about 3%.



³⁷ Marc H. Goedhart, Rishi Raj and Abhishek Saxena, *Equity Analysts: Still too bullish*, Spring 2010, page 14.

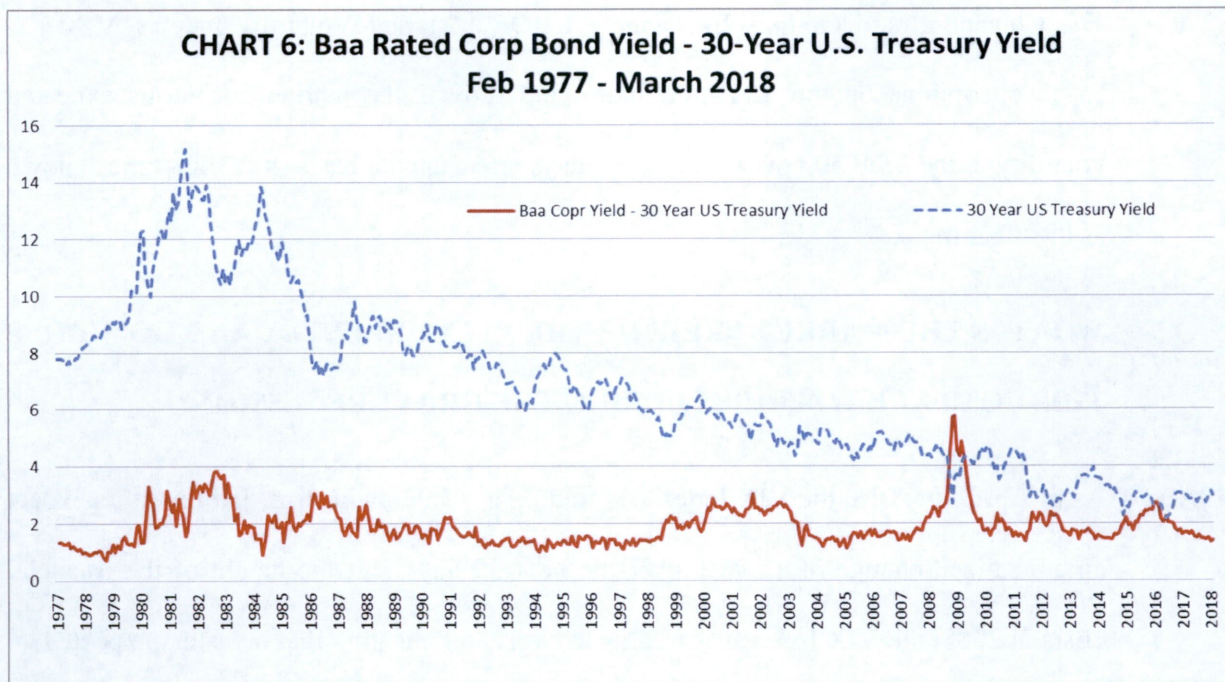
1 A recent paper published by the Congressional Budget Office determined Blue
2 Chip consensus forecasts exhibited “significant positive bias” between 1984 and 2012
3 and “have become more biased and less accurate over time.”³⁸

4 **C. Low Credit Spreads**

5 **Q. WHAT DO LOW U.S. TREASURY YIELDS MEAN FOR THE COST OF**
6 **EQUITY?**

7 A. Historical market data indicate that a low interest rate environment, like we have now,
8 indicates a low cost of equity. Chart 6 below shows that as interest rates decrease the
9 yield credit spread between Baa rated corporate bonds and U.S Treasuries, which is a
10 proxy for the cost of equity, has remained relatively stable (except for the great
11 recession). This chart indicates that the cost of equity decreases as interest rates decrease
12 because the extra yield investors demand to purchase Baa, Corporate bonds, and equities,
13 is over a lower “risk free” rate of return.

³⁸ Did Treasury Debt Markets Anticipate the Persistent Decline in Long-Term Interest Rates?, Congressional Budget Office, Edward N. Gamber, Page 2. This paper can be found at: <https://www.cbo.gov/system/files/115th-congress-2017-2018/workingpaper/53153-interestrateswp.pdf>



1

2 **D. Volatility Expectations**

3 **Q. WHAT IS YOUR BASIS FOR CLAIMING THAT INVESTORS VIEW THE**
4 **MARKETS AS LESS RISKY?**

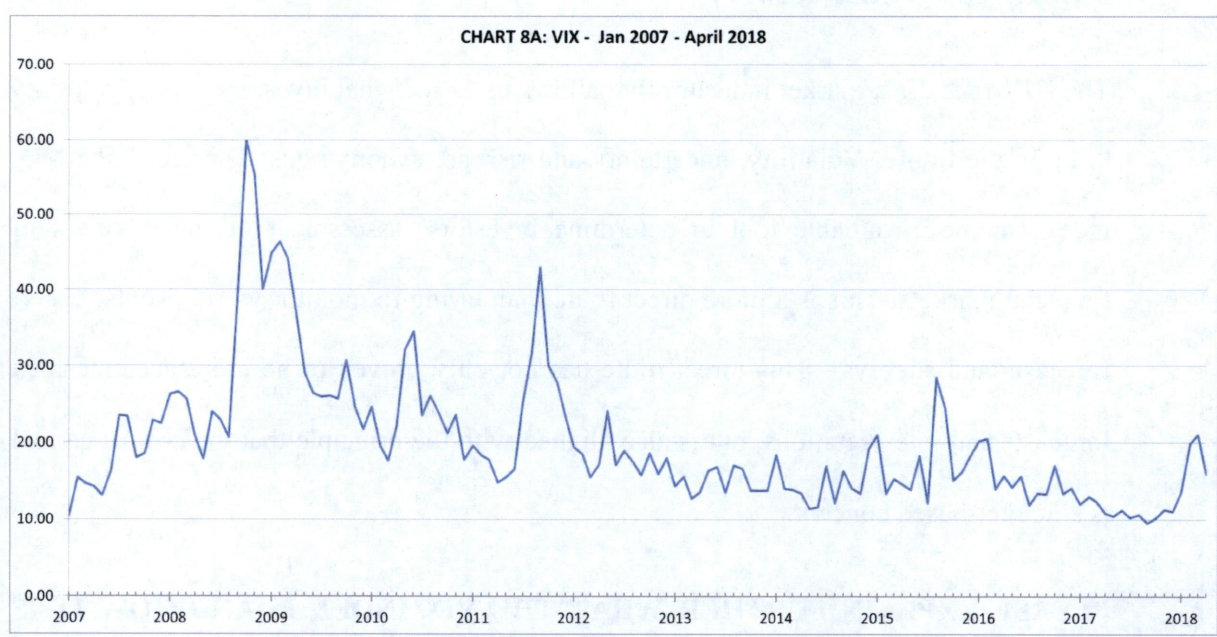
5 A. The VIX index is a market indicator that allows us to see what investors expect volatility
6 to be in the future. Volatility, uncertainty and risk are synonymous. Therefore, the VIX
7 index can be a valuable tool to determine investors' assessment of the riskiness of
8 financial markets. This is a more direct route than trying to monitor world events, expert
9 forecasts and surveys. This direct route has not only proven to be more accurate than
10 forecasts and interpretations, but is also aligned with the principle that the cost of capital
11 is a market-based concept.

12 **Q. PLEASE EXPLAIN FURTHER WHAT THE VIX INDEX IS AND HOW IT IS**
13 **ESTABLISHED.**

1 A. The Chicago Board Options Exchange (“CBOE”) Market Volatility Index (“VIX”) is
2 based on options on the S&P 500 Index and reflects the market consensus expected
3 volatility in the S&P 500 over the next 30 days on an annual basis. It is sometimes known
4 as the “fear index.”

5 **Q. WHAT IS THE MARKET PRICE OF THE VIX CURRENTLY AND HOW DOES**
6 **THIS COMPARE TO PRICES DURING THE GREAT RECESSION?**

7 A. As of April 30, 2018, the VIX Index was trading at 15.93, indicating that investors expect
8 an annualized change of 15.93% over the next 30 days. At the height of the financial
9 crisis in 2008, the VIX Index was trading at over 80, indicating that investors expected an
10 annualized change of over 80% over the same 30 day period. As can readily be seen in
11 the chart below, the VIX Index is significantly lower than it was during the financial
12 crisis and is nearing pre-crisis levels.

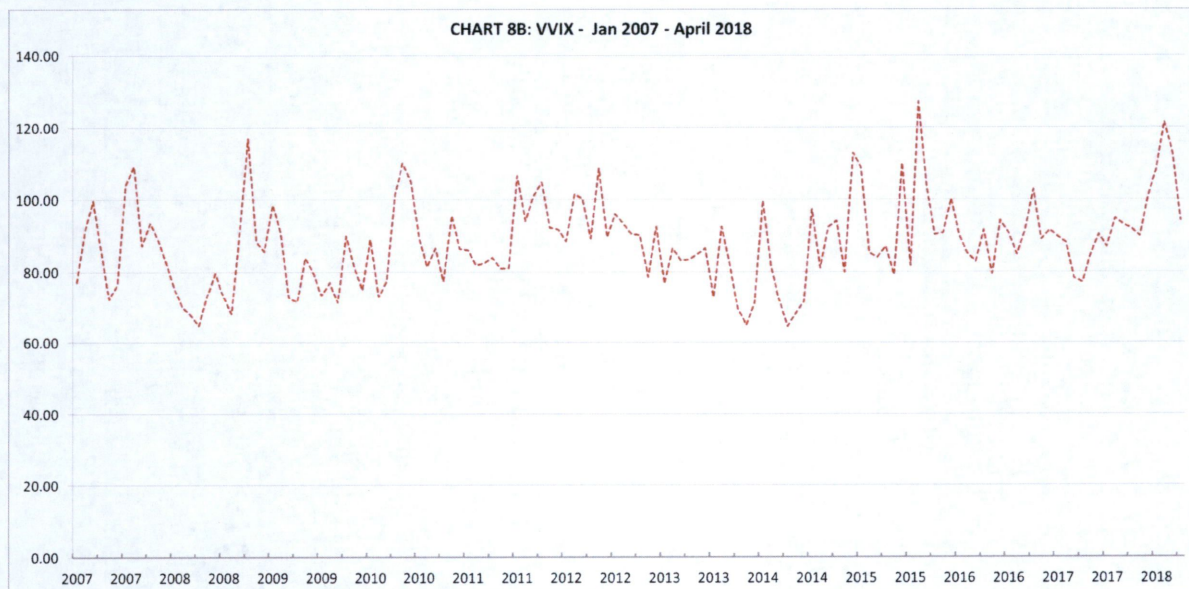


1 **Q. IS THERE MARKET DATA AVAILABLE THAT SHOWS WHAT THE**
2 **MARKET EXPECTATION IS FOR VOLATILITY OF VOLATILITY TO BE**
3 **OVER THE NEXT 30 DAYS?**

4 **A.** Yes. A volatility index, under the ticker symbol “VVIX,” is based on the same
5 methodology as the VIX but structured to measure the market’s expectation of the
6 volatility of the VIX itself.

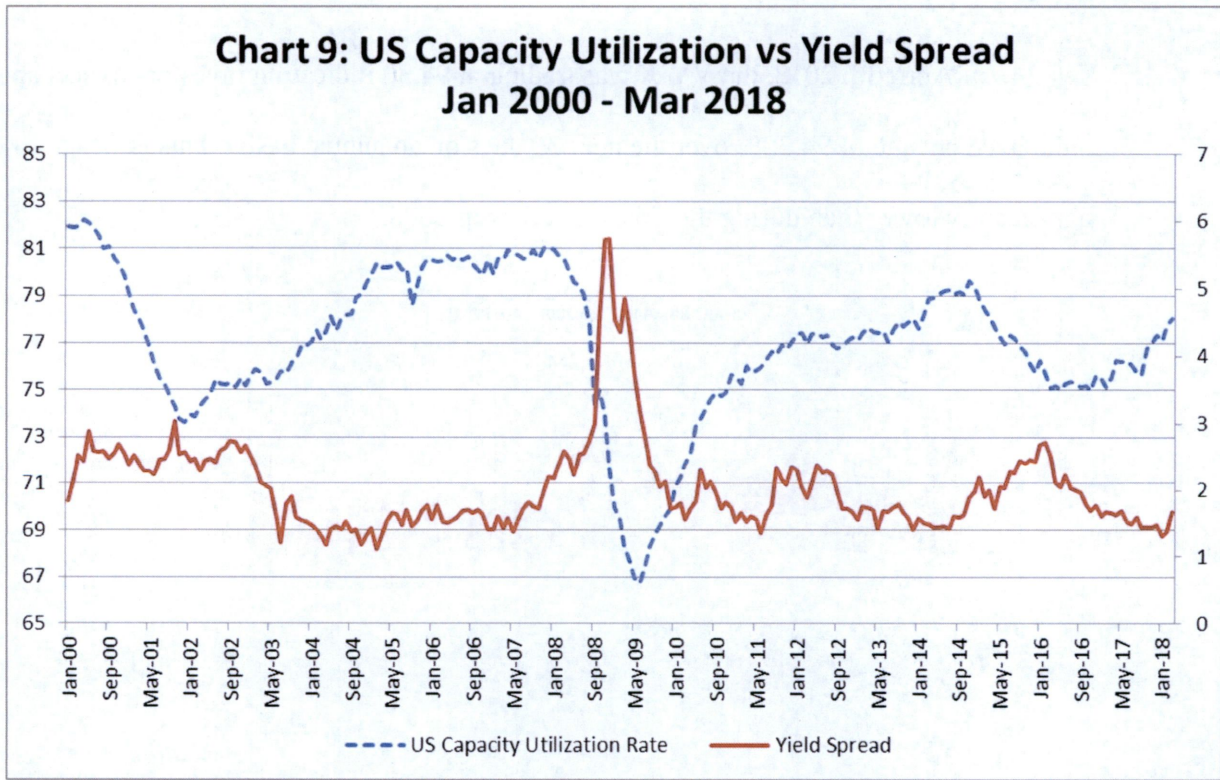
7 **Q. IS THE VVIX ALSO INDICATING THAT INVESTORS’ EXPECTATIONS OF**
8 **VOLATILITY ARE UP?**

9 **A.** Yes. As of April 30, 2018, the VVIX was trading at 94.30 indicating investors expect an
10 annualized change of 94.30% over the next 30 days on an annual basis. This is
11 significantly lower than during the financial crisis in 2008.



13 **Q. WHAT, IF ANYTHING, DOES A HIGH VIX INDEX INDICATE WITH**
14 **REGARD TO THE COST OF EQUITY?**

1 A. Generally as the VIX increases, investors view the market as more risky. However, it is
 2 important to consider the level of the VIX index in the context of other market data and
 3 the overall market. High stock prices (as indicated by price-to-earnings ratios), low
 4 credit spreads, and high U.S. capacity utilization indicate that investors' increased
 5 volatility expectation is not leading to a higher cost of equity. As shown in Chart 9 below,
 6 there is a correlation between U.S. capacity utilization rates and credit spreads.³⁹ To the
 7 degree the VIX is sometimes an indirect measure of "fear" it does not appear to be the
 8 case currently.



9

³⁹ With stable operational cash flow, creditors are likely confident they will be paid

1 **V. COST OF EQUITY CALCULATION**

2 **A. Overview**

3 **Q. PLEASE PROVIDE YOUR DEFINITION OF THE COST OF CAPITAL.**

4 A. The cost of capital is the return investors require to provide capital to OTP based on
5 current capital markets. My cost of equity (“COE”) recommendation is my opinion of
6 the return investors require to provide equity capital to OTP based on current capital
7 markets. My current market-based framework is superior to methodologies that primarily
8 rely on historical data and/or expert forecasts (e.g. company earnings, interest rates), for
9 two reasons:

10 • The cost of equity that OTP has to pay investors is based on capital markets. Interest
11 rates remain at historical low levels after a persistent downtrend since the early 1980s
12 (See Chart 5 above). It is possible interest rates will increase, or stock prices will fall
13 relative to earnings expectations, but if the marketplace expects these changes, then
14 that would already be revealed in current market data.

15 • Capital markets are unpredictable.

16 Regarding capital markets’ unpredictability, investment guru Warren Buffet recently
17 gave the following advice to investors:

18 They should not listen to a lot of the jabbering about what the market is going to
19 do tomorrow, or next week or next month because nobody knows.⁴⁰

20 The scholar, and former Wall Street trader, Nassim Taleb states the following
21 regarding prediction:

22 ...our cumulative prediction errors for political and economic events are so
23 monstrous that every time I look at the empirical record I have to pinch myself to verify

⁴⁰ PBS News Hour, June 26, 2017, Part 1 – America should stand for more than just wealth, says Warren Buffett.

1 that I am not dreaming. What is surprising is not the magnitude of our forecast errors,
2 but our absence of awareness of it.⁴¹

3 Research I present later in my testimony supports Mr. Buffet's advice to investors
4 and my opinion that the cost of equity should be based on current capital markets.

5 My cost of equity recommendation is consistent with the rate making principles
6 established by the U.S. Supreme Court in the *Hope*⁴² and *Bluefield*⁴³ cases, which
7 established that the cost of equity should support a utility's credit, enable raising money,
8 assure financial soundness and "be commensurate with returns on investments in other
9 enterprises having corresponding risks".⁴⁴

10 Mr. Hevert states, "The ROE [or Cost of Equity] is market-based...⁴⁵, premised
11 on opportunity costs⁴⁶" However, he relies on Blue Chip interest rate forecasts instead of
12 current market yields in his CAPM analysis, and his "Bond Yield Plus Risk Premium
13 Approach" uses the earnings return on book equity instead of market returns. Mr. Hevert
14 predicts the cost of equity will increase, and claims this means the Constant Growth DCF
15 model results should be "viewed with caution"⁴⁷. Regarding his cost of equity increase
16 prediction, he states that the utility sector P/E ratios exceeds long-term averages⁴⁸, are not
17 likely to remain constant⁴⁹. He states that a number of variables⁵⁰ indicate "increases in
18 the cost of equity".

⁴¹ Nassim Nicholas Taleb, *The Black Swan* (New York: Random House, 2007): Prologue XX.

⁴² *Federal Power Comm'n et al. v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) ("Hope").

⁴³ *Bluefield Water Works Improvement Co. v. Pub. Serv. Comm'n et al.*, 262 U.S. 679 (1923) ("Bluefield").

⁴⁴ *Federal Power Comm'n et al. v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) ("Hope").

⁴⁵ Mr. Hevert's direct testimony, page 11, line 4

⁴⁶ *Ibid.* page 8, lines 8-9

⁴⁷ Mr. Hevert's direct testimony, page 20, lines 18-21.

⁴⁸ Mr. Hevert's direct testimony, page 20, lines 18-21.

⁴⁹ Mr. Hevert's direct testimony, page 25, lines 15-17.

1 Current market prices of stocks and bonds reflect investors' forecasts for long-
2 term interest rates, and capital markets in general. If, indeed, investors in aggregate
3 should be expecting an increase in interest rates, adding a separate factor for this on top
4 of what is already indicated in market prices would amount to a double-count. And if
5 investors are expecting the P/E ratios of the companies in the Proxy Group to decline, as
6 Mr. Hevert predicts, this indicates the cost of equity is lower than if they expected it to
7 remain constant.⁵¹

8 **Q. WHICH COMPANIES DID YOU INCLUDE IN YOUR COMPARABLE GROUP**
9 **OF UTILITY COMPANIES TO DETERMINE YOUR COST OF EQUITY**
10 **RECOMMENDATION?**

11 A. I included the nine electric utility companies⁵², referred to as the Proxy Group, used by
12 Mr. Hevert.

13 **Q. HOW DID YOU ARRIVE AT YOUR COST OF EQUITY**
14 **RECOMMENDATIONS?**

15 A. I used both a constant growth and non-constant growth Discounted Cash Flow ("DCF")
16 method. My constant growth DCF method determines growth based on the sustainable
17 retention procedure. My non-constant growth method is based on estimated dividend
18 growth for the next 5-years and capital gains. Additionally, I used a Capital Asset Pricing
19 Model ("CAPM") based on current market data. Later in my testimony, I explain the
20 theory behind both the DCF and CAPM methods.

⁵⁰ Regarding these variables, Mr. Hevert makes the following statement on page 59, lines 8-9 of his direct testimony "As interest rates continue to rise, it would be reasonable to expect lower utility valuations, higher dividend yields, and higher growth rates".

⁵¹ Schedule ALR 12, page 3 shows that Mr. Hevert's Multi-Stage DCF results is under 7% if P/E ratios return to levels during OTP's last rate case which was in 2009.

⁵² Mr. Hevert's direct testimony, page 14, Table 3: Proxy Group Screening Results

1 a. **DISCOUNTED CASH FLOW**

2 **Q. WHICH COMPANIES DID YOU INCLUDE IN YOUR COMPARABLE GROUP**
3 **OF UTILITY COMPANIES TO DETERMINE YOUR COST OF EQUITY**
4 **RECOMMENDATION?**

5 A. I included the nine U.S. electric utility companies, referred to as the Proxy Group, used
6 by Company Witness Mr. Hevert as shown on page 14, Table 3 of his direct testimony.

7 **Q. HOW DID YOU ARRIVE AT YOUR COST OF EQUITY**
8 **RECOMMENDATIONS?**

9 A. I used the constant growth form of the Discounted Cash Flow ("DCF") method that
10 determines growth based on the sustainable retention growth procedure. I used a non-
11 constant DCF method as a check.

12 **Q. WHAT IS THE DISCOUNTED CASH FLOW METHOD?**

13 A. The Discounted Cash Flow, or DCF method is an approach to determining the cost of
14 equity which recognizes that investors purchase common stock to receive future cash
15 payments. These payments come from: (a) current and future dividends; and (b)
16 proceeds from selling stock. A rational investor will buy stock to receive dividends and
17 to ultimately sell the stock to another investor at a gain. The price the new owner is
18 willing to pay for stock is related to the future flow of dividends and the future expected
19 selling price. The value of the stock is the discounted value of all future dividends until
20 the stock is sold plus the value of proceeds from the sale of the stock. For example, if the
21 cost of equity is 8% and the dividend is \$1 per share, then the \$1 dividend paid out next

1 year is today worth $\$1/[\$1+.08]$ which equals \$0.926 reflecting the discounted present
2 value.

3 **Q. HAVE INVESTORS ALWAYS USED THE DCF METHOD?**

4 A. While investors who buy stock have always done so for future cash flow, the DCF
5 approach first appeared in the 1937 Harvard Ph.D. thesis of John Burr Williams titled *The*
6 *Theory of Investment Value*. “Williams’ model for valuing a security calls for the
7 investor to make a long-run projection of a company’s future dividend payments ...”⁵³
8 The Williams DCF model separately discounts each and every future expected cash flow.
9 Its accuracy is therefore unaffected by non-constant growth rates. Myron Gordon and Eli
10 Shapiro who helped to make this method widely used, referred to Williams’ work in their
11 paper published in 1956 “Equipment Analysis: The Required Rate of Profit.”

12 **Q. HOW DID INVESTORS EVALUATE STOCKS BEFORE WILLIAMS**
13 **INTRODUCED THE DCF METHOD?**

14 A. Before the DCF method, investors used methods such as P/E ratios (or its reciprocal the
15 E/P ratio, or earnings yield), or dividend yield (D/P). While these methods are still used
16 today, knowledgeable investors are aware that they are very incomplete and provide only
17 rough guidelines to investment value.

18 The appropriate P/E ratio for a company with high growth prospects can be much
19 higher than for a company with meager growth opportunities. Therefore, P/E ratios alone
20 do not predict the total return an investor expects to earn from purchasing stock in that

⁵³ P. BERNSTEIN, *Capital Ideas: The Improbable Origins of Modern Wall Street* (The Free Press, © 1992).

1 company. Similarly, the D/P analysis cannot distinguish important differences between
2 companies with similar D/P ratios but vastly different prospects for future dividend
3 payments. By concentrating on both current dividends and future expected dividend
4 payments, the Williams or non-constant DCF model filled in the major gaps in the P/E
5 ratio and D/P methods. I will discuss the use of the non-constant growth form of the
6 DCF model in detail later in my testimony.⁵⁴

7 **B. Constant Growth Form of the DCF Model**

8 **Q. YOU STATE YOU USED THE CONSTANT GROWTH FORM OF THE DCF**
9 **MODEL. WHAT IS THE CONSTANT GROWTH FORM OF THE DCF**
10 **MODEL?**

11 A. The constant growth form of the DCF model is a form of the DCF method that can be
12 used in determining the cost of equity when investors can reasonably expect that growth
13 of retained earnings and dividends will be constant.

14 **Q. WHAT ARE RETAINED EARNINGS?**

15 A. Retained earnings are funds that a company keeps to grow and invest in business or pay
16 off debt.

17 **Q. WHY DO INVESTORS LOOK AT THE GROWTH OF RETAINED EARNINGS?**

18 A. Retained earnings show investors whether the company is growing which, in turn, is a
19 measure of the future indicator of the value of a company's stock.

20 **Q. DESCRIBE HOW THE CONSTANT GROWTH MODEL WORKS.**

⁵⁴ I use the result of my non-constant growth method as a check on my constant growth DCF result. See Schedule ALR 2 for the results of both of these methods.

1 A. The constant growth model is described by this equation $k = D/P + g$, where:⁵⁵

2 k = cost of equity;

3 D =Dividend rate; and

4 P =Market price of stock.

5

6 In the above equation:

7

8 g =the growth rate, where $g = br + sv$;

9 b =the earnings retention rate;

10 r =rate of return on common equity investment;

11 v =the fraction of funds raised by the sale of stock that increases the book value of
12 the existing shareholders' common equity; and

13 s =the rate of continuous new stock financing.

14 The constant growth model is therefore correctly recognized to be:

15 $k = D/P + (br + sv)$

16 **Q. WHAT OTHER FACTORS IMPACT THE USE OF THE CONSTANT GROWTH**
17 **FORM OF THE DCF MODEL?**

18 A. Sufficient care must be taken to be sure that the growth rate "g" is representative of the
19 constant sustainable growth required for the answer from the constant growth form of the
20 DCF model to be meaningful. In order to obtain a creditable constant growth DCF result
21 the mathematical relationship between earnings, dividends, book value and stock price
22 must be respected.

⁵⁵ M. GORDON, *Cost of Capital to a Public Utility*, at 32-33 (MSU Public Utility Studies 1974).

1 For example, suppose one is faced with a situation where Value Line forecasts are
2 being used as a source for inputs and Value Line projects different growth rates for
3 earnings per share and dividends per share. Under such conditions, the earnings per share
4 growth rate does not provide a reasonable proxy for earnings per share growth, and
5 dividends per share and stock price growth as well. Consider the following:

6 1. It is the lower dividend growth rate that makes it possible for more
7 earnings to be retained, which in turn makes the earnings per share growth rate
8 higher than it would be if dividends had in fact been modeled by Value Line to
9 keep pace with earnings per share growth.

10 2. The lower dividend growth rate than both the earnings per share growth
11 rate and the stock price growth rate means that the dividend yield will be going
12 down. Yet, the constant growth form of the DCF model has no mechanism to
13 account for the lower dividend yield investors would get if the Value Line
14 projections were correct.

15 Using an earnings per share growth rate in the constant growth form of the DCF
16 model will therefore result in an overstatement of the cost of equity whenever the
17 earnings per share growth rate that has been modeled by the analyst was derived along
18 with an expectation of a lower dividend growth rate. This is because under these
19 conditions, the dividend yield portion of the constant growth form of the equation will be
20 overstated.

21 The basic difference between the use of an analysts' earnings per share growth
22 rate in the constant growth DCF formula and using the "br" (b=the earnings retention rate

1 X the rate of return on common equity investment) approach is that the “br” form if
2 properly applied eliminates the mathematical error caused by an inconsistency between
3 the expectations for earnings per share growth and dividends per share growth. Because
4 of the elimination of mathematical problems in the constant growth form due to
5 inconsistencies between the earnings per share and dividends per share growth rate, the
6 accuracy of the results of a properly applied “br” approach will be superior and often
7 materially superior to the answer obtained from other approaches to the constant growth
8 form of the DCF model. This is not to say that even a properly applied “br” approach
9 will be perfect. The self-correcting nature of a properly applied “br” to forecasted
10 differences in earnings per share and dividends per share growth rates is a big help in
11 mitigating the resultant computational error but should not be viewed as the perfect way
12 to quantify the impact of expected non-constant growth rates.

13 **Q. HOW CAN INACCURACIES IN THE DCF RESULT, CAUSED BY**
14 **FORECASTED DIFFERENCES BETWEEN THE EPS GROWTH RATE AND**
15 **THE DIVIDENDS PER SHARE GROWTH RATE, BE ELIMINATED?**

16 A. One way to correct such a problem is to reject the constant growth DCF model in favor of
17 the non-constant growth DCF model. The non-constant growth DCF model separately
18 discounts the anticipated cash flow in each subsequent year so that changes in the
19 dividend payout ratio and anticipated changes in the earned return on book equity can
20 both be quantified in a way that retains mathematical accuracy. The simplest way to
21 avoid adding this extra complexity in a way that, especially for regulated public utilities,
22 will generally retain mostly all of the accuracy obtainable from the non-constant growth
23 model is to quantify growth by using “br” + “sv,” in which:

1 future expected earned return on equity, "r." In fact, there often is a large
2 difference between the two.

3 2. The correct value to use for "r" is the return on book equity expected by
4 investors as of the time the stock price and dividend data is used to quantify the
5 D/P term in the equation. Therefore, even if future events occur that may change
6 what investors expect for "r", the computation of the cost of equity "k" remains
7 correct as of the time the computation was made.

8 3. The ability of a commission decision to influence future cash flow
9 expectations is not unique to the retention growth approach to the DCF method.
10 The five-year analysts' earnings per share growth rate is a computation that is
11 directly influenced by what earnings per share will be in five years. A change in
12 what analysts expect will be the allowed return on equity for earnings generated
13 five years from now will change not only the expected earnings per share five
14 years from now, but will also change the five year earnings per share growth rate.

15 **Q. CAN CHANGES IN THE OVERALL EARNED RETURN IMPACT GROWTH**
16 **ABOVE AND BEYOND WHATEVER GROWTH RESULTS FROM EARNINGS**
17 **RETENTION?**

18 A. Yes, but one-time changes in EPS caused by a perceived change in the future expected
19 earned returns are unsustainable. The new perceived earned return on book equity should
20 be part of the computation, but the one-time growth spurt to get there is no more
21 indicative of the sustainable growth required in the constant growth DCF formula than
22 the temporary negative growth that occurs when a company has a bad year.

1 **Q. HOW HAVE YOU IMPLEMENTED THE CONSTANT GROWTH FORM OF**
2 **THE DCF MODEL IN THIS CASE?**

3 A. I have applied the constant growth form of the DCF model by staying true to the
4 mathematically derived “ $k=D/P + (br + sv)$ ” form of the DCF model. I have also taken
5 care to fully allocate all future expected earnings to either future cash flow in the form of
6 dividends (“D”) or to retained earnings (the retention rate, “b”). This extra accuracy is
7 obtained only when the retention rate “b” is derived from the values used for “D” and “r”
8 rather than independently.

9 **Q. PLEASE EXPLAIN HOW YOU OBTAINED THE VALUES TO INPUT INTO**
10 **THE CONSTANT GROWTH FORM OF THE DCF METHOD.**

11 A. The DCF model generally calls for the use of the dividend expected over the next year.
12 A reasonable way to estimate next year’s dividend rate is to increase the quarterly
13 dividend rate by $\frac{1}{2}$ of the current actual quarterly dividend rate. This is a good
14 approximation of the rate that would be obtained if the full prior year’s dividend were
15 escalated by the entire growth rate.⁵⁶

⁵⁶ For example, assume a company paid a dividend of \$0.50 in the first quarter a year ago, and has a dividend growth rate of 4 % per year. This dividend growth rate equals $(1.04)^4 - 1 = 0.00985$ % per quarter. Thus, the dividend is \$.5049 in the second quarter, \$.5099 in the third quarter, and \$0.5149 in the fourth quarter.

If that 4 % per annum growth continues into the following year, then the dividend would be \$0.5199 in the 1st quarter, \$0.5251 in the 2nd quarter, \$0.5303 in the 3rd quarter, and \$0.5355 in the 4th quarter. Thus, the total dividends for the following year equal \$2.111 ($0.5199 + 0.5251 + 0.5303 + 0.5355$). I computed the dividend yield by taking the current quarter (the \$0.5149 in the 4th quarter in this example), and multiplying it by 4 to get an annual rate of \$2.06. I then escalated this \$2.06 by $\frac{1}{2}$ the 4 % growth rate, which means it is increased by 2 %. $\$2.06 \times 1.02 = \2.101 , which is within one cent of the \$2.111 obtained in the example.

1 I obtained the stock price "P" used in my DCF analysis from the closing prices of
2 the stocks on April 30, 2018. I also obtained an average stock price for the 12 months
3 ending April 30, 2018 by averaging the high and low stock prices for the year.

4 I based the value of the future expected return on equity, "r", on the average
5 return on book equity expected by Value Line. I also made a computation that was based
6 on a review of both the earned return on equity consistent with analysts' consensus
7 earnings growth rate expectations and on the actual earned returns on equity. For a stable
8 industry such as utility companies, investors will look at typical actual earned returns on
9 equity as one meaningful input into what can be expected for future earned returns on
10 book equity. See Schedule ALR 4, page 1.

11 This return on book equity expectation used in the DCF method to compute
12 growth must *not* be confused with the cost of equity. Since the stock prices for the
13 comparative companies are considerably higher than their book value, the return
14 investors expect to receive on their market price investment is considerably less than
15 whatever is the anticipated return on book value. If the market price is low, the cost of
16 equity will be higher than the future expected return on book equity, and if the market
17 price is high, then the return on book equity will be less than the cost of equity.

18 In addition to growing through the retention of earnings, utility companies also
19 grow by selling new common stock. I quantified this growth caused by the sale of new
20 common stock above book value by multiplying the amount that the actual market-to-
21 book ratio exceeds 1.0 by the compound annual growth rate of stock that Value Line

1 forecasts. The results of that computation are shown on line 4 of Schedules ALR 4, page
2 1.

3 Pure financial theory tends to prefer concentrating on the results from the most
4 current price because investors cannot purchase stock at historical prices. Others are
5 concerned about the potential distortion of using just a spot price. I present both so the
6 Commission can use the perspective it feels is most appropriate. As shown on Schedule
7 ALR 2, my DCF method, applied to the Proxy Group, the DCF result based on the year-
8 end stock price and the DCF result based on average prices for the year ending April 30,
9 2018 is 8.00% and as of April 30, 2018 the result is 8.16%. Schedule ALR 4, page 1
10 shows more of the specifics of how I implemented the constant growth form of the DCF
11 model for the Proxy Group.

12 **Q. PLEASE EXPLAIN HOW YOU DETERMINED WHAT VALUE TO USE FOR**
13 **“R” WHEN COMPUTING GROWTH IN YOUR CONSTANT GROWTH FORM**
14 **OF THE DCF MODEL.**

15 A. The inputs I considered are shown in Footnote [A] of Schedule ALR 4, page 1. The value
16 of “r” that is appropriate to use in the DCF formula is the value anticipated by investors
17 to be maintained on average in the future. This schedule shows that the average future
18 return on equity forecast by Value Line on average for the Proxy Group for 2019-2021-
19 23 is 9.50%. The same footnote also shows that the future expected return on equity
20 derived from the Zacks consensus forecast is 9.51%, and that the actual returns on equity
21 earned on average by the Proxy Group were 9.37% in 2015, 9.42% in 2016 and 9.39% in
22 2017. Based on the combination of the forecast return on equity derived from the Zacks

1 consensus, the recent historical actual earned returns and Value Line's forecast, I made
2 the DCF growth computation using an 10.00% value of "r".

3 **Q. WHAT COST OF EQUITY IS INDICATED BY THE CONSTANT GROWTH**
4 **FORM OF THE DCF METHOD THAT YOU RELY ON FOR YOUR**
5 **RECOMMENDATION?**

6 A. The result of my DCF analysis using the Constant Growth form of the DCF indicates a
7 cost of equity range of between 8.00% and 8.16% for the Proxy Group.⁵⁷ Since these
8 DCF findings use analysts' forecasts to derive sustainable growth (in part) and on
9 analysts' forecasts of dividend growth and book value growth in the non-constant form of
10 the DCF method, the results should be considered as conservatively high. This is because
11 as previously mentioned above, analysts' forecasts of such growth have been notoriously
12 overstated.

13 It should be noted that the results I have obtained are not as influenced by over-
14 optimistic analysts' forecasts as would have been the case if I had merely used analysts'
15 five-year earnings growth rate forecasts as a proxy for long-term growth. This is because
16 the DCF methods I use compute sustainable growth rates rather than growth rates that can
17 exaggerate the growth rate due assuming a relatively short-term forecast (five-years) will
18 remain indefinitely.⁵⁸

19 **C. Non-Constant Growth Form of the DCF Model**

20 **Q. WHAT IS THE NON-CONSTANT GROWTH FORM OF THE DCF MODEL?**

⁵⁷ Schedule ALR 2.

⁵⁸ Mr. Hevert agrees that the earnings, book value and cash flow can be considered in determining investor's growth expectations. See Mr. Hevert's direct testimony, page 19, lines 22-25.

1 A. The non-constant growth form of the DCF model is a method that accounts for growth
2 rates that change over time.

3 **Q. PLEASE EXPLAIN HOW YOU IMPLEMENTED THE NON-CONSTANT**
4 **GROWTH FORM OF THE DCF MODEL**

5 A. The non-constant growth form of the DCF model determines the return on investment
6 expected by investors based on an estimate of each separate annual cash flow the investor
7 expects to receive. For the purpose of this computation, I incorporated Value Line's
8 detailed annual forecasts to arrive at the specific non-constant growth expectations that an
9 investor who trusts Value Line would expect. This implementation is shown on Schedule
10 ALR 5, pages 1-2. In the first stage (2018-2022) of my non-constant growth method the
11 dividend received by investors is based on Value Line's year-by-year forecasts of
12 dividends per share. In the second stage (2023-2059) the dividends received by investors
13 is generated from Value Line's future expected return on book equity as follows:

14 1. $\text{Earnings Per Share} = \text{Future Expected Return on Book Equity} \times \text{Book Value}$

15 2. $\text{Dividends} = \text{Earnings Per Share} \times \text{Retention Ratio}$

16 The retention ratio is based on Value Line's forecasts of dividends and earnings in
17 the first stage. The future expected return on book equity is based on Value Line's
18 forecast for 2021-23. The stock price used to determine the proceeds from selling the
19 stock was obtained by estimating that the stock price would grow at the same rate Value
20 Line forecasts book value to grow.

21 **Q. WHY DID YOU IMPLEMENT A NON-CONSTANT GROWTH DCF METHOD?**

1 A. I implemented a non-constant DCF method because it shows how the cost of equity is
2 impacted by forecasted changes in financial factors such as dividend payout ratio or the
3 market-to-book ratio. The non-constant growth method can measure the impact of
4 variations in investor growth rate expectations while the constant growth method cannot.
5 As shown on Schedule ALR 5, page 1, leaving the market-to-book ratio constant at 2.01
6 in Stage 1 and Stage 2 results in an 8.21% cost of equity.⁵⁹ If investors expect market-to-
7 book ratio book ratios to decrease their cost of equity is likely lower than 8.21%.

8 **Q. WHAT COST OF EQUITY DOES YOUR NON-CONSTANT GROWTH DCF**
9 **METHOD INDICATE?**

10 A. My non-constant growth DCF method indicates a cost of equity of between 8.17% and
11 8.21%.⁶⁰

12 d. **EQUITY FINANCING COSTS**

13 **Q. HAVE YOU DETERMINED THE AMOUNT OF FINANCING COSTS TO BE**
14 **INCLUDED IN THE COST OF EQUITY COMPUTATION?**

15 A. The common stock of electric companies is currently selling at a market price that is
16 approximately 100% above book value.⁶¹ As a result, when an electric company sells
17 new common stock, the effect is for the book value per share to increase. This makes
18 selling new common stock a net profit center rather than a contributor to costs.
19 Therefore, it is not necessary at this time to add any common equity financing cost
20 allowance.

⁵⁹ Schedule ALR 5, page 1.

⁶⁰ Schedule ALR 5, pages 1-2.

⁶¹ Schedule ALR 3, page 1.

1 **D. Capital Asset Pricing Model**

2 **Q. WHAT IS THE CAPITAL ASSET PRICING MODEL (CAPM)?**

3 A. The CAPM of Sharpe (1964), Lintner (1965), and Black (1972) is a theory about how
4 expected return (e.g. electric utility stocks) and capital assets are related. Like the DCF
5 method, it can be used to predict the return expected by stock investors or cost of equity.
6 Capital assets include stocks, bonds, real estate, et cetera. Here, the CAPM is being used
7 as a check on DCF results.

8 **Q. WHAT IS CAPM THEORY?**

9 The CAPM predicts that the cost of equity of a security has a positive linear
10 relationship to how sensitive the stock's returns are to the returns of the overall market.⁶²
11 This is referred to as the security market line. For example, the CAPM predicts that a
12 stock that tends to increase/decrease 2% when the overall market (e.g. S&P 500)
13 increases/decreases 1% has a higher cost of equity than a stock that increases/decreases
14 0.5% when the overall market increases/decreases 1%.

15 The relationship between the expected returns of a stock and the overall market is
16 measured by a stock's beta⁶³. I determined the market implied beta for the Proxy Group is
17 0.81⁶⁴ which indicates that investors expect the Proxy Group has a lower cost of equity
18 than the overall market (S&P 500).

⁶² The covariance between a stock and the overall market.

⁶³ A stock's beta is calculated by dividing its covariance with the overall market by the variance of the overall market.

⁶⁴ Schedule ALR 6, page 1.

1 The CAPM is a theoretical framework and does not require a specific formula or
2 mechanical process. William Sharpe⁶⁵ explains that the CAPM's assumptions provide
3 "no implications concerning either the signs or the magnitudes of the coefficients and the
4 associated pricing relationship"⁶⁶. However, a mathematical formula provides a concrete
5 representation of the CAPM's theoretical framework. In general the formula often
6 involves adding a risk premium (RP) to a risk-free rate of interest (Rf). The CAPM cost
7 of equity (K) result can be expressed as the following equation:

$$8 \qquad K = R_f + \beta * [E(R_m) - (R_f)]$$

9 Terms:

- 10 • K: Cost of equity;
- 11 • Rf: risk from rate of interest (e.g. 30-year U.S. Treasury yield);
- 12 • Beta (β): the systematic or market risk of a stock;
- 13 • E (Rm): return on the overall market (e.g. S&P 500, Dow Jones);
- 14 • [E(Rm) - (Rf)]: market risk premium;

15 **Q. WHAT IS BETA AND HOW DOES IT RELATE TO RISK?**

16 A. Beta is a measurement of the correlation between the risk of a given stock or industry
17 category and the risk of the market as a whole. A portfolio made up of companies with a
18 beta that averages 1.0 tends to have price swings that match the market in magnitude. A
19 portfolio with an average beta of 1.5 tends to move 1.5% for every 1% the market moves.
20 A portfolio with average beta of 0.8 tends to move 0.8% for every 1% the market moves.

⁶⁵ William Sharpe won the Noble Prize in Economics in 1990 for developing the CAPM.

⁶⁶ CAPITAL ASSET PRICES WITH AND WITHOUT NEGATIVE HOLDINGS, Noble Lecture, December 7, 1990 by William F. Sharpe, page 320.

1

2 **Q. WHY DO INVESTORS DEMAND A RISK PREMIUM TO INVEST IN STOCKS?**

3 A. Investors prefer to avoid uncertainty. Investments with more uncertain returns (i.e
4 greater volatility or risk) require higher compensation to induce investors to take on
5 additional risk.

6 **Q. FOR WHAT TYPE OF RISK DO INVESTORS DEMAND COMPENSATION?**

7 A. Investors demand compensation for risks that they cannot eliminate through
8 diversification. Investors buy stocks as part of diversified portfolios. This behavior, or
9 portfolio effect, causes the diversifiable risks of each company to cancel out.
10 Unanticipated failure is offset by unanticipated success. After all the diversifiable risks
11 of all The Company in an investor's portfolio cancel out, only non-diversifiable risk
12 remains. Examples of non-diversifiable risk could be a worldwide recession or a sudden
13 shortage of crude oil.

14 **Q. PLEASE EXPLAIN HOW YOU IMPLEMENTED THE CAPM.**

15 A. I used the CAPM to estimate OTP's cost of equity with the following inputs:

- 16 1. Option price derived betas for each of the companies in the Proxy Group⁶⁷;
- 17 2. Option price derived betas for two BlackRock Bond Funds⁶⁸;
- 18 3. Yields on BlackRock Bond Funds.

19 Based on the option implied betas of the bond funds and their market yields I was able to
20 determine the security market line. Because one of the three bond funds that I use for this

⁶⁷ An option implied beta was not calculated for Exelon Corp. because option pricing data is not provided by Yahoo Finance.

⁶⁸ BlackRock Bond Funds were used because they are large funds which have options pricing data.

1 method did not have adequate data on April 30, 2018 I used data from earlier in the
2 month.

3 Utilizing this options implied security market line the CAPM indicates a cost of
4 equity of 8.59% for the Proxy Group⁶⁹.

5 **VI. BUSINESS RISK AND OTHER CONSIDERATIONS**

6 **Q. PLEASE SUMMARIZE THE ADDITIONAL FACTORS MR. HEVERT RELIES**
7 **UPON TO INCREASE HIS COST OF EQUITY RECOMMENDATION**

8 A. Mr. Hevert considers the following factors in determining OTP's Cost of Equity:

- 9 1. Planned capital investment program;
- 10 2. Small size;
- 11 3. Degree of customer concentration;
- 12 4. Institutional ownership;
- 13 5. Trading volumes and liquidity;
- 14 6. Relative Beta coefficients;⁷⁰
- 15 7. Overall performance in reducing costs;
- 16 8. High quality of service.⁷¹

17 Mr. Hevert does not make a specific adjustment to his cost of equity
18 recommendation to account for the impact of these additional factors.⁷² He claims these
19 factors support a cost of equity above the mean of his cost of equity results.⁷³

⁶⁹ 3 of the 9 companies in the Proxy Group with adequate options data were used.

⁷⁰ Mr. Hevert's direct testimony, page 36, lines 7-10.

⁷¹ Ibid. page 3, lines 24-26.

⁷² Ibid. page 66, lines 10-11.

1 Mr. Hevert's states, "The ROE [or Cost of Equity] is market-based...⁷⁴, premised
2 on opportunity costs"⁷⁵. While I explain elsewhere in this testimony why his cost of
3 equity recommendation is not market based, even he does not claim that his
4 recommendation to set an "ROE that recognizes" overall performance and quality of
5 service is in any way market-based. The only reasons he provides for this
6 recommendation is they "merit consideration"⁷⁶ and it is "consistent with ...latitude of
7 regulators."⁷⁷ Rewarding the company for good performance is beyond the scope of rate
8 of return testimony. And providing such a reward, should the commission decide to do
9 so, by increasing the cost of equity is not consistent with ratemaking principles.

10 **Q. DOES MR. HEVERT CONSIDER THE CREDIT IMPACT OF OTP'S SUITE OF**
11 **RATE MECHANISMS?**

12 A. No. Mr. Hevert discusses the need for "supportive cost recovery from regulators"⁷⁸, **NOT**
13 **FOR PUBLIC DISCLOSURE.**⁷⁹

14 **Q. DO CREDIT RATING AGENCIES VIEW OTP'S RATE MECHANISMS AS**
15 **CREDIT POSITIVE?**

16 A. **NOT FOR PUBLIC DISCLOSURE.**⁸⁰ **NOT FOR PUBLIC DISCLOSURE.**⁸¹

⁷³ Ibid.

⁷⁴ Ibid. page 11, line 4.

⁷⁵ Ibid. page 8, lines 8-9.

⁷⁶ Ibid. page 36, line 16.

⁷⁷ Ibid. lines 16-18.

⁷⁸ Ibid. page 38, lines 12-13.

⁷⁹ **NOT FOR PUBLIC DISCLOSURE.**

⁸⁰ **NOT FOR PUBLIC DISCLOSURE.**

⁸¹ **NOT FOR PUBLIC DISCLOSURE.**

1 **Q. PLEASE DISCUSS THE PROBLEMS WITH MR. HEVERT'S CLAIM THAT**
2 **THESE ADDITIONAL FACTORS JUSTIFY AN ROE ABOVE THE MEAN OF**
3 **HIS ANALYTICAL RESULTS.**

4 A. There are many flaws in Mr. Hevert's justifications regarding the appropriateness of
5 allowing a higher cost of equity for additional factors justify.

6 **A. Planned Capital Investment Program**

7 The primary justification for why OTP's capital investment plan (\$862 million
8 over the five-year period from 2017-2021) indicates a higher⁸² cost of equity is that it is
9 larger (ratio of projected capital expenditures to net plant) than most of the proxy
10 companies. Mr. Hevert shows in his direct testimony that OTP's ratio of projected capital
11 expenditures to net plant is higher than eight of the nine companies in his proxy group
12 over 18 percentage points higher than the next highest company.⁸³ This ratio, relied upon
13 by Mr. Hevert, does not directly measure what impacts credit metrics. As Mr. Hevert
14 explains in his direct testimony, "pressure on cash flows...exerts...pressure on credit
15 metrics".⁸⁴ What Mr. Hevert fails to explain is if new plant is financed by the same mix
16 of debt and equity as existing plant and the new debt is issued at a cost rate similar to the
17 company's embedded cost of debt, the new financing has little or no impact on the credit
18 metrics. Once added to rate base, the new plant produces the cash flow to maintain
19 coverage ratios. In OTTR's most recent credit report S&P Global Ratings indicated they
20 are watching cash flow. In particular S&P is focusing on the ratio of funds from
21 operations (FFO) to debt.

⁸² "toward the upper end of the reasonable range of returns".

⁸³ Mr. Hevert's direct testimony, page 37, lines 8-11.

⁸⁴ Mr. Hevert's direct testimony, page 38, lines 3-7.

1 To test if OTP's capital investment plan indicates a higher risk profile than the
 2 proxy companies, as claimed by Mr. Hevert, I conducted a study to determine how OTP
 3 compares to the Proxy Group for a metrics used by credit rating agencies. In particular, I
 4 compared projected cash flow to debt ratios. In this test, a lower cash flow to debt ratio
 5 for OTP relative to the Proxy Group would support Mr. Hevert's claim. As shown in
 6 Table 5 below, OTTR's projected cash flow to debt ratio is higher than the Proxy Group
 7 median for all available data between 2017 and 2023. In 2017 OTTR's 24.7% projected
 8 cash flow to debt ratio is higher than every other company in the Proxy Group. Between
 9 2018 and 2023⁸⁵ OTTR has the second highest or the third highest ratio.

TABLE 5: CASH FLOW / TOTAL DEBT COMPARISON				
Proxy Group	2017	2018	2019	2020-23
ALLETE, Inc.	22.0%	22.4%	22.6%	23.3% [1]
Alliant Energy Corporation	19.3%	21.0%	21.9%	23.7% [1]
Black Hills Corporation	11.9%	10.5%	N/A	11.1% [2]
El Paso Electric Company	18.4%	18.8%	N/A	18.6% [2]
Hawaiian Electric Industries, Inc.	23.6%	25.8%	N/A	25.1% [2]
IDACORP, Inc.	21.3%	21.5%	N/A	22.2% [2]
North Western Corporation	16.2%	15.7%	N/A	16.2% [2]
OGE Energy Corp.	22.1%	23.0%	24.8%	27.0% [1]
PNM Resources, Inc.	15.7%	15.6%	N/A	17.6% [2]
Proxy Group Median	19.3%	21.0%	22.6%	22.2%
OTTR	24.7%	24.5%	24.6%	24.0% [1]
OTTR Ranking	1	2	2	3

10

Source: Schedule ALR 13, page 1

⁸⁵ In 2019 OTTR is third among only 4 companies (3 proxy companies + OTTR) because Value Line has not published the data for the other 6 companies in the Proxy Group.

1 Based on the criteria used by credit rating agencies (FFO to debt), OTP is less
2 risky than the proxy companies, despite, and because of, their larger⁸⁶ investment plan.
3 **NOT FOR PUBLIC DISCLOSURE**.⁸⁷ At OTTR's 2018 Annual Shareholder meeting, the
4 title of one of CFO Moug's slides was "Capital Expenditure Investments Enable Organic
5 Growth and Profitability"⁸⁸. All else equal, OTP's capital spending plan is risk reducing
6 and supports a cost of equity below the mean of Mr. Hevert's analytical results, not above
7 the mean as he claims.

8 **B. Small Size**

9 **Q. PLEASE DISCUSS MR. HEVERT'S CLAIM THAT OTP HAS A HIGHER COST**
10 **OF EQUITY BECAUSE OF ITS SIZE.**

11 A. Mr. Hevert claims that the Duff & Phelps analysis indicates that OTP's cost of equity is
12 176 basis points higher than the Proxy Group.⁸⁹ However, he is using the implied
13 capitalization of OTP instead of Otter Tail Power Corp.

14 **Q. DO YOU AGREE WITH MR. HEVERT THAT THE DUFF & PHELPS**
15 **ANALYSIS SUPPORTS A HIGHER COST OF EQUITY FOR OTP?**

16 A. No. The size of OTP's parent, Otter Tail Power Corp, is the relevant figure because OTP
17 has access to the resources of its parent. A stand-alone company of OTP's size would not
18 have access to the financial resources of a parent and would therefore be a totally
19 different risk category. If Otter Tail Power Corp's stock (e.g. trading volumes, liquidity
20 and amount of institutional ownership) is relevant to OTP's cost of equity, as Mr. Hevert
21 claims, its size is the relevant figure in a risk analysis, such as Duff & Phelps' study.

⁸⁶In comparison to the Proxy Group

⁸⁷**NOT FOR PUBLIC DISCLOSURE**

⁸⁸ 2018 Annual Shareholder Meeting, Kevin Moug, CFO Presentation, page 5.

⁸⁹ Mr. Hevert's Direct Testimony, page 43, lines 9-14.

1 OTP’s parent Otter Tail Power Corp, has a market capitalization of over \$1.75
2 billion as of April 30, 2018, between a low-cap and a mid-cap stock based on Duff &
3 Phelps size classification.⁹⁰ The Duff & Phelps analysis does not include small
4 companies that are subsidiaries of larger companies.⁹¹

5 **Q. IS THERE UNIVERSAL AGREEMENT THAT SMALLER COMPANIES HAVE**
6 **A HIGHER COST OF EQUITY?**

7 A. No. Professor Aswath Damodaran from New York University states the following
8 regarding the supposed “small cap premium”:

9 Even if you believe that small cap companies are more exposed to market risk
10 than large cap ones, this is an extremely sloppy and lazy way of dealing with that
11 risk, since risk ultimately has to come from something fundamental (and size is
12 not a fundamental factor).⁹²
13

14 **Q. WHAT IS YOUR CONCLUSION REGARDING MR. HEVERT’S CLAIM THAT**
15 **OTP HAS A HIGHER COST OF EQUITY BECAUSE OF ITS SIZE?**

16 A. As a subsidiary, OTP does not have the risk profile of a small company because it has
17 access to the resources of its parent, Otter Tail Power Corp. Mr. Hevert’s claim that OTP
18 has a higher cost of equity because of its size is unjustified.

19 **C. Degree of Customer Concentration**

20 **Q. DO YOU AGREE WITH MR. HEVERT’S CLAIM THAT OTP HAS A HIGHER**
21 **COST OF EQUITY BECAUSE OF ITS CONCENTRATION OF COMMERCIAL**
22 **AND INDUSTRIAL CUSTOMERS?**

⁹⁰ “companies within this low-cap range have an average market capitalizations \$1.17 Billion. Mid-cap stocks have an average market capitalization of \$4.65 Billion. 2016 SBBI Yearbook, page 7-3, Exhibit 7.1.

⁹¹ The portfolio used by Duff & Phelps is the entire universe of NYSE/NYSE MKT/NASDAQW-listed securities. 2016 SBBI Yearbook, page 7-2.

⁹²Aswath Damodaran, Equity Risk Premiums (ERP): Determinates, Estimation and Implications – The 2015 Edition (paper updated, March 2015). Page 42.

1 A. No. As shown on Schedule 10 of Mr. Hevert's direct testimony, the customer base of the
2 companies in the Proxy Group receive essentially the same percentage of revenues from
3 commercial and industrial customers as OTP. The average percentage of revenues from
4 commercial and industrial customers for the Proxy Group is 64.51%, ranging from a low
5 of 55.35% to a high of 88.48%.⁹³ OTP receives 69.49% of its revenues from commercial
6 and industrial customers.⁹⁴

7 **D. Trading Volumes and Liquidity**

8 **Q. PLEASE DISCUSS MR. HEVERT'S CLAIM THAT OTP HAS A HIGHER COST**
9 **OF EQUITY BECAUSE OF THE LIQUIDITY OF OTTR'S STOCK.**

10 A. Mr. Hevert claims that OTTR's trading volume (approximately 18% to 19% of the
11 average for the Proxy Group), is another indicator that OTP has a greater business risk
12 relative to the Proxy Group and supports a cost of equity at the upper end of his model
13 results.⁹⁵ The average daily volume Mr. Hevert uses to justify his claim that OTP is riskier
14 than the Proxy Group is not an indicator of increased risk. Investors demand a "liquidity
15 premium" for stocks that are more difficult to sell during difficult times. This is not the
16 case for OTTR. Mr. Hevert failed to perform this necessary analysis.⁹⁶

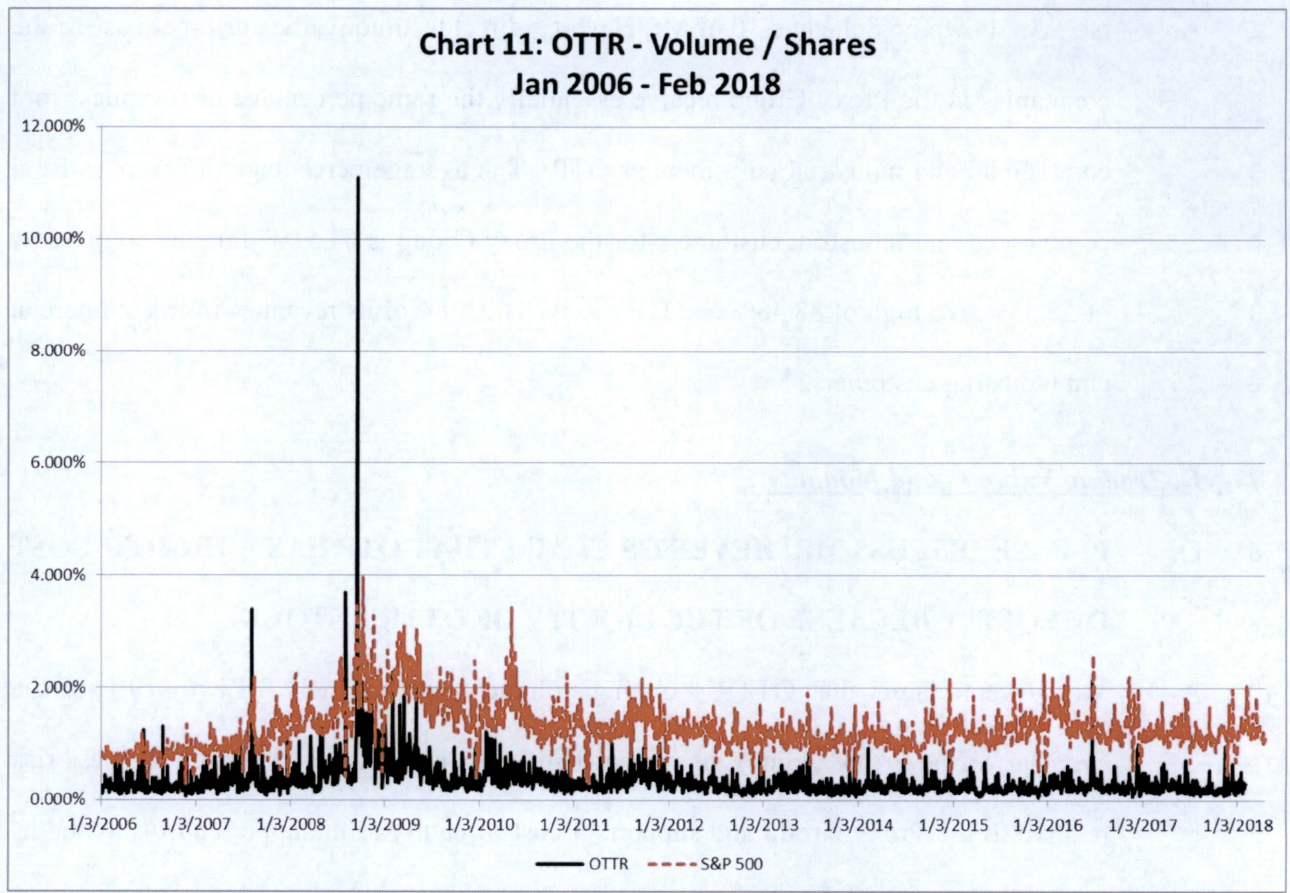
17 As shown in Chart 11 below, there was significant volume for OTTR stock during
18 the financial crisis indicating that investors are able to sell their stock during market
19 crashes. Mr. Hevert's claim that a higher cost of equity is required because of the
20 liquidity of OTTR's stock is not justified.

⁹³ Mr. Hevert's direct testimony, Schedule 10, page 1 of 1.

⁹⁴ Ibid.

⁹⁵ Mr. Hevert's direct testimony, page 2, line 27 and page 3, lines 1-5.

⁹⁶ Response to Data Request ND-PSC-02.14.



1

2 As shown on Schedules ALR 14, page 1 when OTTR stock prices changes by more than 5% in
 3 one day investors are able to trade shares. For example, when OTTR's stock changed by over
 4 10% in one day, over 2% of volume as a percentage outstanding shares traded. As shown on
 5 Schedule ALR 14, page 2, when S&P prices change 5% in a day, a similar percentage of
 6 outstanding shares are traded. This indicates that the cost of equity for OTP should not be any
 7 higher because of liquidity.

8 **Q. DO YOU AGREE WITH MR. HEVERT'S CLAIM THAT OTP'S OVERALL**
 9 **RISKS ARE HIGHER THAN THE PROXY GROUP?**

10 A. No. As discussed above, Mr. Hevert's claim that OTP is riskier than the Proxy Group is
 11 unjustified. OTP is not riskier than the Proxy Group.

1 **VII. ADDITIONAL COMMENTS ON TESTIMONY OF MR. HEVERT AND MR.**

2 **MOUG**

3 **Q. PLEASE SUMMARIZE OTP'S REQUESTED RATE OF RETURN.**

4 A. OTP is requesting a 7.92%⁹⁷ overall rate of return, based on a 10.30%⁹⁸ cost of equity,
5 and a capital structure consisting of 45.86% long-term debt, 1.64% short-term debt, and
6 52.50% common equity. The debt cost component of the Company's 7.92% overall rate
7 of return is based on a 5.35% cost for long-term debt, and 3.84% for short-term debt⁹⁹.

8 OTP's requested rate of return is summarized in Table 1 on page 2 of Mr. Moug's Direct
9 Testimony.

10 **Q. PLEASE SUMMARIZE THE TESTIMONY OF MR. HEVERT.**

11 A. Mr. Hevert considers the following "empirical models"¹⁰⁰ applied to his Proxy Group of
12 nine electric utilities: (1) Constant Growth DCF model, (2) Multi-Stage DCF model, (3)
13 CAPM, (4) Risk Premium approach. His Bond Yield Premium Approach is applied to
14 data from 1,522 electric utility rate proceedings.¹⁰¹ These approaches provide equity cost
15 rate estimates of between 8.05% and 12.04%.

Method	Cost of Equity- Median
Constant Growth DCF	8.05% - 10.36%
Multi-Stage DCF	8.49% - 10.19%

⁹⁷ Mr. Moug's supplemental direct testimony, page 4, Table 1.

⁹⁸ Ibid.

⁹⁹ Ibid.

¹⁰⁰ Mr. Hevert's direct testimony, page 15, line 20.

¹⁰¹ Ibid. page 34, lines 4-5.

CAPM	9.42% - 12.04%
Bond Yield Plus Risk Premium	9.96% - 10.33%

1 Source: Mr. Hevert’s direct testimony, page 6, Table 1: Summary of Analytical Results

2 Mr. Hevert states that his 10.30%, which is at the high end of the range of his cost
3 of equity methods, is justified for the following reasons: (1) OTP’s planned capital
4 investment program; (2) OTP’s small size; (3) OTP’s low customer concentration; (4)
5 OTTR’s low institutional ownership and level of average trading volume; (5) commercial
6 and industrial revenue concentration; and (6) TCJA impact on credit rating.¹⁰²

7 Additionally, he claims it is “appropriate” given OTP’s low consumer rates and under-
8 budget completion of recent projects.¹⁰³

9 **Q. PLEASE SUMMARIZE MR. HEVERT’S COST OF EQUITY DEFINITION AND**
10 **ANALYTICAL APPROACH.**

11 A. Mr. Hevert states, “The ROE [or Cost of Equity] is market-based...¹⁰⁴, and “...the key
12 consideration in determining the ROE is to ensure that the overall analysis reasonably
13 reflects investors’ view of the financial markets in general”¹⁰⁵ Regarding cost of equity
14 methods (e.g. DCF, CAPM), he explains, “...financial models simply are tools” and
15 “adherence to any single approach...can lead to flawed or misleading conclusions”¹⁰⁶. He
16 claims that “no individual model is more reliable than all others”¹⁰⁷ and reasonable cost

¹⁰² Ibid. page 6, lines 18-23.

¹⁰³ Ibid. page 3, lines 17-20.

¹⁰⁴ Ibid. page 11, line 4.

¹⁰⁵ Ibid. page 15, lines 15-16.

¹⁰⁶ Ibid. page 10, lines 23-26.

¹⁰⁷ Ibid. page 16, line 1.

1 of equity estimates consider “alternative methodologies...in the context of observable,
2 relevant market information”¹⁰⁸.

3 **Q. WHAT IS YOUR OVERALL REACTION TO MR. HEVERT’S TESTIMONY?**

4 A. Mr. Hevert’s 10.30% cost of equity recommendation is excessive largely because: (1) his
5 cost of equity recommendation is based on a flawed analytical approach and an
6 inappropriate definition of the cost of equity, despite defining it correctly in considerable
7 portions of filed testimony, (2) his interpretation of current capital markets include
8 unknowable and/or speculative predictions, (3) his incorrect conclusions about OTP’s
9 overall risks relative to the proxy group, (4) his invalid comments about the relevance of
10 DCF method results in the current high market-to-book ratios environment, (5) the
11 measurement and magnitude of the equity risk premium used in his CAPM and Bond
12 Yield Plus Risk Premium method.

13 **A. Analytical Approach**

14 **Q. IS MR. HEVERT’S STATED ANALYTICAL APPROACH CONSISTENT WITH**
15 **HIS STATED PRINCIPLES?**

16 A. No. Mr. Hevert conveys the air of a scientific approach to determining the cost of capital
17 by correctly stating important basic premises. He states that “estimating the Cost of
18 Equity is an empirical exercise”.¹⁰⁹ However, when it comes time to make his
19 computations, he fails to follow those principles. For example, Mr. Hevert says “The
20 ROE [or Cost of Equity] is market-based...”¹¹⁰, but when applying his approaches, there
21 are key places where he fails to actually use market data. Half of his CAPM results (2 of
22 4) are based on interest rate forecasts (“Near Term Projected”) instead directly observable

¹⁰⁸ Ibid. page 10, lines 28-30.

¹⁰⁹ Ibid. page 59, line 14.

¹¹⁰ Ibid. page 11, line 4.

1 market yields.¹¹¹ Using these forecasts instead of market-based data adds over 50 basis
2 points to two of his CAPM results.¹¹²

3
4 Mr. Hevert states "...the key consideration in determining the ROE is to ensure
5 that the overall analysis reasonably reflects investors' view of the financial markets in
6 general, and the subject company (in the context of the proxy companies) in
7 particular."¹¹³ He fails to do this. For example, when deriving his CAPM answer, he
8 used a cost of equity for Netflix of 40.60%¹¹⁴ based upon his interpretation of the data in
9 Value Line.¹¹⁵ He used this obviously unreasonable result even though the very same
10 Value Line report he cites advises investors that over the next five years, they should
11 expect a total return on their investment in Netflix stock of between 6% and -4%.¹¹⁶ It is
12 unlikely that Mr. Hevert's 74% growth rate for Halliburton Co¹¹⁷ reflects investors' view
13 of financial markets. Investors expecting Haliburton will grow at 74% indefinitely,
14 consistent with Mr. Hevert's model, is equivalent to investors expecting Haliburton's
15 market capitalization will pass \$30 trillion in 12 years¹¹⁸, or more than the total market
16 capitalization of all the companies in the S&P 500 as of April 30, 2018¹¹⁹.

17 Mr. Hevert explains that the required return "must be based on a comprehensive
18 review of relevant data and information, and does not necessarily lend itself to a strict

¹¹¹ Ibid. page 33, Table 8.

¹¹² Ibid.

¹¹³ Ibid. lines 15-17.

¹¹⁴ Ibid. Schedule 4, page 4 of 12.

¹¹⁵ Stock price data is used to calculate the dividend yield.

¹¹⁶ Value Line, August 11, 2017. The most recent Value Line addition at the time Mr. Hevert filed his direct testimony.

¹¹⁷ Mr. Hevert's direct testimony, Schedule 4, page 3 of 12.

¹¹⁸ \$40.1 Billion X (1+.74)¹² = \$30.899 Trillion.

¹¹⁹ The total Market capitalization of the S&P 500 was \$22.56 Trillion as of April 30, 2018. Yahoo Finance.

1 mathematical solution.”¹²⁰ However, despite claiming that P/E ratios are likely to
2 decrease, he does not directly test for this in his Multi-Stage DCF analysis.¹²¹ Mr.
3 Hevert’s Multi-Stage DCF model indicates a cost of equity of about 7% if P/E ratios
4 decline to the same levels as OTP’s last rate case.¹²²

5 **B. DCF Method**

6 **Q. PLEASE SUMMARIZE MR. HEVERT’S DCF METHODS.**

7 A. Mr. Hevert applies Constant Growth and Multi-Stage DCF models to his Proxy Group.
8 He calculates the dividend yield portion based on 30, 90, and 180 day average stock
9 prices.¹²³ Mr. Hevert’s Constant Growth model relies on EPS growth estimates from
10 Zack’s, First Call, and Value Line.¹²⁴ The growth component of his Multi-Stage DCF
11 model is based on EPS growth estimates (first stage) and forecasted long-term GDP
12 growth to calculate the terminal value.¹²⁵ Mr. Hevert’s Constant Growth DCF results are
13 between 8.05% and 10.36%.¹²⁶ His Multi-Stage DCF results are between 8.49% and
14 10.19%.¹²⁷

15 Mr. Hevert claims the Constant Growth DCF model has limiting assumptions¹²⁸
16 and its “results should be viewed with caution”¹²⁹. In particular, he states that the
17 Constant Growth DCF assumes that “the P/E ratio will remain constant”¹³⁰ and the Multi-

¹²⁰ Mr. Hevert’s direct testimony, page 15, lines 13-15.

¹²¹ Mr. Hevert’s direct testimony, Schedule 3, page 1-20 of 20.

¹²² Schedule ALR 12, page 3.

¹²³ Mr. Hevert’s direct testimony, page 17, lines 3-5.

¹²⁴ Ibid. page 20, lines 2-5.

¹²⁵ Ibid, page 28, Table 6.

¹²⁶ Ibid. page 24, Table 4.

¹²⁷ Ibid, page 30, Table 7.

¹²⁸ Ibid. page 25, lines 1-2.

¹²⁹ Ibid. page 20, lines 18-21.

¹³⁰ Ibid. page 25, lines 12-15.

1 Stage DCF model “enables analysts to...address the limiting and likely unrealistic
2 assumptions underlying the Constant Growth form of the model”¹³¹. However, he does
3 not directly test the impact of a declining P/E ratio. As discussed below, if Mr. Hevert is
4 correct that investors expect declining P/E ratios, Mr. Hevert’s Multi-Stage DCF results
5 indicate a cost of equity of between about 80 and 200 basis points lower than his results
6 assuming a constant P/E ratio – the opposite of what Mr. Hevert has claimed.

7 **Q. DOES MR. HEVERT AGREE THAT THE CONSTANT GROWTH FORM OF**
8 **THE DCF METHOD REQUIRES THAT EARNINGS, DIVIDENDS, AND BOOK**
9 **VALUE ARE ALL EXPECTED TO GROW AT THE SAME RATE?**

10 A. Yes. On page 16, lines 22-25 of his Direct Testimony, he says

11 The Constant Growth DCF model assumes: (1) earnings, book
12 value, and dividends all grow at the same, constant rate in
13 perpetuity; (2) the dividend payout ratio remains constant; (3) a
14 Price to Earnings (“P/E”) multiple remains constant in perpetuity;
15 and (4) the discount rate is greater than the expected growth rate.

16 **Q DO YOU BELIEVE MR. HEVERT’S “CONSTANT GROWTH” DCF**
17 **APPROACH UPHOLDS THE REQUIREMENTS THAT MR. HEVERT HAS**
18 **STATED HIMSELF?**

19 A. No. A careful reading of his testimony shows that because he has failed to respect the
20 need to grow earnings, book value, and dividends at the same rate, his Constant Growth
21 DCF method overstats of the cost of equity.

22 **Q. PLEASE SUMMARIZE THE FLAWS IN MR. HEVERT’S CONSTANT**
23 **GROWTH AND MULTI-STAGE DCF ANALYSES.**

¹³¹ Ibid. page 25, lines 20-22.

1 A. The critical flaws in Mr. Hevert's DCF Analyses have the following three characteristics:
 2 (1) mathematical errors, (2) inconsistencies, (3) invalid inputs. As shown in Table 6
 3 below, there are five primary flaws in Mr. Hevert's DCF analyses. I will discuss each of
 4 these five flaws below.

TABLE 6: DCF FLAWS

	<u>Mathematical Errors</u>	<u>Inconsistencies</u>	<u>Invalid Inputs</u>
1. 5-Year EPS Growth	X		X
2. Multi-Stage Dividend Payout Ratio	X		X
3. Long-Term Growth at Historical GDP Growth		X	X
4. Multi-Stage - P/E Ratio Held Constant		X	
5. Claiming to be Smarter than Capital Markets		X	X

5

6 As Table 7 below shows, correcting for the flaws in Mr. Hevert's Constant
 7 Growth and Multi-Stage DCF models would substantially lower his cost of equity results.

TABLE 7: CORRECTIONS FOR THE FLAWS IN MR. HEVERT'S DCF METHODS

	<u>Constant Growth</u>	<u>Multi-Stage</u>
Mr. Hevert's Recommendations (Mean 30-Day)*	8.05% to 10.36%	8.49% to 10.19%
Impact of Flaws		
1. 5-Year EPS Growth	0.60%	
2. Multi-Stage Dividend Payout Ratio**	N/A	-0.12%
3. Long-Term Growth at Historical GDP Growth**	N/A	-0.65% to Unquantified
4. Multi-Stage - P/E Ratio Held Constant**	N/A	-0.85% to -2.14%
5. Non-Market Based Recommendations	Unquantifiable	Unquantifiable

8

*Mr. Hevert's direct testimony, page 24, Table 4 and page 30, Table 7

**Based on sensitivity results from Mr. Hevert's Multi-Stage DCF model - Mr. Hevert's direct testimony, Schedule 3, page 11 of 20

1 1. 5-Year EPS Growth

2 **Q. WHY ARE ANALYSTS 5-YEAR CONSENSUS GROWTH RATES NOT**
3 **INDICATIVE OF LONG-TERM SUSTAINABLE GROWTH RATES?**

4 A. Analysts' 5-year earnings per share growth rates are earnings per share growth rates that
5 measure earnings growth from the most currently completed fiscal year to projected
6 earnings five years into the future. As shown in the Netflix example above, these growth
7 rates are rarely indicative of future sustainable growth rates in part because the sources of
8 cash flow to an investor are dividends and stock price appreciation. While both stock
9 price and dividends are impacted in the long-run by the level of earnings a company is
10 capable of achieving, earnings growth over a period as short as five years is rarely in
11 synchronization with the cash flow growth from increases in dividends and stock prices.
12 For example, if a company experiences a year in which investors perceive that earnings
13 temporarily dipped below normal trend levels, stock prices generally do not decline at the
14 same percentage that earnings decline, and dividends are usually not cut just because of a
15 temporary decline in a company's earnings. Unless both the stock price and dividends
16 mirror every down swing in earnings, they cannot be expected to recover at the same
17 growth rate that earnings recover. Therefore, growth rates such as five-year projected
18 growth in earnings per share are not indicative of long-term sustainable growth rates in
19 cash flow. As a result, they are inapplicable for direct use in the simplified DCF method.

20 **Q. IS THE USE OF FIVE-YEAR EARNINGS PER SHARE GROWTH RATES IN**
21 **THE DCF MODEL IMPROPER?**

1 A. Yes. It is improper because 5-year earnings per share growth rates are not long-term
2 sustainable growth rates and are typically different from 5-year dividend, book value and
3 stock price growth rate forecasts.

4 When implementing the DCF method, the time value of money is considered by
5 equating the current stock price of a company to present value of the future cash flows
6 that an investor expects to receive over the entire time that he or she owns the stock. The
7 discount rate required to make the future cash flow stream, on a net present value basis,
8 equal to the current stock price is the cost of equity. The only two sources of cash flow to
9 an investor are dividends and the net proceeds from the sale of stock at whatever time in
10 the future the investor finally sells. Therefore, the DCF method is discounting future
11 cash flows that investors expect to receive from dividends and from the eventual sale of
12 the stock. Five-year earnings growth rate forecasts are especially poor indicators of cash
13 flow growth even over the five years being measured by the five-year earnings per share
14 growth rate number.

15 **Q. WHY IS A 5-YEAR EARNINGS PER SHARE GROWTH RATE A POOR**
16 **INDICATOR OF THE FIVE-YEAR CASH FLOW EXPECTATION FROM**
17 **DIVIDENDS?**

18 A. The board of directors change dividend rates based upon long-term earnings expectations
19 combined with the capital needs of a company. Most companies do not cut the dividend
20 simply because a company has a year in which earnings were below sustainable trends,
21 and similarly they do not increase dividends simply because earnings for one year
22 happened to be above long-term sustainable trends. Therefore, over any given five-year

1 period, earnings growth is frequently very different from dividend growth. In order for
2 earnings growth to equal dividend growth, at a minimum, earnings per share in the first
3 year of the five-year earnings growth rate period would have to be exactly on the long-
4 term earnings trend line expected by investors. Since earnings in most years are with
5 above or below the trend line, the earnings per share growth rate over most five-year
6 periods is different from what is expected for earnings growth.

7 **Q. WHY IS THE 5-YEAR EARNINGS PER SHARE GROWTH RATE A POOR**
8 **INDICATION OF FUTURE STOCK PRICE GROWTH?**

9 A. If a company happens to experience a year in which earnings decline below what
10 investors believe are consistent with the long-term trend, then the stock price does not
11 drop anywhere near as much as earnings drop. Similarly, if a company happens to
12 experience a year in which earnings are higher than the investor-perceived long-term
13 sustainable trend, then the stock price will not increase as much as earnings. In other
14 words, the P/E (price/earnings) ratio of a company will increase after a year in which
15 investors believe earnings are below sustainable levels, and the P/E ratio will decline in a
16 year in which investors believe earnings are higher than expected. Since it is stock price
17 that is one of the important cash flow sources to an investor, a five-year earnings growth
18 rate is a poor indicator of cash flow both because it is a poor indicator of stock price
19 growth over the five years being examined and is equally a poor predictor of dividend
20 growth over the period.

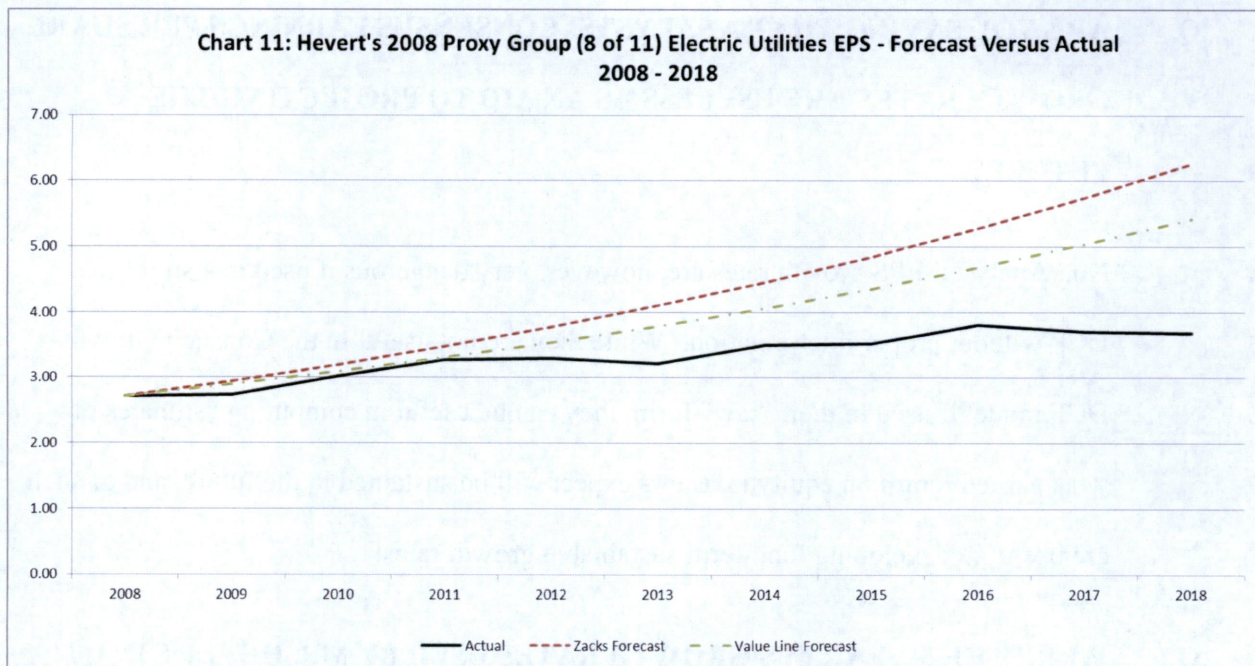
1 **Q. ARE YOU SAYING THAT ANALYSTS' CONSENSUS EARNINGS PER SHARE**
2 **GROWTH RATES ARE USELESS AS AN AID TO PROJECTING THE**
3 **FUTURE?**

4 A. No. Analysts' EPS growth rates are, however, very dangerous if used in a simplified
5 DCF without proper interpretation. While they are not useful in the Constant Growth
6 DCF model if used in their "raw" form, they can be useful in computing estimates of
7 what earned return on equity investors expect will be sustained in the future, and as such,
8 are useful in developing long-term sustainable growth rates.

9 **Q. WERE THE 5-YEAR EPS GROWTH RATES USED BY MR. HEVERT IN OTP'S**
10 **LAST RATE CASE HIGHER THAN ACTUAL EARNINGS?**

11 A. Yes. As Chart 11 below shows, Zacks and Value Line's 5-year EPS forecasts for the
12 proxy group (8 of 11) were significantly higher than actual earnings. The results of this
13 test are consistent with the results of the McKinsey study mentioned earlier in my
14 testimony. McKinsey found that analysts were overly optimistic a, slow to revise their
15 forecasts, and prone to making increasingly inaccurate forecasts during economic
16 downturns. Moreover, as indicated by P/E ratios, investors' expectations were more
17 conservative.¹³² DCF results based on analyst 5-Year EPS growth rates should be viewed
18 with caution because they likely are higher than investor expectations.

¹³² Marc H. Goedhart, Rishi Raj and Abhishek Saxena, *Equity Analysts: Still too bullish*, Spring 2010, page 14.



1

2 **Q. DOES THE ACADEMIC RESEARCH CITED BY MR. HEVERT INDICATE IT**
 3 **IS APPROPRIATE TO USE ANALYST EPS GROWTH ESTIMATES IN A DCF**
 4 **MODEL WITHOUT ADDRESSING SUSTAINABILITY?**

5 A. No. The issues with using analyst EPS growth rates in a DCF model are addressed in the
 6 articles cited in Mr. Hevert testimony. Regarding the potential difficulties with using
 7 analyst EPS growth rates in a DCF model, Robert Harris explains the following in Using
 8 Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return:

9 ...some analysts fail to normalize growth projections or fail to continually review
 10 and revise their earnings estimates.¹³³

11 Harris takes various measures to control for analysts potential failure to normalize EPS
 12 growth projections. He applies his DCF approach to a portfolios of stocks¹³⁴ because
 13 “future growth patterns may be expected to have drastic changes for some specific

¹³³ Attachment 6 to DR ND-PSC-02.07, page 4 of 10.

¹³⁴ All dividend paying stocks in the S&P 500 plus approximately 150 stocks of regulated companies.

1 securities.”¹³⁵ As Harris explains, it is critical to assure that the growth rate component
2 used in a DCF model is sustainable. Using analyst EPS growth forecasts in a DCF model
3 applied to a Proxy Group of 9 companies, as Mr. Hevert has done, is inconsistent with the
4 research cited in his testimony. On the other hand, my Constant Growth DCF method
5 takes measures (See “Constant Growth Form of the DCF Model” section of my
6 testimony), as Mr. Hevert’s cited research advises, to control for the difficulties with
7 analyst EPS growth forecasts.

8 2. Multi-Stage Dividend Payout Ratio

9 **Q. HOW DOES MR. HEVERT CALCULATE THE DIVIDEND PAYOUT RATIO IN**
10 **HIS MULTI-STAGE DCF METHOD?**

11 A. Mr. Hevert relied on Value Line’s projected payout ratio for the earliest time period of
12 his model.¹³⁶ He claims that the payout ratio in his model converges to the industry-
13 average of 64.42%.¹³⁷

14 **Q. WHY DOES MR. HEVERT’S PAYOUT RATIO ASSUMPTIONS PRODUCE**
15 **UNREASONABLY HIGH RESULTS?**

16 A. He does not use GDP as a proxy for the growth rate as claimed. Instead he consistently
17 escalates the growth rate by allocating a greater portion of earnings to dividends, i.e. he
18 increases the payout ratio.

19 3. Long-Term Growth at Historical GDP Growth

¹³⁵ Attachment 6 to DR ND-PSC-02.07, page 4 of 10.

¹³⁶ Mr. Hevert’s direct testimony, page 29, lines 13-18.

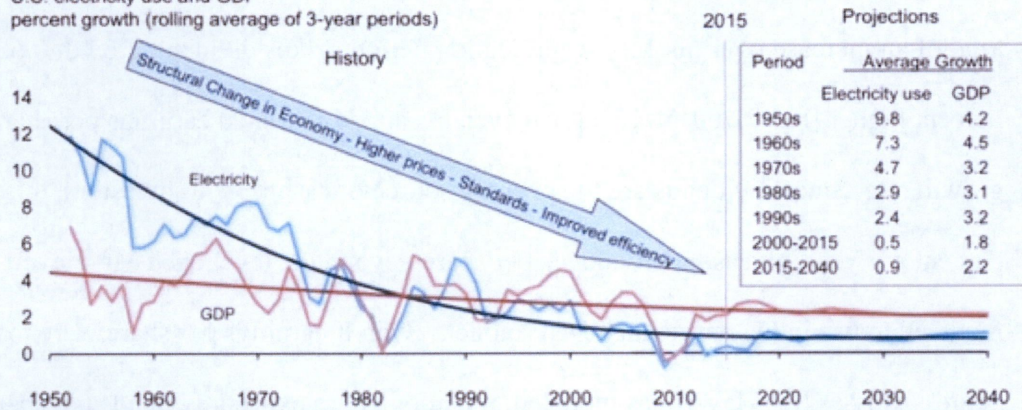
¹³⁷ Ibid.

1 **Q. PLEASE EXPLAIN THE PROBLEMS WITH HOW MR. HEVERT**
2 **DETERMINED THE GDP GROWTH RATE USED IN HIS MULTI-STAGE DCF**
3 **METHOD.**

4 A. First, he assumes that growth in electric consumption will be the same as GDP growth in
5 electricity use. As shown in the following graph published by the U.S. Energy
6 Information Association (www.eia.gov), electricity consumption has been growing more
7 slowly than GDP since the 1980's. The table that is part of this same graph specifically
8 shows that from 2015-2040 Electric use is projected to grow at 0.9 percent per year while
9 at the same time forecasting GDP growth to be 2.2 percent per year. These growth
10 figures are both before adding an allowance for inflation, but the basic premise that
11 electric growth is expected to be considerably lower than GDP growth still remains. The
12 large downward sloping arrow on the EIA below expresses that the slower growth in
13 electricity consumption vs GDP is caused by "Structural Change in the Economy",
14 "Higher prices", "Standards", and "Improved efficiency". When making the overly
15 simplistic assumption that GDP growth and electric consumption would remain the same,
16 Mr. Hevert considered none of this. If he had, his non-constant DCF result would have
17 been materially lower.

Electricity use (including direct use) continues to grow, but the rate of growth slows as it has almost continuously over the past 60 years

U.S. electricity use and GDP
percent growth (rolling average of 3-year periods)



Source: EIA, Annual Energy Outlook 2016

eia Adam Sieminski, Johns Hopkins SAIS
June 28, 2016

12

1

2 By contrasting the forecasted growth rate in electricity that considers changes in factors
3 that impact electric consumption, the forecast is significantly lower than the 5.35 percent
4 growth rate used by Mr. Hevert. The 0.9 percent forecast in the EIA report is not directly
5 comparable to Mr. Hevert's number because for the purposes being used by Mr. Hevert,
6 the number should include an allowance for inflation. Adding 2 percent for inflation to
7 the 0.9 percent EIA energy forecast results in a growth rate of 2.9 percent, a number still
8 dramatically lower than Mr. Hevert's 5.35 percent projected growth rate in electric utility
9 sales.

10 Second, Mr. Hevert made an additional mistake that further inflates the impact of
11 GDP growth. Instead of modeling that future cash flow received by investors would
12 grow at his excessive 5.35 percent, his multi-stage DCF model has the dividend payout
13 ratio growing from an average of 60 percent in 2017 up to 65.91 percent. This means

1 that over his forecast period, his total dividend growth is 9.85 percent more than earnings
2 growth $(65.91\%/60\%-1)$. His forecasted increase in the payout ratio means that he has
3 modeled dividends to grow more rapidly than either earnings or electricity sales. This
4 kind of an increase over his 15 year projection period makes dividend growth 0.63
5 percent higher $[(65.91/60)^{1/15}-1]$ than even his already inflated earnings per share
6 growth rate. Since dividends are the primary source of cash flow to investors, this 0.63
7 percent per year increase in dividends per share beyond the level even Mr. Hevert
8 modeled to use in his multi-stage DCF model. Even if earnings per share were to grow as
9 aggressively as Mr. Hevert has modeled, it is illogical to expect dividends per share to
10 grow so rapidly. The higher the dividend growth, the lower the amount of earnings
11 available to be retained in the business. The smaller the level of earnings retained in the
12 business, the more sales of new stock a company has to make to get the equity for growth
13 that it had alternatively paid out as a dividend. It mathematically follows that when the
14 dividend payout ratio increases, earnings retained in the business decreases. This means
15 that a correct arithmetic derivation from Mr. Hevert's model is that because he has forced
16 dividends to grow more rapidly than earnings, the equity available to reinvest in the
17 business will grow less rapidly than either earnings growth, dividend growth, or than the
18 level of electricity sales growth Mr. Hevert has modeled. In other words, for Mr.
19 Hevert's projections to be correct, he has to expect that future plant will cost less--- yet
20 he provides no basis whatsoever for such a finding. Similarly, if the amount of equity
21 grows more slowly than earnings growth, then Mr. Hevert's model is forecasting an ever
22 higher earned return on equity. This is true because by definition earned return on equity

1 is earnings divided by equity. When a numerator grows more rapidly than a
2 denominator, the result is that the product of division goes up.

3 As if the above extremely serious problems with Mr. Hevert's attempt at a multi-
4 stage DCF model, he goes on to be inconsistent with his use of historical and forecasted
5 data. While Mr. Hevert uses the Blue Chip consensus forecasts for interest rates, he did
6 not use the same source for forecasted GDP growth. If he had used the Blue Chip forecast
7 his GDP growth rate would have been 4.15% (2.1% GDP growth forecast¹³⁸ + 2.05% for
8 inflation) or over 1% lower than the growth rate used by Mr. Hevert.

9 Despite claiming that "the Cost of Equity is forward-looking" he uses historical
10 GDP growth in his Multi-Stage model. This inconsistency alone reduces the results of
11 his 30-day Multi-Stage DCF model from 9.04%¹³⁹ to 8.39%¹⁴⁰. Correcting for his error of
12 using GDP as a proxy for growth in his Multi-Stage DCF model would reduce his result
13 even further.

14 **C. CAPM**

15 **Q. PLEASE SUMMARIZE MR. HEVERT'S CAPM METHOD.**

16 A. Mr. Hevert explains that, "the CAPM is defined by four components: the risk-free rate of
17 return ("Rf"), the beta of an individual security ("β"), the required return on the overall
18 market ("Rm"), and the required market ROE ("Ke").¹⁴¹ He explains that CAPM theory

¹³⁸ Attachment 13 to DR ND-PSC-02.07, page 16 of 19.

¹³⁹ Mr. Hevert's direct testimony, Schedule 3, page 11 of 20.

¹⁴⁰ Schedule ALR 12, page 4.

¹⁴¹ Mr. Hevert's direct testimony, page 30, lines 11-21.

1 indicates that unsystematic risk can be diversified away and the beta coefficient is a
2 measure of non-diversifiable risk.¹⁴²

3 He uses a risk free rate of 2.77% and 3.30% based on the 30-day average yield on
4 30-day Treasury bonds and near-term projected 30-year Treasury yield respectively.¹⁴³

5 Mr. Hevert uses a “DCF-derived ex-ante” market risk premium in his CAPM analysis,
6 which is based on results from each of the S&P 500 companies for which Bloomberg
7 provides growth rate forecasts, and the companies Value Line provides five-year earnings
8 growth rates.¹⁴⁴ His market risk premium based on the companies covered by Bloomberg
9 is 11.06% and 11.56% for companies covered by Value Line.¹⁴⁵

10 **Q. DO YOU AGREE WITH THE RESULTS OF MR. HEVERT’S CAPM**
11 **ANALYSIS?**

12 A. No, I do not agree with results of Mr. Hevert’s CAPM analysis because they significantly
13 and inaccurately overstate the Company’s cost of equity. His DCF-derived ex-ante
14 market risk premium estimate is not based on sustainable growth. As discussed earlier in
15 this testimony, it is a mathematical error to use unsustainable growth rates in the constant
16 growth form of the DCF model. His DCF analysis for the S&P 500 includes long-term
17 growth estimates for individual companies that are as high as 74%¹⁴⁶. As discussed
18 earlier, expecting Haliburton to grow at 74% indefinitely, as Mr. Hevert calculates his
19 model, is equivalent to investors expecting Haliburton’s market capitalization will be
20 over \$30 trillion in 12 years¹⁴⁷, or more than the total market capitalization of all the

¹⁴² Ibid. page 31, lines 2-6.

¹⁴³ Ibid. page 31, lines 17-20.

¹⁴⁴ Ibid. page 32, lines 12-17.

¹⁴⁵ Ibid. Schedule 6, page 1 of 1.

¹⁴⁶ Ibid. Schedule 4, page 3 of 12.

¹⁴⁷ \$40.1 Billion X (1+.74) ^ 12 = \$30.899 Trillion.

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Otter Tail Power Company
2017 Electric Rate Increase
Application

Case No. PU-17-398

VERIFICATION

STATE OF Connecticut)
COUNTY OF Fairfield) ss.

Aaron Rothschild being first duly sworn on oath, deposes and states that he has read the testimony and exhibits submitted in the above captioned matter under his name, that they prepared by him or under his direction, that he knows the contents thereof, and that the same are true and correct to the best of his knowledge and belief.

Aaron Rothschild
[name] Aaron Rothschild

Subscribed and sworn to before me this 18th day of May, 2018.

Veda Polkichev
Notary Public
My Commission Expires 5/31/22

