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| APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES | § § § § | BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS |

# DIRECT TESTIMONY AND EXHIBITS

## OF

## J. RANDALL WOOLRIDGE

## ON BEHALF OF

## TEXAS COAST UTILITIES COALITION

J. Randall Woolridge
120 Haymaker Circle
State College, PA 16801

**JUNE 6, 2019**

414

| APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES | § § § § | BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS |
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## DIRECT TESTIMONY AND EXHIBITS OF J. RANDALL WOOLRIDGE

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## WORKPAPERS

*Provided on CD*

| APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES | § § § § § | BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS |
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## DIRECT TESTIMONY AND EXHIBITS OF J. RANDALL WOOLRIDGE

1  Q.  PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.

2  A.  My name is J. Randall Woolridge, and my business address is 120 Haymaker Circle,

3  State College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co.

4  and Frank P. Smeal Endowed University Fellow in Business Administration at the

5  University Park Campus of Pennsylvania State University. I am also the Director of

6  the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. A

7  summary of my educational background, research, and related business experience is

8  provided in Appendix A.

9  I.  **SUBJECT OF TESTIMONY AND SUMMARY OF**
10  **RECOMMENDATIONS**

11  Q.  WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

12  A.  I have been asked by the Texas Coast Utilities Coalition ("TCUC") to provide an

13  opinion as to the overall fair rate of return or cost of capital for the regulated electric

14  services of the CenterPoint Energy Houston Electric LLC ("CEHE," "CenterPoint

15  Houston," or the "Company") and to evaluate the Company's rate of return testimony

16  in this proceeding.

17  Q.  HOW IS YOUR TESTIMONY ORGANIZED?

18  A.  First, I summarize my cost of capital recommendation for the Company, and review

19  the primary areas of contention on the Company's position. Second, I discuss the

20  proxy groups that I have used to estimate an equity cost rate for CEHE. Third, I

21  review the Company's recommended capital structure and debt cost rates. Fourth, I

22  estimate the equity cost rate for the Company. Finally, I critique CEHE's rate of

1      return analysis and testimony. Appendix A is a summary of my education and

2      business experience.

3      **A. Overview**

4   **Q.**    **WHAT COMPRISES A UTILITY'S "RATE OF RETURN"?**

5   **A.**    A company's overall rate of return consists of three main categories: (1) capital

6      structure (*i.e.*, ratios of short-term debt, long-term debt, preferred stock, and common

7      equity); (2) cost rates for short-term debt, long-term debt, and preferred stock; and (3)

8      common equity cost, otherwise known as Return on Equity ("ROE").

9   **Q.**    **WHAT IS A UTILITY'S ROE INTENDED TO REFLECT?**

10  **A.**    The ROE is most simply described as the allowed rate of profit for a regulated

11      company. In a competitive market, a company's profit level is determined by a

12      variety of factors, including the state of the economy, the degree of competition a

13      company faces, the ease of entry into its markets, the existence of substitute or

14      complementary products/services, the company's cost structure, the impact of

15      technological changes, and the supply and demand for its services and/or products.

16      For a regulated monopoly, the regulator determines the level of profit available to the

17      public utility. The United States Supreme Court established the guiding principles for

18      determining an appropriate level of profitability for regulated public utilities in two

19      cases: (1) *Hope* and (2) *Bluefield*.[1] In those cases, the Court recognized that the fair

20      rate of return on equity should be: (1) comparable to returns investors expect to earn

21      on other investments of similar risk; (2) sufficient to assure confidence in the

22      company's financial integrity; and (3) adequate to maintain and support the

23      company's credit and to attract capital.

24      Thus, the appropriate ROE for a regulated utility requires determining the market-

25      based cost of capital. The market-based cost of capital for a regulated firm represents

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[1]    *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) ("*Hope*") and *Bluefield Water Works and Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923) ("*Bluefield*").

1    the return investors could expect from other investments, while assuming no more

2    and no less risk. The purpose of all of the economic models and formulas in cost of

3    capital testimony (including those presented later in my testimony) is to estimate,

4    using market data of similar-risk firms, the rate of return equity investors require for

5    that risk-class of firms in order to set an appropriate ROE for a regulated firm.

6    **B.    Summary of Positions**

7    Q.    **PLEASE REVIEW THE COMPANY'S PROPOSED RATE OF RETURN.**

8    A.    The Company has proposed a capital structure of 50.00% long-term debt and 50.00%

9          common equity. The Company has recommended a long-term debt cost rate of

10         4.38%. Mr. Hevert has recommended a common equity cost rate of 10.40%. The

11         Company's overall proposed rate of return is 7.39%.

12   Q.    **HOW HAVE YOU CONDUCTED YOUR RATE OF RETURN STUDIES FOR**
13         **THE COMPANY?**

14   A.    I have reviewed the Company's proposed capital structure and overall rate of return

15         or cost of capital. The Company's proposed capital structure is hypothetical and has

16         a higher common equity ratio than CEHE's actual capitalization, CEHE's parent

17         CenterPoint Energy, as well as the average of the Electric and Hevert Proxy Groups.

18         Therefore, as my primary recommendation, I am proposing a capital structure of

19         40.0% common equity and 60.0% debt, which is more consistent with CEHE's actual

20         2018 capital structure. I am also proposing an alternative capital structure using

21         CCHE's actual 2018 capital structure consisting of 0.90% short-term debt, 55.48%

22         long-term debt, and 43.62% common equity. To estimate an equity cost rate for the

23         Company, I have applied the Discounted Cash Flow Model ("DCF") and the Capital

24         Asset Pricing Model ("CAPM") to my proxy group of electric utilities ("Electric

25         Proxy Group"). I have also used Mr. Hevert's proxy group ("Hevert Proxy Group").

26         My studies indicate that a cost of equity or ROE for the Company is in the range of

27         7.30% to 8.65%.

1 Q. **WHAT IS YOUR PRIMARY RATE OF RETURN RECOMMENDATION**
2 **FOR THE CEHE?**

3 A. As noted, my equity cost rate studies indicate of ROE between 7.30% and 8.65%. I

4 believe that this range accurately reflects current capital market data. However, I

5 recognize that this range is below the authorized ROEs for electric delivery

6 companies nationally. Therefore, as a primary ROE for CEHE, I am recommending

7 9.0%. This recommendation: (1) gives weight to the higher authorized ROEs for

8 electric delivery companies; and (2) recognizes the concept of 'gradualism' in which

9 authorized ROEs are adjusted on a gradual basis to reflect capital market data. Given

10 my recommended capitalization ratios and senior capital cost rates, my alternative

11 rate of return or cost of capital recommendation for the Company is 6.23% and is

12 summarized in Table 1 and Panel A of Exhibit JRW-1.

13 **Table 1**
14 **TCUC's Primary Rate of Return Recommendation**

| Capital Source | Capitalization Ratio | Cost Rate | Weighted Cost Rate |
|---|---|---|---|
| Short-Term Debt | 0.00% | 0.00% | 0.00% |
| Long-Term Debt | 60.00% | 4.38% | 2.63% |
| Common Equity | 40.00% | 9.00% | 3.60% |
| Total | 100.00% | | 6.23% |

15 Q. **ARE YOU ALSO PROVIDING AN ALTERNATIVE RATE OF RETURN**
16 **RECOMMENDATION FOR CEHE?**

17 A. Yes. My alternative rate of return recommendation uses CEHE's actual 2018 capital

18 structure consisting of 0.90% short-term debt, 55.48% long-term debt, and 43.62%

19 common equity. With respect to the ROE, as indicated above, I believe that my

20 equity cost rate range, 7.30% to 8.65%, accurately reflects current capital market

21 data. Capital costs in the U.S. remain low, with low inflation and interest rates and

22 very modest economic growth. To reflect these low capital costs, my alternative ROE

23 recommendation is 8.65%, which is at the high end of my equity cost rate range.

24 Given my recommended capitalization ratios and senior capital cost rates, my

25 alternative rate of return or cost of capital recommendation for the Company is 6.22%

26 and is summarized in Table 2 and Panel B of Exhibit JRW-1.

**Table 2**
**TCUC's Alternative Rate of Return Recommendation**

| Capital Source | Capitalization Ratio | Cost Rate | Weighted Cost Rate |
|---|---|---|---|
| Short-Term Debt | 0.90% | 2.27% | 0.02% |
| Long-Term Debt | 55.48% | 4.38% | 2.43% |
| Common Equity | 43.62% | 8.65% | 3.77% |
| Total | 100.00% | | 6.22% |

3    Q.    **PLEASE PROVIDE AN OVERVIEW OF THE PRIMARY ISSUES**
4            **REGARDING RATE OF RETURN IN THIS PROCEEDING?**

5    A.    The primary issues related to the Company's rate of return include the following:

6         Capital Structure – Mr. Robert B. McRae has proposed a hypothetical capital
7         structure consisting of 50% long-term debt and 50% common equity. The Company's
8         proposed capital structure is hypothetical and has a higher common equity ratio than
9         CEHE's actual capitalization, as well as the average of the Electric and Hevert Proxy
10        Groups.

11        Capital Market Conditions – Mr. Hevert's analyses and ROE results and
12        recommendations reflect the assumption of higher interest rates and capital costs.
13        However, I show that despite the Federal Reserve's moves to increase the federal
14        funds rate, interest rates and capital costs have remained at historically low levels and
15        are likely to remain low for some time.

16        Disconnect Between Mr. Hevert's Equity Cost Rate Studies and his 10.4% ROE
17        Recommendation – There is a disconnect between Mr. Hevert's equity cost rate
18        results and his 10.4% ROE recommendation. Simply stated, the vast majority of his
19        equity cost rate results point to a lower ROE. In fact, the only results that point to a
20        ROE as high as 10.4% are his CAPM results using *Value Line* betas and market risk
21        premium ("MRP"), which as I explain later in my testimony are flawed. As a result,
22        Mr. Hevert's ROE recommendation is based on: (1) the results of only one model (the
23        CAPM); and, even more narrowly, (2) only one source of financial information for
24        betas and MRP (*Value Line*). Otherwise, Mr. Hevert provides no other equity cost
25        rate studies that support his 10.4% ROE recommendation.

1    DCF Equity Cost Rate - The DCF Equity Cost Rate is estimated by summing the
2    stock's dividend yield and investors' expected long-run growth rate in dividends paid
3    per share.  There are several errors in Mr. Hevert's DCF analyses: (1) he has given
4    very little weight to his constant-growth DCF results; and (2) he has relied
5    exclusively on the overly optimistic and upwardly biased earnings per share ("EPS")
6    growth-rate forecasts of Wall Street analysts and *Value Line*.  On the other hand, when
7    developing the DCF growth rate that I have used in my analysis, I have reviewed
8    thirteen growth-rate measures, including historical and projected growth-rate
9    measures, and have evaluated growth in dividends, book value, and earnings per
10   share.

11   CAPM Approach - The CAPM approach requires an estimate of the risk-free interest
12   rate, the beta, and the market or equity risk premium. There are three primary issues
13   with Mr. Hevert's CAPM analyses: (1) he employs an excessively high, projected
14   long-term risk-free interest rate; (2) his MRPs of 10.72% and 14.10% are exaggerated
15   and do not reflect current market fundamentals.  Mr. Hevert has employed analysts'
16   three-to-five-year growth-rate projections for EPS to compute an expected market
17   return and MRP.  These EPS growth-rate projections and the resulting expected
18   market returns and MRPs include highly unrealistic assumptions regarding future
19   economic and earnings growth and stock returns; (3) Mr. Hevert has used the three-
20   to-five- year projected EPS growth rates with Bloomberg and *Value Line* adjusted
21   betas, despite the fact that utility betas do not regress to 1.0 over three-to-five year
22   time periods, and therefore it is erroneous to use adjusted betas.

23   As I highlight in my testimony, there are three procedures for estimating a market or
24   equity risk premium – historic returns, surveys, and expected return models.  I have
25   used a MRP of 5.50%, which: (1) factors in all three approaches – historic returns,
26   surveys, and expected return models – to estimating a market premium; and (2)
27   employs the results of many studies of the MRP.  As I note, my MRP reflects the
28   MRPs: (1) determined in recent academic studies by leading finance scholars; (2)
29   employed by leading investment banks and management consulting firms; and (3)

---

1       found in surveys of companies, financial forecasters, financial analysts, and corporate

2       CFOs.

3       <u>Alternative Risk Premium Model</u> - Mr. Hevert estimates an equity cost rate using an

4       alternative risks premium model which he calls the Bond Yield Risk Premium

5       ("BYRP") approach.   The risk premium in his BYRP method is based on the

6       historical relationship between the yields on long-term Treasury yields and authorized

7       returns on equity ("ROEs") for electric utility companies.  There are several issues

8       with this approach:

9           (1) This approach is a gauge of commission behavior and not investor

10          behavior. Capital costs are determined in the market place through the

11          financial decisions of investors and are reflected in such fundamental factors

12          as dividend yields, expected growth rates, interest rates, and investors'

13          assessment of the risk and expected return of different investments;

14          (2) Mr. Hevert's methodology produces an inflated measure of the risk premium

15          because his approach uses historical authorized ROEs and Treasury yields, and

16          the resulting risk premium is applied to projected Treasury yields; and

17          (3) the risk premium is inflated as a measure of investor's required risk

18          premium, since electric utility companies have been selling at market-to-book

19          ratios in excess of 1.0.  This indicates that the authorized rates of return have

20          been greater than the return that investors require.

21      <u>Expected Earnings Approach</u> - Mr. Hevert also uses the Expected Earnings approach

22      to estimate an equity cost rate for the Company.  Mr. Hevert computes the expected

23      ROE as forecasted by *Value Line* for his proxy group as well as for *Value Line*'s

24      universe of electric utilities.  As I discuss in my critique of Mr. Hevert's presentation,

25      the so-called "Expected Earnings" approach does not measure the market cost of

26      equity capital, is independent of most cost of capital indicators, and has several other

27      empirical issues. Therefore, the Commission should ignore Mr. Hevert's "Expected

28      Earnings" approach in determining the appropriate ROE for CenterPoint Houston.

| 1 | | Other Issues - Mr. Hevert also considers several risk factors in arriving at his 10.4% |
|---|---|---|

1        Other Issues - Mr. Hevert also considers several risk factors in arriving at his 10.4%

2        ROE recommendation. These factors include: (1) customer concentration: (2)

3        geographic and weather risk, together with the securitization of system restoration

4        expenses; (3) regulatory mechanisms and capital spending; and (4) historical cash

5        flow from operations. As I note, these risk factors are all part of the credit rating

6        process used by firms such as S&P and Moody's. Mr. Hevert indicates that he also

7        considered flotation costs in arriving at his 10.4% ROE recommendation. However,

8        he has not identified any flotation costs for CEHE.

9    **C.    Capital Market Conditions and Authorized ROEs**

10  **Q.    PLEASE REVIEW THE FEDERAL RESERVE'S DECISIONS TO RAISE**
11  **      THE FEDERAL FUNDS RATE IN RECENT YEARS.**

12  A.    On December 16, 2015, the Federal Reserve increased its target rate for federal funds

13       from 0.25 to 0.50 percent.[2] This increase came after the rate was kept in the 0.00 to

14       0.25 percent range for over five years in order to spur economic growth in the wake

15       of the financial crisis associated with the Great Recession. As the economy has

16       improved, with lower unemployment, steady but slow GDP growth, the Federal

17       Reserve has increased the target federal funds rate on eight additional occasions:

18       December 2016; March, June, December of 2017; and March, June, September, and

19       December of 2018.

20  **Q.    HOW HAVE LONG-TERM RATES RESPONDED TO THE ACTIONS OF**
21  **      THE FEDERAL RESERVE?**

22  A.    Figure 1, below, shows the yield on 30-year Treasury bonds over the period of 2015-

23       2019. I have highlighted the dates in which the Federal Reserve increased the federal

24       funds rate. The 30-year Treasury yield hit its lowest point in the 2015 – 2016

25       timeframe in the summer of 2016 and subsequently increased with improvements in

26       the economy. Then came November 8, 2016, and financial markets moved

27       significantly in the wake of the results in the U.S. presidential election. The stock

---

[2]  The federal funds rate is set by the Federal Reserve and is the borrowing rate applicable to the most creditworthy financial institutions when they borrow and lend funds overnight to each other.

1 market gained more than 10% and the 30-year Treasury yield increased about 50

2 basis points to 3.2% by year-end 2016. However, over the past three years, even as

3 the Federal Reserve has increased the federal funds rate, the yield on thirty-year

4 bonds has remained in the 2.8% to 3.3% range.

5 **Figure 1**
6 **Thirty-Year Treasury Yield and Federal Reserve Fed Funds Rate Increases**
7 **2015-2019**



8
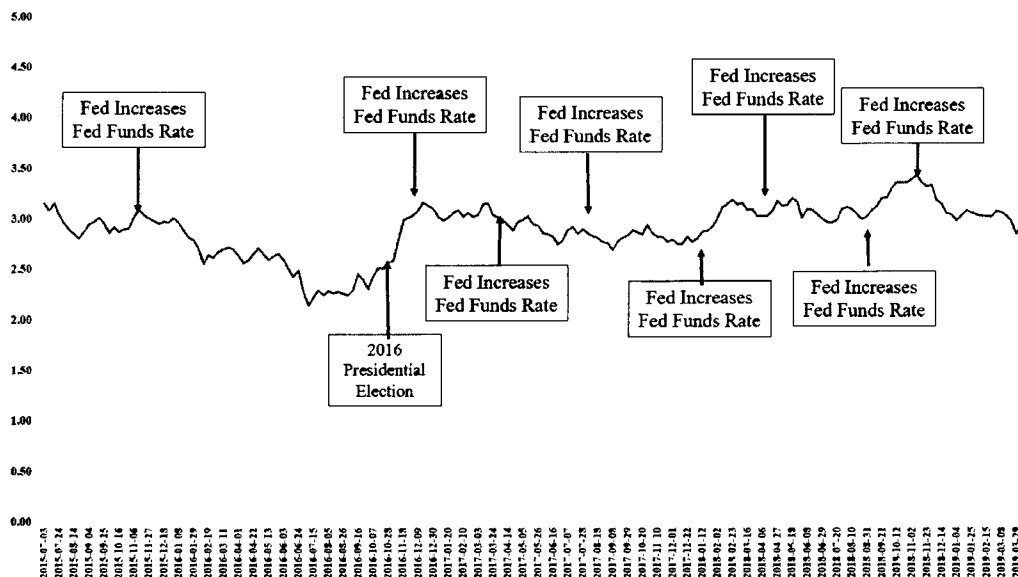
9 **Q. WHY HAVE LONG-TERM TREASURY YIELDS REMAINED IN THE 3.0%**
10 **RANGE DESPITE THE FEDERAL RESERVE INCREASING SHORT-TERM**
11 **RATES?**

12 A. Whereas the Federal Reserve can directly affect short-term rates by adjustments to the

13 federal funds rate, long-term rates are primarily driven by expected economic growth

14 and inflation.[3] The relationship between short- and long-term rates is normally

15 evaluated using the yield curve. The yield curve depicts the relationship between the

16 yield-to-maturity and the time-to-maturity for U.S. Treasury bills, notes, and bonds.

17 Figure 2, below, shows the yield curve on a semi-annual basis since the Federal

18 Reserve started increasing the federal funds rate at the end of 2015. It shows that,

---

[3] Whereas economic growth picked up in 2018, partly in response to the personal and corporate tax cuts, projected real GDP growth for 2019 and beyond remains in the 2.0% to 2.5% range. In addition, inflation remains low and is also in the 2.0% to 2.5% range.

1   except for mid-year 2016, when interest rates dipped to very low levels, the 30-year

2   Treasury yield has remained in the 2.8%-3.3% range despite the fact that short-term

3   rates have increased from near 0.0% to about 2.50%.  As such, long-term interest

4   rates and capital costs have not increased in any meaningful way even with the

5   Federal Reserve's actions and the increase in short-term rates.

6   **Figure 2**
7   **Semi-Annual Yield Curves**
8   **2015-2019**



9
10  Date Source: https://www.treasury.gov/resource-center/data-chart-center/interest-
11  rates/Pages/TextView.aspx?data=yieldYear&year=2019
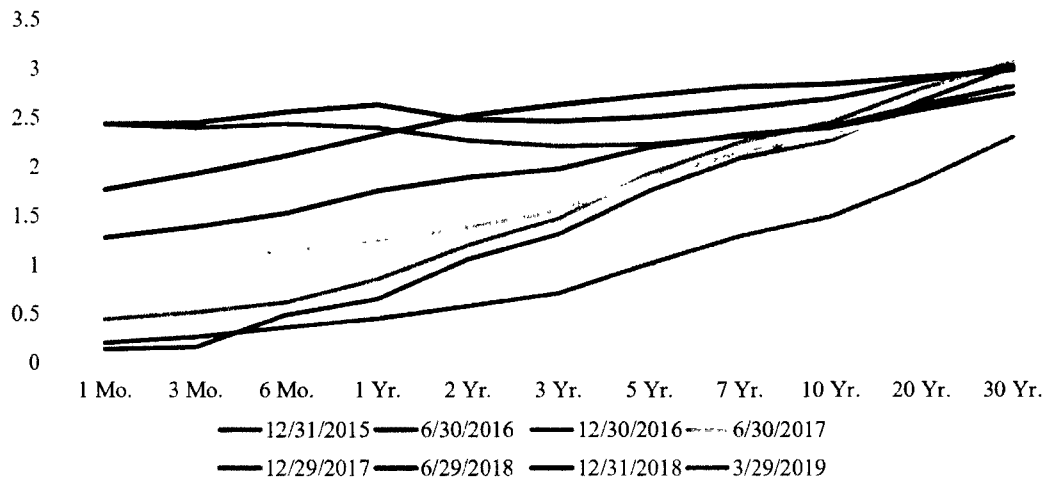
12  **Q.   WHAT DO YOU RECOMMEND THE COMMISSION DO REGARDING MR.**
13  **HEVERT'S USE OF FORECASTS OF HIGHER INTEREST RATES AND**
14  **CAPITAL COSTS?**

15  A.   I suggest that the Commission set an equity cost rate based on current indicators of

16  market-cost rates and not speculate on the future direction of interest rates.

17  Economists have been predicting that interest rates would be going up for a decade, and

18  they consistently have been wrong.  For example, after the announcement of the end of

19  the Quantitative Easing III ("QE III") program in 2014, all the economists in

1    Bloomberg's interest rate survey forecasted interest rates would increase in 2014, and

2    100% of the economists were wrong. According to the *Market Watch* article:[4]

3        The survey of economists' yield projections is generally skewed
4        toward rising rates — only a few times since early 2009 have a
5        majority of respondents to the Bloomberg survey thought rates
6        would fall. But the unanimity of the rising rate forecasts in the
7        spring was a stark reminder of how one-sided market views can
8        become. It also teaches us that economists can be universally
9        wrong.

10   Two other financial publications produced studies on how economists consistently

11   predict higher interest rates, and yet they too, have been wrong. The first publication,

12   entitled "How Interest Rates Keep Making People on Wall Street Look Like Fools,"

13   evaluated economists' forecasts for the yield on 10-year Treasury bonds at the

14   beginning of the year for the last ten years.[5] The results demonstrated that

15   economists consistently predict that interest rates will go higher, and interest rates

16   have not fulfilled those predictions.

17   The second study tracked economists' forecasts for the yield on 10-year Treasury

18   bonds on an ongoing basis from 2010 until 2015.[6] The study, entitled "Interest Rate

19   Forecasters are Shockingly Wrong Almost All of the Time," indicates that economists

20   are continually forecasting that interest rates are going up, yet they do not. Indeed, as

21   Bloomberg has reported, economists' continued failure in forecasting increasing

22   interest rates has caused the Federal Reserve Bank of New York to stop using the

---

[4]   Ben Eisen, "Yes, 100% of economists were dead wrong about yields, *Market Watch*," October 22, 2014.
      Perhaps reflecting this fact, *Bloomberg* reported that the Federal Reserve Bank of New York has stopped
      using the interest rate estimates of professional forecasters in the Bank's interest rate model due to the
      unreliability of those interest rate forecasts. See Susanne Walker and Liz Capo McCormick, "Unstoppable
      $100 Trillion Bond Market Renders Models Useless," *Bloomberg.com* (June 2, 2014).
      http://www.bloomberg.com/news/2014-06-01/the-unstoppable-100-trillion-bond-market-renders-models-
      useless.html.

[5]   Joe Weisenthal, "How Interest Rates Keep Making People on Wall Street Look Like Fools,"
      Bloomberg.com, March 16, 2015. http://www.bloomberg.com/news/articles/2015-03-16/how-interest-
      rates-keep-making-people-on-wall-street-look-like-fools.

[6]   Akin Oyedele, "Interest Rate Forecasters are Shockingly Wrong Almost All of the Time," *Business Insider*,
      July 18, 2015. http://www.businessinsider.com/interest-rate-forecasts-are-wrong-most-of-the-time-2015-7.

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| 1 | interest-rate estimates of professional forecasters in the Bank's interest-rate model |
| 2 | due to the unreliability of those interest-rate forecasts.[7] |

3      Obviously, investors are aware of the consistently wrong forecasts of higher interest

4      rates, and therefore place little weight on such forecasts. Investors would not be

5      buying long-term Treasury bonds or utility stocks at their current yields if they

6      expected interest rates to suddenly increase, thereby producing higher yields and

7      negative returns. For example, consider a utility that pays a dividend of $2.00 with a

8      stock price of $50.00. The current dividend yield in that example is 4.0%. If, as Mr.

9      Hevert suggests, interest rates and required utility yields increase, the price of the

10      utility stock would decline. In the example above, if higher return requirements led

11      the dividend yield to increase from 4.0% to 5.0% in the next year, the stock price

12      would have to decline to $40, which would be a -20% return on the stock. Obviously,

13      investors would not buy the utility stock with an expected return of -20% due to

14      higher dividend yield requirements.

15      In sum, it is practically impossible to accurately forecast interest rates and prices of

16      investments that are determined in financial markets, such as interest rates and prices

17      for stocks and commodities. For interest rates, I am not aware of any study that

18      suggests one forecasting service is consistently better than others or that interest-rate

19      forecasts are consistently better than just assuming the current interest rate will be the

20      rate in the future. As discussed above, investors would not be buying long-term

21      Treasury bonds or utility stocks at their current yields if they expected interest rates to

22      suddenly increase, thereby producing higher yields and negative returns.

23 **Q. PLEASE DISCUSS THE TREND IN AUTHORIZED RETURN ON EQUITY**
24      **FOR ELECTRIC AND GAS COMPANIES.**

25 A.    Over the past five years, with the historically low interest rates and capital costs,

26      authorized ROEs for electric utility and gas distribution companies have slowly

27      declined to reflect the low capital cost environment. In Figure 3, below, I have

---

[7] "*Market Watch,*" October 22, 2014.

1    graphed the quarterly authorized ROEs for electric and gas companies from 2000 to

2    2018. There is a clear downward trend in the data. On an annual basis, these

3    authorized ROEs for electric utilities have declined from an average of 10.01% in

4    2012, 9.8% in 2013, 9.76% in 2014, 9.58% in 2015, 9.60%, and 9.68% in 2017,

5    9.56% in 2018, and 9.57% in the first quarter of 2019, according to Regulatory

6    Research Associates.[8]

7                                   **Figure 3**
8         **Authorized ROEs for Electric Utility and Gas Distribution Companies**
9                                    **2000-2019**
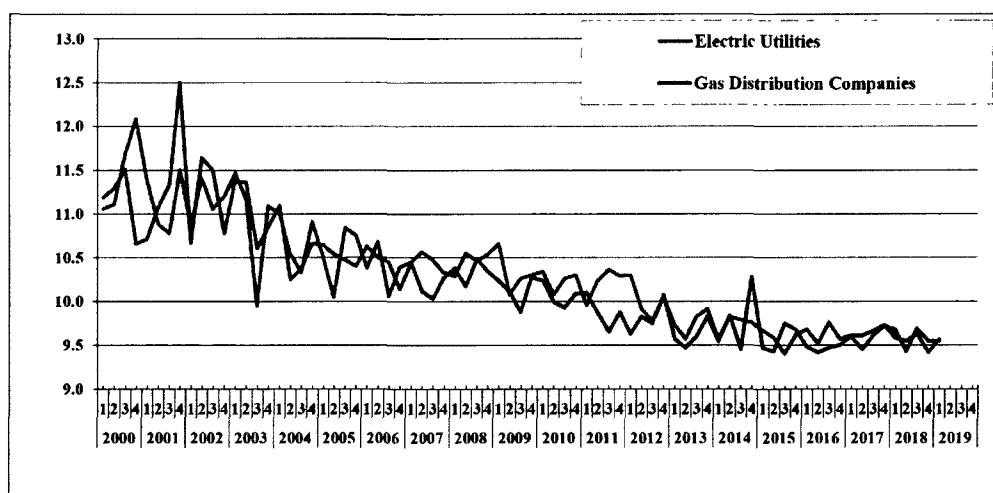
11   Q.   **DO AUTHORIZED ROES FOR ELECTRIC DELIVERY COMPANIES LIKE**
12        **CENTERPOINT HOUSTON DIFFER FROM THE AUTHORIZED ROES**
13        **FOR INTEGRATED ELECTRIC UTILITIES?**

14   A.   Yes. One consistent factor in electric utility authorized ROEs is that the ROEs for

15        delivery or distribution companies have consistently been below those of vertically

16        integrated utilities. This is shown in Figure 4, below. The lower authorized ROEs

17        are usually attributed to the fact that delivery or distribution companies do not own

18        and operate electric generation which is perceived to be the riskier part of electric

19        utility operations. I believe that commissions in states who have deregulated the

20        electric-utility industry recognize the lesser risk of "wires-only" companies like

---

[8]   *Regulatory Focus*, Regulatory Research Associates, 2019. The electric utility authorized ROEs exclude the
      authorized ROEs in Virginia, which include generation adders.

1      CenterPoint Houston and award lower ROEs. The authorized ROEs for electric

2      delivery companies have been 30-50 basis points below those of vertically-integrated

3      electric utilities in recent years. In 2018, the average authorized ROE for electric

4      delivery companies was 9.38%.[9]

5
6
7
8

**Figure 4**
**Authorized ROEs for Vertically Integrated versus**
**Delivery Only Electric Utilities**
**2006-2019**



9
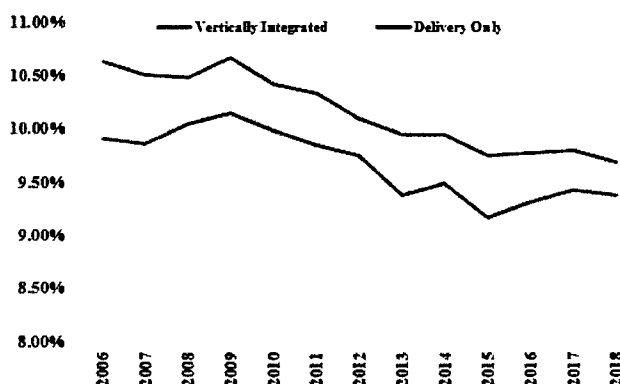
10 **II.**     **PROXY GROUP SELECTION**

11 **Q.**     **PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING YOUR**
12         **RECOMMENDATION FOR A FAIR RATE OF RETURN FOR THE**
13         **COMPANY.**

14 **A.**     To develop a fair rate of return recommendation for the Company, I have evaluated

15      the return requirements of investors on the common stock of a proxy group of

16      publicly-held electric utility companies ("Electric Proxy Group"). I have also

17      employed the group developed by Mr. Hevert ("Hevert Proxy Group").

18 **Q.**     **PLEASE DESCRIBE YOUR PROXY GROUP OF COMPANIES.**

19 **A.**     The selection criteria for the Electric Proxy Group include the following:

20        1.     At least 50% of revenues from regulated electric operations as reported in

21        SEC Form 10-K Report;

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[9] *Regulatory Focus*, Regulatory Research Associates, January 2019. The electric integrated utility authorized ROEs exclude the authorized ROEs in Virginia which include generation adders.

1      2.     Listed as a U.S. Electric Utility by Value Line Investment Survey;

2      3.     An investment-grade corporate credit and bond rating;

3      4.     Has paid a cash dividend for the past six months, with no cuts or omissions;

4      5.     Not involved in an acquisition of another electric utility, and not the target of
5      an acquisition; and

6      6.     Analysts' long-term EPS growth rate forecasts available from Yahoo, Reuters,
7      and/or Zack's.

8      The Electric Proxy Group includes twenty-eight companies. Summary financial
9      statistics for the proxy group are listed in Exhibit JRW-2.[10] The median operating
10     revenues and net plant among members of the Electric Proxy Group are $6,582.0
11     million and $22,405.5 million, respectively. On average, the group receives 82% of
12     its revenues from regulated electric operations, has an average BBB+ bond rating
13     from Standard & Poor's and a Baa1 rating from Moody's, a current common equity
14     ratio of 45.2%, and an earned return on common equity of 9.7%.

15 **Q.**    **PLEASE DESCRIBE THE HEVERT PROXY GROUP.**

16 A.     Mr. Hevert's group includes twenty-four utilities. Summary financial statistics for
17     Mr. Hevert's proxy group are provided in Panel B of page 1 of Exhibit JRW-2. The
18     median operating revenues and net plant for the Hevert Proxy Group are $5,283.5
19     million and $18,454.3 million, respectively. On average, the group receives 77% of
20     its revenues from regulated electric operations, has an average BBB+ bond rating
21     from Standard & Poor's and a Baa1 rating from Moody's, a common equity ratio of
22     45.8%, and a median earned return on common equity of 9.8%.

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[10]   In my testimony, I present financial results using both mean and medians as measures of central tendency. However, due to outliers among means, I have used the median as a measure of central tendency.

| 1 | Q. | HOW DOES THE INVESTMENT RISK OF THE COMPANY COMPARE TO |
|---|---|---|
| 2 | | THAT OF THE TWO PROXY GROUPS? |

3  A.  I believe that bond ratings provide a good assessment of the investment risk of a

4  company. Exhibit JRW-2 also shows S&P and Moody's issuer credit ratings for the

5  companies in the two groups. CenterPoint Houston has S&P and Moody's issuer

6  credit ratings of BBB+ and A3. The average S&P and Moody's issuer credit ratings

7  for the Electric and Hevert Proxy Groups are BBB+ and Baa1, respectively.[11]

8  Therefore, given that: (1) the Company's S&P rating is equal to the average of the

9  proxy groups, and (2) the Company's Moody's rating is one notch better than the

10  average of the proxy groups, I conclude that the Company's investment risk is a little

11  lower than the average investment risk of the companies in the proxy groups.

12  Q.  HOW DOES THE INVESTMENT RISK OF THE TWO GROUPS COMPARE
13  TO ONE ANOTHER BASED ON THE VARIOUS RISK METRICS
14  PUBLISHED BY *VALUE LINE*?

15  A.  On page 2 of Exhibit JRW-2, I have assessed the riskiness of the two proxy groups of

16  electric utility companies using five different risk measures published by *Value Line*.

17  These measures include Beta, Financial Strength, Safety, Earnings Predictability, and

18  Stock Price Stability. These risk measures suggest that two groups are very similar in

19  risk. These indicators include Beta (0.60 versus 0.59), Financial Strength (A versus

20  A), Safety (1.9 versus 1.8), Earnings Predictability (79 versus 81), and Stock Price

21  Stability (95 versus 95).

22  Q.  WHAT DO YOU CONCLUDE FROM YOUR RISK ANALYSIS?

23  A.  First, based on the credit ratings from S&P and Moody's, I conclude that the

24  Company is a little less risky than the average of the two proxy groups. Second, the

25  S&P and Moody's credit ratings and the five *Value Line* risk ratings are very similar

26  for the two groups, and therefore I conclude that the two groups are similar in risk.

27  And third, the five *Value Line* risk ratings for the two groups suggest that electric

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[11]  CEHE's S&P rating was downgraded in February 2019 from A- to BBB+. The downgrade was associated with the risks associated with CEHE's parent, CenterPoint Energy, acquisition of Vectren. As such, the downgrade was not related to the risks associated with CEHE.

| 1 | | utilities are very low risk. This is indicated by the low Betas as well as the high |
| 2 | | ratings for safety, financial strength, earnings predictability, and stock price stability. |

3    III.    **CAPITAL STRUCTURE RATIOS AND DEBT COST RATE**

| 4 | Q. | **PLEASE DESCRIBE THE COMPANY'S PROPOSED CAPITAL** |
| 5 | | **STRUCTURE AND SENIOR CAPITAL COST RATES.** |

| 6 | A. | Mr. Pringle has proposed a capital structure of 50.00% long-term debt and 50.00% |
| 7 | | common equity. The Company has recommended a long-term debt cost rate of |
| 8 | | 4.38%. This is summarized in Panel A of Exhibit JRW-3. |

| 9 | Q. | **WHAT ARE THE AVERAGE COMMON EQUITY RATIOS IN THE** |
| 10 | | **CAPITALIZATIONS OF THE TWO PROXY GROUPS?** |

| 11 | A. | As shown in Exhibit JRW-2, the median common equity ratios of the Electric and |
| 12 | | Hevert Proxy Groups are 45.2% and 45.8%, respectively. This indicates that the |
| 13 | | Company's proposed capitalization has a higher common equity ratio than the two |
| 14 | | proxy groups. It should be noted that the capitalization ratios of the proxy groups |
| 15 | | include total debt which consists of both short-term and long-term debt. In assessing |
| 16 | | financial risk, short-term debt is included because, just like long-term debt, short-term |
| 17 | | has a higher claim on the assets and earnings of the company and requires timely |
| 18 | | payment of interest and repayment of principal. |

| 19 | Q. | **HOW DOES THE COMPANY'S PROPOSED CAPITALIZATION AND** |
| 20 | | **COMMON EQUITY RATIO COMPARE TO THAT OF ITS PARENT** |
| 21 | | **COMPANY?** |

| 22 | A. | Page 2 of Exhibit JRW-3 shows the quarterly capital structure ratios for CenterPoint |
| 23 | | Energy ("CNP") as well as CEHE for the period 2016-2018. The average common |
| 24 | | equity ratios for CNP and CEHE are 33.4% and 42.9%, respectively. Therefore, the |
| 25 | | Company is proposing a capital structure with a much higher common equity ratio |
| 26 | | than both CNP and CEHE have maintained in the past. |

1    Q.    **PLEASE DISCUSS THE ISSUE OF PUBLIC UTILITY HOLDING**
2          **COMPANY'S SUCH AS CENTERPOINT ENERGY USING DEBT TO**
3          **FINANCE THE EQUITY IN SUBSIDIARIES SUCH AS THE COMPANY.**

4    A.    Moody's published an article on the use of low-cost debt financing by public utility

5          holding companies to increase their ROEs. The summary observations included the

6          following: [12]

7                 US utilities use leverage at the holding-company level to invest in other
8                 businesses, make acquisitions and earn higher returns on equity. In some
9                 cases, an increase in leverage at the parent can hurt the credit profiles of its
10                regulated subsidiaries.

11          This financial strategy has traditionally been known as double leverage. Moody's

12          defined double leverage in the following way: [13]

13                 Double leverage is a financial strategy whereby the parent raises debt but
14                 downstreams the proceeds to its operating subsidiary, likely in the form of an
15                 equity investment. Therefore, the subsidiary's operations are financed by debt
16                 raised at the subsidiary level and by debt financed at the holding-company
17                 level. In this way, the subsidiary's equity is leveraged twice, once with the
18                 subsidiary debt and once with the holding-company debt. In a simple
19                 operating-company / holding-company structure, this practice results in a
20                 consolidated debt-to-capitalization ratio that is higher at the parent than at the
21                 subsidiary because of the additional debt at the parent.

22          Moody's goes on to discuss the potential risk to utilities of the strategy, and

23          specifically notes that regulators could take it into consideration in setting authorized

24          ROEs. [14]

25                 **"Double leverage" drives returns for some utilities but could pose risks**
26                 **down the road.** The use of double leverage, a long-standing practice whereby
27                 a holding company takes on debt and downstreams the proceeds to an
28                 operating subsidiary as equity, could pose risks down the road if regulators

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[12]   Moody's Investors' Service, "High Leverage at the Parent Often Hurts the Whole Family," May 11, 2015, p.1.

[13]   *Id.* p. 5.

[14]   *Id.* p. 1.

| 1 | | were to ascribe the debt at the parent level to the subsidiaries or adjust the |
| 2 | | authorized return on capital. |

3 **Q. PLEASE DISCUSS THE SIGNIFICANCE OF THE AMOUNT OF EQUITY**
4 **THAT IS INCLUDED IN A UTILITY'S CAPITAL STRUCTURE.**

5 A. A utility's decision as to the amount of equity capital it will incorporate into its

6 capital structure involves fundamental trade-offs relating to the amount of financial

7 risk the firm carries, the overall revenue requirements its customers are required to

8 bear through the rates they pay, and the return on equity that investors will require.

9 **Q. WHY IS THIS RELATIONSHIP IMPORTANT TO THE UTILITY'S**
10 **CUSTOMERS?**

11 A. Just as there is a direct correlation between the utility's authorized return on equity

12 and the utility's revenue requirements (the higher the return, the greater the revenue

13 requirement), there is a direct correlation between the amount of equity in the capital

14 structure and the revenue requirements that customers are called on to bear. Again,

15 equity capital is more expensive than debt. Not only does equity command a higher

16 cost rate, it also adds more to the income tax burden that ratepayers are required to

17 pay through rates. As the equity ratio increases, the utility's revenue requirements

18 increase, and the rates paid by customers increase. If the proportion of equity is too

19 high, rates will be higher than they need to be. For this reason, the utility's

20 management should pursue a capital acquisition strategy that results in the proper

21 balance in the capital structure.

22 **Q. GIVEN THAT CEHE HAS PROPOSED AN EQUITY RATIO THAT IS**
23 **HIGHER THAN (1) THE AVERAGE COMMON EQUITY RATIO OF MR.**
24 **HEVERT'S PROXY GROUP, AND (2) THE COMMON EQUITY RATIO OF**
25 **ITS PARENT COMPANY, CNP, WHAT CAPITAL STRUCTURE ARE YOU**
26 **RECOMMENDING FOR CEHE?**

27 A. As noted above, page 2 of Exhibit JRW-3 provides the average quarterly

28 capitalization ratios for CNP and CEHE. The data shows that CEHE's common

29 equity ratio has been in the 38% to 45% range over the three-year time period. This is

30 the capitalization the Company has used to maintain its credit ratings and raise

31 capital.

| 1 | I have developed a primary and an alternative capital structure for CEHE. For my |
| 2 | primary recommendation, I am using a capital structure consisting of 60% long-term |
| 3 | debt and 40% common equity. This capital structure is consistent with the |
| 4 | Commission's capital structures approved for Wind Energy Texas Transmission LLC |
| 5 | and Cross Texas Transmission in 2015.[15] |

| 6 | My alternative capital structure is developed on page 3 of Exhibit JRW-3. To |
| 7 | develop a capital structure for CEHE, I have done the following: |

| 8 | (1) I have used the average quarterly capital amounts for long-term debt and common |
| 9 | equity in 2018. These are developed in Panel A of page 3 of Exhibit JRW-3; |

| 10 | (2) CEHE'e use of short-term financing requirements and debt varies by the day, and |
| 11 | the Company had short-term debt outstand for 225 of the 365 days in 2018.[16] Hence, |
| 12 | I have computed the average daily amount of short-term debt outstanding, with the |
| 13 | average including $0 for the 140 days with no short-term debt outstanding. Short- |
| 14 | term debt hit a maximum of $220 million on February 5th, and the average daily |
| 15 | balance for the year was $52.1 million. The average daily cost rate for the short-term |
| 16 | debt was 2.27%; and |

| 17 | (3) In Panel B of page 3 of Exhibit JRW-3, I combine the average quarterly amounts |
| 18 | of long-term debt and equity with the average daily amount of short-term debt. The |
| 19 | resulting capital structure includes of 0.90% short-term debt, 55.48% long-term debt, |
| 20 | and 43.62% common equity. A common equity ratio of 43.62.0% is close to the |
| 21 | Company's actual capital structure. I have used short-term and long-term debt cost |
| 22 | rates of 2.27% and 4.38%. |

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[15]  PUC Docket No. 44746, SOAH Docket No. 473-15-4089, *Application of the Wind Energy Texas Transmission LLC for Authority to Change Rates and Tariffs, Public Utility Commission of Texas*, September 25, 2015. PUC Docket No. 43950, SOAH Docket No. 473-15-1782, *Application of the Cross Texas Transmission LLC for Authority to Change Rates and Tariffs, Public Utility Commission of Texas*, May 1, 2015.

[16]  The short-term debt data is provided in CenterPoint Houston's Schedule II-C-2.5a.

1   Q.   **MR. PRINGLE ARGUES THAT HIS PROPOSED CAPITAL STRUCTURE**
2          **OF 50% DEBT AND 50% EQUITY IS REQUIRED TO OFFSET THE**
3          **NEGATIVE CASH FLOW EFFECTS OF THE TAX CUT AND JOBS ACT OF**
4          **2017 ("TCJA"). DO YOU AGREE?**

5   A.   No. As I indicated above, CEHE has achieved its current credit rating and has raised

6          capital based on its current capitalization. As shown on Page of Exhibit JRW-3,

7          CEHE's 2018 common equity ratio is higher than its been in recent years. In

8          addition, CEHE's Moody's credit rating of A3 is one notch above the average of the

9          proxy groups and its S&P rating of BBB+ is equal to the average of the proxy groups.

10        Furthermore, CEHE's debt was rated A- by S&P until February of this year. The

11        downgrade had nothing to do with the TCJA or CEHE, but instead was due to the

12        risks associated with CEHE's parent's acquisition of Vectren. Therefore, Mr.

13        Pringle's arguments that a 50% debt – 50% equity capital structure is necessary to

14        offset the impact of the TJCA is speculative and are without merit.

15   **IV.**   **THE COST OF COMMON EQUITY CAPITAL**

16          **A.**   **Overview**

17   Q.   **WHY MUST AN OVERALL COST OF CAPITAL OR FAIR RATE OF**
18          **RETURN BE ESTABLISHED FOR A PUBLIC UTILITY?**

19   A.   In a competitive industry, the return on a firm's common equity capital is determined

20        through the competitive market for its goods and services. Due to the capital

21        requirements needed to provide utility services and the economic benefit to society

22        from avoiding duplication of these services and the construction of utility

23        infrastructure facilities, many public utilities are monopolies. Because of the lack of

24        competition and the essential nature of their services, it is not appropriate to permit

25        monopoly utilities to set their own prices. Thus, regulation seeks to establish prices

26        that are fair to consumers and, at the same time, sufficient to meet the operating and

27        capital costs of the utility, *i.e.*, provide an adequate return on capital to attract

28        investors.

1 Q. **PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPITAL IN THE**
2 **CONTEXT OF THE THEORY OF THE FIRM.**

3 A. The total cost of operating a business includes the cost of capital. The cost of
4 common equity capital is the expected return on a firm's common stock that the
5 marginal investor would deem sufficient to compensate for risk and the time value of
6 money. In equilibrium, the expected and required rates of return on a company's
7 common stock are equal.

8 Normative economic models of a company or firm, developed under very restrictive
9 assumptions, provide insight into the relationship between firm performance or
10 profitability, capital costs, and the value of the firm. Under the economist's ideal
11 model of perfect competition, where entry and exit are costless, products are
12 undifferentiated, and there are increasing marginal costs of production, firms produce
13 up to the point where price equals marginal cost. Over time, a long-run equilibrium is
14 established where price equals average cost, including the firm's capital costs. In
15 equilibrium, total revenues equal total costs, and because capital costs represent
16 investors' required return on the firm's capital, actual returns equal required returns,
17 and the market value must equal the book value of the firm's securities.

18 In a competitive market, firms can achieve competitive advantage due to product
19 market imperfections. Most notably, companies can gain competitive advantage
20 through product differentiation (adding real or perceived value to products) and by
21 achieving economies of scale (decreasing marginal costs of production). Competitive
22 advantage allows firms to price products above average cost and thereby earn
23 accounting profits greater than those required to cover capital costs. When these
24 profits are in excess of those required by investors, or when a firm earns a return on
25 equity in excess of its cost of equity, investors respond by valuing the firm's equity in
26 excess of its book value.

27 James M. McTaggart, founder of the international management consulting firm
28 Marakon Associates, described this essential relationship between the return on
29 equity, the cost of equity, and the market-to-book ratio in the following manner:

| 1 | | Fundamentally, the value of a company is determined by the cash |
| 2 | | flow it generates over time for its owners, and the minimum |
| 3 | | acceptable rate of return required by capital investors. This "cost |
| 4 | | of equity capital" is used to discount the expected equity cash flow, |
| 5 | | converting it to a present value. The cash flow is, in turn, |
| 6 | | produced by the interaction of a company's return on equity and |
| 7 | | the annual rate of equity growth. High return on equity (ROE) |
| 8 | | companies in low-growth markets, such as Kellogg, are prodigious |
| 9 | | generators of cash flow, while low ROE companies in high-growth |
| 10 | | markets, such as Texas Instruments, barely generate enough cash |
| 11 | | flow to finance growth. |

12      A company's ROE over time, relative to its cost of equity, also
13      determines whether it is worth more or less than its book value. If
14      its ROE is consistently greater than the cost of equity capital (the
15      investor's minimum acceptable return), the business is
16      economically profitable and its market value will exceed book
17      value. If, however, the business earns a ROE consistently less than
18      its cost of equity, it is economically unprofitable and its market
19      value will be less than book value. [17]

20    As such, the relationship between a firm's return on equity, cost of equity, and

21    market-to-book ratio is relatively straightforward. A firm that earns a return on

22    equity above its cost of equity will see its common stock sell at a price above its book

23    value. Conversely, a firm that earns a return on equity below its cost of equity will

24    see its common stock sell at a price below its book value.

25   **Q.**   **PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE RELATIONSHIP**
26       **BETWEEN ROE AND MARKET-TO-BOOK RATIOS.**

27   **A.**   This relationship is discussed in a classic Harvard Business School case study entitled

28       "Note on Value Drivers." On page 2 of that case study, the author describes the

29       relationship very succinctly:

30            For a given industry, more profitable firms – those able to generate
31            higher returns per dollar of equity– should have higher market-to-
32            book ratios. Conversely, firms which are unable to generate

---

[17]   James M. McTaggart, "The Ultimate Poison Pill: Closing the Value Gap," *Commentary* (Spring 1986), p.3.

| 1 | | returns in excess of their cost of equity should sell for less than |
| 2 | | book value. |

| 3 | | *Profitability* | *Value* |
| 4 | | *If ROE > K* | *then Market/Book > 1* |
| 5 | | *If ROE = K* | *then Market/Book = 1* |
| 6 | | *If ROE < K* | *then Market/Book < 1*[18] |

7      To assess the relationship by industry, as suggested above, I performed a regression

8      study between estimated ROE and market-to-book ratios using *Value Line*'s electric

9      utilities. I used all electric utility companies that are covered by *Value Line* and have

10      estimated ROE and market-to-book ratio data. The results are presented in Exhibit

11      JRW-4. The R-square for the regression of estimated ROEs and market-to-book

12      ratios is 0.63.[19] This demonstrates the strong positive relationship between ROEs and

13      market-to-book ratios for electric utilities. Given that the market-to-book ratios have

14      been above 1.0 for a number of years, this also demonstrates that utilities have been

15      earnings ROEs above the cost of equity capital for many years.

16 **Q.**    **WHAT ECONOMIC FACTORS HAVE AFFECTED THE COST OF EQUITY**
17         **CAPITAL FOR PUBLIC UTILITIES?**

18 **A.**    Exhibit JRW-5 provides indicators of public utility equity cost rates.

19      Page 1 shows the yields on long-term A-rated public utility bonds. These yields

20      decreased from 2000 until 2003, and then hovered in the 5.50%-6.50% range from

21      mid-2003 until mid-2008. These yields peaked in November 2008 at 7.75% during

22      the Great Recession. These yields have generally declined since then, dropping

23      below 4.0% on four occasions - in mid-2013, in the first quarter of 2015, in the

24      summer of 2016, and in late 2017. These yields are about 4.0% as of the second

25      quarter of 2019.

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[18]   Benjamin Esty, "Note on Value Drivers," Harvard Business School, Case No. 9-297-082, April 7, 1997.

[19]   R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another variable (e.g., expected ROE). R-squares vary between zero and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

1    Page 2 of Exhibit JRW-5 provides the average dividend yields for electric utility

2    companies over the past 16 years. The dividend yields for the electric group declined

3    from 5.3% to 3.4% between the years 2000 to 2007, increased to over 5.0% in 2009,

4    and have declined steadily since that time. The average dividend yield was 3.2% in

5    2018.

6    Average earned returns on common equity and market-to-book ratios for electric

7    utilities are on page 3 of Exhibit JRW-5. For the electric group, earned returns on

8    common equity have declined gradually over the years. In the past three years, the

9    average earned ROE for the group has been in the 9.0% to 10.0% range. The average

10   market-to-book ratios for this group declined to about 1.1X in 2009 during the

11   financial crisis and have increased since that time. As of 2018, the average market-

12   to-book for the group was 1.80X. This means that, for at least the last decade, returns

13   on common equity have been greater than the cost of capital, or more than necessary

14   to meet investors' required returns. This also means that customers have been paying

15   more than necessary to support an appropriate profit level for regulated utilities.

16   Q.   **WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR REQUIRED**
17        **RATE OF RETURN ON EQUITY?**

18   A.   The expected or required rate of return on common stock is a function of market-wide

19        as well as company-specific factors. The most important market factor is the time

20        value of money as indicated by the level of interest rates in the economy. Common

21        stock investor requirements generally increase and decrease with like changes in

22        interest rates. The perceived risk of a firm is the predominant factor that influences

23        investor return requirements on a company-specific basis. A firm's investment risk is

24        often separated into business risk and financial risk. Business risk encompasses all

25        factors that affect a firm's operating revenues and expenses. Financial risk results

26        from incurring fixed obligations in the form of debt in financing its assets.

27   Q.   **HOW DOES THE INVESTMENT RISK OF UTILITIES COMPARE WITH**
28        **THAT OF OTHER INDUSTRIES?**

29   A.   Due to the essential nature of their service as well as their regulated status, public

30        utilities are exposed to a lesser degree of business risk than other, non-regulated

| 1 | | businesses. The relatively low level of business risk allows public utilities to meet |
| 2 | | much of their capital requirements through borrowing in the financial markets, |
| 3 | | thereby incurring greater than average financial risk. Nonetheless, the overall |
| 4 | | investment risk of public utilities is below most other industries. |

5      Page 4 of Exhibit JRW-5 provides an assessment of investment risk for 97 industries

6      as measured by beta, which according to modern capital market theory, is the only

7      relevant measure of investment risk. These betas come from the *Value Line*

8      *Investment Survey*. The study shows that the investment risk of utilities is very low.

9      The average betas for electric, gas, and water utility companies are 0.60, 0.67, and

10      0.70, respectively.[20] As such, the cost of equity for utilities is the lowest of all

11      industries in the U.S. based on modern capital market theory.

12 **Q. WHAT IS THE COST OF COMMON EQUITY CAPITAL?**

13 A.      The costs of debt and preferred stock are normally based on historical or book values

14      and can be determined with a great degree of accuracy. The cost of common equity

15      capital, however, cannot be determined precisely and must instead be estimated from

16      market data and informed judgment. This return requirement of the stockholder

17      should be commensurate with the return requirement on investments in other

18      enterprises having comparable risks.

19      According to valuation principles, the present value of an asset equals the discounted

20      value of its expected future cash flows. Investors discount these expected cash flows

21      at their required rate of return that, as noted above, reflects the time value of money

22      and the perceived riskiness of the expected future cash flows. As such, the cost of

23      common equity is the rate at which investors discount expected cash flows associated

24      with common stock ownership.

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[20] The beta for the *Value Line* Electric Utilities is the simple average of *Value Line*'s Electric East (0.65), Central (0.73), and West (0.70) group betas.

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| 1 | Q. | HOW CAN THE EXPECTED OR REQUIRED RATE OF RETURN ON |
| 2 | | COMMON EQUITY CAPITAL BE DETERMINED? |

3   A.   Models have been developed to ascertain the cost of common equity capital for a

4         firm. Each model, however, has been developed using restrictive economic

5         assumptions. Consequently, judgment is required in selecting appropriate financial

6         valuation models to estimate a firm's cost of common equity capital, in determining

7         the data inputs for these models, and in interpreting the models' results. All of these

8         decisions must take into consideration the firm involved as well as current conditions

9         in the economy and the financial markets.

| 10 | Q. | HOW DO YOU PLAN TO ESTIMATE THE COST OF EQUITY CAPITAL |
| 11 | | FOR THE COMPANY? |

12   A.   I rely primarily on the discounted cash flow ("DCF") model to estimate the cost of

13       equity capital. Given the investment valuation process and the relative stability of the

14       utility business, the DCF model provides the best measure of equity cost rates for

15       public utilities. I have also performed a capital asset pricing model ("CAPM") study;

16       however, I give these results less weight because I believe that risk premium studies,

17       of which the CAPM is one form, provide a less reliable indication of equity cost rates

18       for public utilities.

19   **B.    Discounted Cash Flow Analysis**

| 20 | Q. | PLEASE DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF |
| 21 | | MODEL. |

22   A.   According to the DCF model, the current stock price is equal to the discounted value

23       of all future dividends that investors expect to receive from investment in the firm.

24       As such, stockholders' returns ultimately result from current as well as future

25       dividends. As owners of a corporation, common stockholders are entitled to a *pro*

26       *rata* share of the firm's earnings. The DCF model presumes that earnings that are not

27       paid out in the form of dividends are reinvested in the firm so as to provide for future

28       growth in earnings and dividends. The rate at which investors discount future

29       dividends, which reflects the timing and riskiness of the expected cash flows, is

30       interpreted as the market's expected or required return on the common stock.

1    Therefore, this discount rate represents the cost of common equity. Algebraically, the

2    DCF model can be expressed as:

$$P \;=\; \frac{D_1}{(1+k)^1} \;+\; \frac{D_2}{(1+k)^2} \;+\; \dots \; \frac{D_n}{(1+k)^n}$$

6    where P is the current stock price, $D_n$ is the dividend in year n, and k is the cost of

7    common equity.

8    **Q.  IS THE DCF MODEL CONSISTENT WITH VALUATION TECHNIQUES**
9    **EMPLOYED BY INVESTMENT FIRMS?**

10   A.   Yes.  Virtually all investment firms use some form of the DCF model as a valuation

11        technique.  One common application for investment firms is called the three-stage

12        DCF or dividend discount model ("DDM").  The stages in a three-stage DCF model

13        are presented in Exhibit JRW-6, Page 1 of 2.  This model presumes that a company's

14        dividend payout progresses initially through a growth stage, then proceeds through a

15        transition stage, and finally assumes a maturity (or steady-state) stage.  The dividend-

16        payment stage of a firm depends on the profitability of its internal investments which,

17        in turn, is largely a function of the life cycle of the product or service.

18        1.    Growth stage:  Characterized by rapidly expanding sales, high profit margins,

19        and an abnormally high growth in earnings per share.  Because of highly profitable

20        expected investment opportunities, the payout ratio is low.  Competitors are attracted

21        by the unusually high earnings, leading to a decline in the growth rate.

22        2.    Transition stage:  In later years, increased competition reduces profit margins

23        and earnings growth slows.  With fewer new investment opportunities, the company

24        begins to pay out a larger percentage of earnings.

25        3.    Maturity (steady-state) stage:  Eventually, the company reaches a position

26        where its new investment opportunities offer, on average, only slightly more

27        attractive ROEs.  At that time, its earnings growth rate, payout ratio, and ROE

1    stabilize for the remainder of its life. As I will explain below, the constant-growth
2    DCF model is appropriate when a firm is in the maturity stage of the life cycle.

3    In using the 3-stage model to estimate a firm's cost of equity capital, dividends are
4    projected into the future using the different growth rates in the alternative stages, and
5    then the equity cost rate is the discount rate that equates the present value of the
6    future dividends to the current stock price.

7  Q. **HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR REQUIRED**
8     **RATE OF RETURN USING THE DCF MODEL?**

9  A.  Under certain assumptions, including a constant and infinite expected growth rate,
10    and constant dividend/earnings and price/earnings ratios, the DCF model can be
11    simplified to the following:

12
13    $$P = \frac{D_1}{k - g}$$
14

15    where P is the current stock price, $D_1$ represents the expected dividend over the
16    coming year, k is investor's required return on equity, and g is the expected growth
17    rate of dividends. This is known as the constant-growth version of the DCF model.
18    To use the constant-growth DCF model to estimate a firm's cost of equity, one solves
19    for k in the above expression to obtain the following:

20
21
22    $$k = \frac{D_1}{P} + g$$
23

24  Q. **IN YOUR OPINION, IS THE CONSTANT-GROWTH DCF MODEL**
25     **APPROPRIATE FOR PUBLIC UTILITIES?**

26  A.  Yes. The economics of the public utility business indicate that the industry is in the
27    steady-state or constant-growth stage of a three-stage DCF. The economics include
28    the relative stability of the utility business, the maturity of the demand for public
29    utility services, and the regulated status of public utilities (especially the fact that their
30    returns on investment are effectively set through the ratemaking process). The DCF

1     valuation procedure for companies in this stage is the constant-growth DCF.  In the

2     constant-growth version of the DCF model, the current dividend payment and stock

3     price are directly observable.  However, the primary problem and controversy in

4     applying the DCF model to estimate equity cost rates entails estimating investors'

5     expected dividend growth rate.

6   Q.   **WHAT FACTORS SHOULD ONE CONSIDER WHEN APPLYING THE DCF**
7        **METHODOLOGY?**

8   A.   One should be sensitive to several factors when using the DCF model to estimate a

9        firm's cost of equity capital.  In general, one must recognize the assumptions under

10       which the DCF model was developed in estimating its components (the dividend

11       yield and the expected growth rate).  The dividend yield can be measured precisely at

12       any point in time; however, it tends to vary somewhat over time.  Estimation of

13       expected growth is considerably more difficult.  One must consider recent firm

14       performance, in conjunction with current economic developments and other

15       information available to investors, to accurately estimate investors' expectations.

16  Q.   **WHAT DIVIDEND YIELDS HAVE YOU REVIEWED?**

17  A.   I have calculated the dividend yields for the companies in the proxy group using the

18       current annual dividend and the 30-day, 90-day, and 180-day average stock prices.

19       These dividend yields are provided in Panels A and B of page 2 of Exhibit JRW-7.  I

20       have shown the mean and median dividend yields using 30-day, 90-day, and 180-day

21       average stock prices.  Using both the means and medians, the dividend yields range

22       from 3.0% to 3.4% for the Electric Proxy Group and 3.0% to 3.3% for the Hevert Proxy

23       Group.  Therefore, I will use a dividend yields of 3.3% and 3.2% for my Electric Proxy

24       Group and the Hevert Proxy Group, respectively.

25  Q.   **PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT**
26       **DIVIDEND YIELD.**

27  A.   According to the traditional DCF model, the dividend yield term relates the dividend

28       paid over the coming period to the current stock price.  As indicated by Professor

29       Myron Gordon, who is commonly associated with the development of the DCF model

1  for popular use, this is obtained by: (1) multiplying the expected dividend over the
2  coming quarter by 4, and (2) dividing this dividend by the current stock price to
3  determine the appropriate dividend yield for a firm that pays dividends on a quarterly
4  basis.[21]

5  In applying the DCF model, some analysts adjust the current dividend for growth
6  over the coming year as opposed to the coming quarter. This can be complicated
7  because firms tend to announce changes in dividends at different times during the
8  year. As such, the dividend yield computed based on presumed growth over the
9  coming quarter as opposed to the coming year can be quite different. Consequently,
10 it is common for analysts to adjust the dividend yield by some fraction of the long-
11 term expected growth rate.

12 **Q.**  **GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR DO YOU USE**
13      **FOR YOUR DIVIDEND YIELD?**

14 **A.**  I adjust the dividend yield by one-half (1/2) of the expected growth so as to reflect
15      growth over the coming year. The DCF equity cost rate ("K") is computed as:

16 $$K = [\, (D/P) * (1 + 0.5g) \,] + g$$

17 **Q.**  **PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF**
18      **MODEL.**

19 **A.**  There is debate as to the proper methodology to employ in estimating the growth
20      component of the DCF model. By definition, this component is investors'
21      expectation of the long-term dividend growth rate. Presumably, investors use some
22      combination of historical and/or projected growth rates for earnings and dividends per
23      share and for internal or book-value growth to assess long-term potential.

---

[21]  *Petition for Modification of Prescribed Rate of Return*, Federal Communications Commission, Docket No. 79-05, Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62 (April 1980).

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| 1  | Q. | WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE PROXY |
| 2  |    | GROUPS? |

3   A.   I have analyzed a number of measures of growth for companies in the proxy groups.

4        I reviewed *Value Line's* historical and projected growth rate estimates for earnings

5        per share ("EPS"), dividends per share ("DPS"), and book value per share ("BVPS").

6        In addition, I utilized the average EPS growth rate forecasts of Wall Street analysts as

7        provided by Yahoo, Reuters and Zacks. These services solicit five-year earnings

8        growth rate projections from securities analysts and compile and publish the means

9        and medians of these forecasts. Finally, I also assessed prospective growth as

10       measured by prospective earnings retention rates and earned returns on common

11       equity.

12  Q.   PLEASE DISCUSS HISTORICAL GROWTH IN EARNINGS AND

13       DIVIDENDS AS WELL AS INTERNAL GROWTH.

14  A.   Historical growth rates for EPS, DPS, and BVPS are readily available to investors

15       and are presumably an important ingredient in forming expectations concerning

16       future growth. However, one must use historical growth numbers as measures of

17       investors' expectations with caution. In some cases, past growth may not reflect

18       future growth potential. Also, employing a single growth rate number (for example,

19       for five or ten years) is unlikely to accurately measure investors' expectations, due to

20       the sensitivity of a single growth rate figure to fluctuations in individual firm

21       performance as well as overall economic fluctuations (*i.e.*, business cycles).

22       However, one must appraise the context in which the growth rate is being employed.

23       According to the conventional DCF model, the expected return on a security is equal

24       to the sum of the dividend yield and the expected long-term growth in dividends.

25       Therefore, to best estimate the cost of common equity capital using the conventional

26       DCF model, one must look to long-term growth rate expectations.

27       Internally generated growth is a function of the percentage of earnings retained within

28       the firm (the earnings retention rate) and the rate of return earned on those earnings

29       (the return on equity). The internal growth rate is computed as the retention rate

30       times the return on equity. Internal growth is significant in determining long-run

| 1 | | earnings and, therefore, dividends. Investors recognize the importance of internally |
|---|---|---|
| 2 | | generated growth and pay premiums for stocks of companies that retain earnings and |
| 3 | | earn high returns on internal investments. |

4    **Q.**    **PLEASE DISCUSS THE SERVICES THAT PROVIDE ANALYSTS' EPS**
5          **FORECASTS.**

6    **A.**    Analysts' EPS forecasts for companies are collected and published by a number of

7          different investment information services, including Institutional Brokers Estimate

8          System ("I/B/E/S"), Bloomberg, FactSet, Zacks, First Call and Reuters, among

9          others. Thompson Reuters publishes analysts' EPS forecasts under different product

10         names, including I/B/E/S, First Call, and Reuters. Bloomberg, FactSet, and Zacks

11         each publish their own set of analysts' EPS forecasts for companies. These services

12         do not reveal (1) the analysts who are solicited for forecasts or (2) the identity of the

13         analysts who actually provide the EPS forecasts that are used in the compilations

14         published by the services. I/B/E/S, Bloomberg, FactSet, and First Call are fee-based

15         services. These services usually provide detailed reports and other data in addition to

16         analysts' EPS forecasts. In contrast, Thompson Reuters and Zacks do provide limited

17         EPS forecast data free-of-charge on the Internet. Yahoo finance

18         (http://finance.yahoo.com) lists Thompson Reuters as the source of its summary EPS

19         forecasts. The Reuters website (www.reuters.com) also publishes EPS forecasts from

20         Thompson Reuters, but with more detail. Zacks (www.zacks.com) publishes its

21         summary forecasts on its website. Zacks estimates are also available on other

22         websites, such as MSN.money (http://money.msn.com).

23    **Q.**    **PLEASE PROVIDE AN EXAMPLE OF THESE EPS FORECASTS.**

24    **A.**    The following example provides the EPS forecasts compiled by Reuters for

25         Consolidated Edison (stock symbol "ED"). The figures are provided on page 2 of

26         Exhibit JRW-6. Line one shows that ten analysts have provided EPS estimates for

27         the quarter ending June 30, 2019. The mean, high and low estimates are $0.62, $0.72,

28         and $0.51, respectively. The second line shows the quarterly EPS estimates for the

29         quarter ending September 30, 2019 of $1.60 (mean), $1.71 (high), and $1.53 (low).

30         Line three shows the annual EPS estimates for the fiscal year ending December 2019

| 1 | | ($4.36 (mean), $4.38 (high), and $4.32 (low). Line four shows the annual EPS |

1      ($4.36 (mean), $4.38 (high), and $4.32 (low). Line four shows the annual EPS

2      estimates for the fiscal year ending December 2020 ($4.56 (mean), $4.70 (high), and

3      $4.45 (low). The quarterly and annual EPS forecasts in lines 1-4 are expressed in

4      dollars and cents. As in the ED case shown here, it is common for more analysts to

5      provide estimates of annual EPS as opposed to quarterly EPS. The bottom line (5)

6      shows the projected long-term EPS growth rate, which is expressed as a percentage.

7      For ED, five analysts have provided a long-term EPS growth rate forecast, with mean,

8      high, and low growth rates of 3.41%, 4.90%, and 2.00%.

9    **Q.**    **WHICH OF THESE EPS FORECASTS IS USED IN DEVELOPING A DCF**
10         **GROWTH RATE?**

11    **A.**    The DCF growth rate is the long-term projected growth rate in EPS, DPS, and BVPS.

12       Therefore, in developing an equity cost rate using the DCF model, the projected long-

13       term growth rate is the projection used in the DCF model.

14    **Q.**    **WHY DO YOU NOT RELY EXCLUSIVELY ON THE EPS FORECASTS OF**
15         **WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE**
16         **FOR THE PROXY GROUP?**

17    **A.**    There are several issues with using the EPS growth rate forecasts of Wall Street

18       analysts as DCF growth rates. First, the appropriate growth rate in the DCF model is

19       the dividend growth rate, not the earnings growth rate. Nonetheless, over the very

20       long term, dividend and earnings will have to grow at a similar growth rate.

21       Therefore, consideration must be given to other indicators of growth, including

22       prospective dividend growth, internal growth, as well as projected earnings growth.

23       Second, a study by Lacina, Lee, and Xu (2011) has shown that analysts' three-to-five

24       year EPS growth rate forecasts are not more accurate at forecasting future earnings

25       than naïve random walk forecasts of future earnings.[22] Employing data over a

26       twenty-year period, these authors demonstrate that using the most recent year's actual

27       EPS figure to forecast EPS in the next 3-5 years proved to be just as accurate as using

28       the EPS estimates from analysts' three-to-five year EPS growth rate forecasts. In the

---

[22]   M. Lacina, B. Lee & Z. Xu, *Advances in Business and Management Forecasting (Vol. 8)*, Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

1     authors' opinion, these results indicate that analysts' long-term earnings growth-rate

2     forecasts should be used with caution as inputs for valuation and cost of capital

3     purposes. Finally, and most significantly, it is well known that the long-term EPS

4     growth-rate forecasts of Wall Street securities analysts are overly optimistic and

5     upwardly biased. This has been demonstrated in a number of academic studies over

6     the years.[23]  Hence, using these growth rates as a DCF growth rate will provide an

7     overstated equity cost rate. On this issue, a study by Easton and Sommers (2007)

8     found that optimism in analysts' growth rate forecasts leads to an upward bias in

9     estimates of the cost of equity capital of almost 3.0 percentage points.[24]

10    **Q.    IS IT YOUR OPINION THAT STOCK PRICES REFLECT THE UPWARD**
11    **BIAS IN THE EPS GROWTH RATE FORECASTS?**

12    A.    Yes, I do believe that investors are well aware of the bias in analysts' EPS growth-

13          rate forecasts, and therefore stock prices reflect the upward bias.

14    **Q.    HOW DOES THAT AFFECT THE USE OF THESE FORECASTS IN A DCF**
15    **EQUITY COST RATE STUDY?**

16    A.    According to the DCF model, the equity cost rate is a function of the dividend yield

17          and expected growth rate. Because I believe that investors are aware of the upward

18          bias in analysts' long-term EPS growth rate forecasts, stock prices reflect the bias.

19          But the DCF growth rate needs to be adjusted downward from the projected EPS

20          growth rate to reflect the upward bias in the DCF model.

---

[23]  The studies that demonstrate analysts' long-term EPS forecasts are overly-optimistic and upwardly biased include: R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 725-55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, "The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings," *Contemporary Accounting Research* (2000); K. Chan, L., Karceski, J., & Lakonishok, J., "The Level and Persistence of Growth Rates," *Journal of Finance* pp. 643–684, (2003); M. Lacina, B. Lee and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8)*, Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101; and Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, "Equity Analysts, Still Too Bullish," *McKinsey on Finance*, pp. 14-17, (Spring 2010).

[24]  Peter D. Easton & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. ACCT. RES. 983–1015 (2007).

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| 1 | Q. | PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN |
| 2 | | THE PROXY GROUPS, AS PROVIDED BY *VALUE LINE*. |

3 A.  Page 3 of Exhibit JRW-7 provides the 5- and 10- year historical growth rates for EPS,

4    DPS, and BVPS for the companies in the two proxy groups, as published in the *Value*

5    *Line Investment Survey*. The median historical growth measures for EPS, DPS, and

6    BVPS for the Electric Proxy Group, as provided in Panel A, range from 4.0% to

7    6.5%, with an average of the medians of 4.7%. For the Hevert Proxy Group, as

8    shown in Panel B of page 3 of Exhibit JRW-7, the historical growth measures in EPS,

9    DPS, and BVPS, as measured by the medians, range from 4.0% to 6.0%, with an

10   average of the medians of 4.7%.

| 11 | Q. | PLEASE SUMMARIZE *VALUE LINE'S* PROJECTED GROWTH RATES |
| 12 | | FOR THE COMPANIES IN THE PROXY GROUPS. |

13 A.  *Value Line's* projections of EPS, DPS, and BVPS growth for the companies in the

14   proxy groups are shown on page 4 of Exhibit JRW-7. As stated above, due to the

15   presence of outliers, the medians are used in the analysis. For the Electric Proxy

16   Group, as shown in Panel A of page 4 of Exhibit JRW-7, the medians range from

17   4.0% to 6.0%, with an average of the medians of 5.2%. The range of the medians for

18   the Hevert Proxy Group, shown in Panel B of page 4 of Exhibit JRW-7, is from 4.0%

19   to 6.0%, with an average of the medians of 5.2%.

20   Also provided on page 4 of Exhibit JRW-7 are the prospective sustainable growth

21   rates for the companies in the two proxy groups as measured by *Value Line*'s average

22   projected retention rate and return on shareholders' equity. As noted above,

23   sustainable growth is a significant and a primary driver of long-run earnings growth.

24   For the Electric and Hevert Proxy Groups, the median prospective sustainable growth

25   rates are 3.8% and 3.6%, respectively.

| 26 | Q. | PLEASE ASSESS GROWTH FOR THE PROXY GROUPS AS MEASURED |
| 27 | | BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR EPS GROWTH. |

28 A.  Yahoo, Zacks, and Reuters collect, summarize, and publish Wall Street analysts' 5-

29   year EPS growth-rate forecasts for the companies in the proxy groups. These

30   forecasts are provided for the companies in the proxy groups on page 5 of Exhibit

1      JRW-7. I have reported both the mean and median growth rates for the groups. Since

2      there is considerable overlap in analyst coverage between the three services, and not all

3      of the companies have forecasts from the different services, I have averaged the

4      expected five-year EPS growth rates from the three services for each company to arrive

5      at an expected EPS growth rate for each company. The mean/median of analysts'

6      projected EPS growth rates for the Electric and Hevert Proxy Groups are 5.0%/5.2%

7      and 5.3%/5.4%, respectively.[25]

8 **Q.**     **PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND**
9         **PROSPECTIVE GROWTH OF THE PROXY GROUPS.**

10 **A.**     Page 6 of Exhibit JRW-7 shows the summary DCF growth rate indicators for the

11      proxy groups.

12      The historical growth rate indicators for my Electric Proxy Group imply a baseline

13      growth rate of 4.7%. The average of the projected EPS, DPS, and BVPS growth rates

14      from *Value Line* is 5.2%, and *Value Line*'s projected sustainable growth rate is 3.8%.

15      The projected EPS growth rates of Wall Street analysts for the Electric Proxy Group

16      are 5.2% and 5.0% as measured by the mean and median growth rates. The overall

17      range for the projected growth-rate indicators (ignoring historical growth) is 3.8% to

18      5.2%. Giving primary weight to the projected EPS growth rate of Wall Street

19      analysts, I believe that the appropriate projected growth rate is 5.1%, which is the

20      average of the mean and median projected EPS growth rates. This growth rate figure

21      is in the upper end of the range of historic and projected growth rates for the Electric

22      Proxy Group.

23      For the Hevert Proxy Group, the historical growth rate indicators indicate a growth

24      rate of 4.7%. The average of the projected EPS, DPS, and BVPS growth rates from

25      *Value Line* is 5.2%, and *Value Line*'s projected sustainable growth rate is 3.6%. The

26      projected EPS growth rates of Wall Street analysts are 5.3% and 5.4% as measured by

27      the mean and median growth rates. The overall range for the projected growth rate

---

[25] Given variation in the measures of central tendency of analysts' projected EPS growth rates proxy groups, I have considered both the means and medians figures in the growth rate analysis.

1    indicators is 3.6% to 5.4%. Giving primary weight to the projected EPS growth rate

2    of Wall Street analysts, I believe that the appropriate projected growth rate is in the

3    5.35%, which is the average of the mean and median projected EPS growth rates.

4    This growth rate figure is in the upper end of the range of historic and projected

5    growth rates for the Hevert Proxy Group.

6    **Q.    BASED ON THE ABOVE ANALYSIS, WHAT ARE YOUR INDICATED**
7    **COMMON EQUITY COST RATES FROM THE DCF MODEL FOR THE**
8    **PROXY GROUPS?**

9    A.    My DCF-derived equity cost rates for the groups are summarized on page 1 of

10    Exhibit JRW-7 and in Table 3 below.

11                                    **Table 3**
12                        **DCF-Derived Equity Cost Rate/ROE**

|  | Dividend Yield | 1 + ½ Growth Adjustment | DCF Growth Rate | Equity Cost Rate |
|---|---|---|---|---|
| **Electric Proxy Group** | **3.30%** | **1.02550** | **5.10%** | **8.50%** |
| **Hevert Proxy Group** | **3.20%** | **1.02675** | **5.35%** | **8.65%** |

13    The result for the Electric Proxy Group is the 3.30% dividend yield, times the one and

14    one-half growth adjustment of 1.0255, plus the DCF growth rate of 5.10%, which

15    results in an equity cost rate of 8.50%. The result for the Hevert Proxy Group is

16    8.65%, which includes a dividend yield of 3.20%, an adjustment factor of 1.02675,

17    and a DCF growth rate of 5.35%.

18    **C.    Capital Asset Pricing Model**

19    **Q.    PLEASE DISCUSS THE CAPITAL ASSET PRICING MODEL ("CAPM").**

20    A.    The CAPM is a risk premium approach to gauging a firm's cost of equity capital.

21    According to the risk premium approach, the cost of equity is the sum of the interest

22    rate on a risk-free bond ($R_f$) and a risk premium (RP), as in the following:

23                        $$k \quad = \quad R_f \quad + \quad RP$$

24    The yield on long-term U.S. Treasury securities is normally used as $R_f$. Risk premiums

25    are measured in different ways. The CAPM is a theory of the risk and expected

1      returns of common stocks.  In the CAPM, two types of risk are associated with a

2      stock:  firm-specific risk or unsystematic risk, and market or systematic risk, which is

3      measured by a firm's beta.  The only risk that investors receive a return for bearing is

4      systematic risk.

5      According to the CAPM, the expected return on a company's stock, which is also the

6      equity cost rate (K), is expressed as:

7      $$K = (R_f) + ß * [E(R_m) - (R_f)]$$

8      Where:

9      • $K$ represents the estimated rate of return on the stock;

10     • $E(R_m)$ represents the expected rate of return on the overall stock market.
11     Frequently, the S&P 500 is used as a proxy for the "market";

12     • $(R_f)$ represents the risk-free rate of interest;

13     • $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—the
14     excess rate of return that an investor expects to receive above the risk-free rate
15     for investing in risky stocks; and

16     • Beta—(ß) is a measure of the systematic risk of an asset.

17     To estimate the required return or cost of equity using the CAPM requires three

18     inputs:  the risk-free rate of interest $(R_f)$, the beta (ß), and the expected equity or

19     market risk premium $[E(R_m) - (R_f)]$. $R_f$ is the easiest of the inputs to measure – it is

20     represented by the yield on long-term U.S. Treasury bonds.  ß, the measure of

21     systematic risk, is a little more difficult to measure because there are different

22     opinions about what adjustments, if any, should be made to historical betas due to

23     their tendency to regress to 1.0 over time.  And finally, an even more difficult input to

24     measure is the expected equity or market risk premium $(E(R_m) - (R_f))$.  I will discuss

25     each of these inputs below.

26  **Q.  PLEASE DISCUSS EXHIBIT JRW-8.**

27  A.   Exhibit JRW-8 provides the summary results for my CAPM study.  Page 1 shows the

28      results, and the following pages contain the supporting data.

1    **Q.**    **PLEASE DISCUSS THE RISK-FREE INTEREST RATE.**

2    **A.**    The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-free

3             rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn,

4             has been considered to be the yield on U.S. Treasury bonds with 30-year maturities.

5    **Q.**    **WHAT RISK-FREE INTEREST RATE ARE YOU USING IN YOUR CAPM?**

6    **A.**    As shown on page 2 of Exhibit JRW-8, the yield on 30-year U.S. Treasury bonds has

7             been in the 2.5% to 4.0% range over the 2013–2019 time period. The current 30-year

8             Treasury yield is in about the middle of this range. Given the recent range of yields, I

9             have chosen to use the top end of the range as my risk-free interest rate. Therefore, I

10           am using 4.0% as the risk-free rate, or $R_f$, in my CAPM.

11   **Q.**    **DOES YOUR 4.0% RISK-FREE INTEREST RATE TAKE INTO**
12       **CONSIDERATION FORECASTS OF HIGHER INTEREST RATES?**

13   **A.**    No; it does not. As I stated before, forecasts of higher interest rates have been

14          notoriously wrong for a decade. My 4.0% risk-free interest rate takes into account the

15          range of interest rates in the past and effectively synchronizes the risk-free rate with

16          the market-risk premium ("MRP"). The risk-free rate and the MRP are interrelated in

17          that the MRP is developed in relation to the risk-free rate. As discussed below, my

18          MRP is based on the results of many studies and surveys that have been published

19          over time. Therefore, my risk-free interest rate of 4.0% is effectively a normalized

20          risk-free rate of interest.

21   **Q.**    **WHAT BETAS ARE YOU EMPLOYING IN YOUR CAPM?**

22   **A.**    Beta (ß) is a measure of the systematic risk of a stock. The market, usually taken to

23          be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement

24          as the market also has a beta of 1.0. A stock whose price movement is greater than

25          that of the market, such as a technology stock, is riskier than the market and has a

26          beta greater than 1.0. A stock with below average price movement, such as that of a

27          regulated public utility, is less risky than the market and has a beta less than 1.0.

28          Estimating a stock's beta involves running a linear regression of a stock's return on

29          the market return.

1    As shown on page 3 of Exhibit JRW-8, the slope of the regression line is the stock's

2    ß. A steeper line indicates that the stock is more sensitive to the return on the overall

3    market. This means that the stock has a higher ß and greater-than-average market

4    risk. A less steep line indicates a lower ß and less market risk.

5    Several online investment information services, such as Yahoo and Reuters, provide

6    estimates of stock betas. Usually these services report different betas for the same

7    stock. The differences are usually due to: (1) the time period over which ß is

8    measured; and (2) any adjustments that are made to reflect the fact that betas tend to

9    regress to 1.0 over time. In estimating an equity cost rate for the proxy groups, I am

10   using the betas for the companies as provided in the *Value Line Investment Survey*.

11   As shown on page 3 of Exhibit JRW-8, the median betas for the companies in the

12   Electric and Hevert Proxy Groups are 0.60 and 0.60, respectively.

13  Q.   **PLEASE DISCUSS THE MARKET RISK PREMIUM.**

14  A.   The MRP is equal to the expected return on the stock market (e.g., the expected return

15       on the S&P 500, $E(R_m)$ minus the risk-free rate of interest $(R_f)$. The MRP is the

16       difference in the expected total return between investing in equities and investing in

17       "safe" fixed-income assets, such as long-term government bonds. However, while

18       the MRP is easy to define conceptually, it is difficult to measure because it requires

19       an estimate of the expected return on the market - $E(R_m)$. As is discussed below,

20       there are different ways to measure $E(R_m)$, and studies have come up with

21       significantly different magnitudes for $E(R_m)$. As Merton Miller, the 1990 Nobel Prize

22       winner in economics indicated, $E(R_m)$ is very difficult to measure and is one of the

23       great mysteries in finance.[26]

24  Q.   **PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO ESTIMATING**
25       **THE MRP.**

26  A.   Page 4 of Exhibit JRW-8 highlights the primary approaches to, and issues in,

27       estimating the expected MRP. The traditional way to measure the MRP was to use

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[26] Merton Miller, "The History of Finance: An Eyewitness Account," *Journal of Applied Corporate Finance*, 2000, P. 3.

1      the difference between historical average stock and bond returns. In this case,

2      historical stock and bond returns, also called *ex post* returns, were used as the

3      measures of the market's expected return (known as the *ex ante* or forward-looking

4      expected return). This type of historical evaluation of stock and bond returns is often

5      called the "Ibbotson approach" after Professor Roger Ibbotson, who popularized this

6      method of using historical financial market returns as measures of expected returns.

7      However, this historical evaluation of returns can be a problem because: (1) *ex post*

8      returns are not the same as *ex ante* expectations; (2) market risk premiums can change

9      over time, increasing when investors become more risk-averse and decreasing when

10      investors become less risk-averse; and (3) market conditions can change such that *ex*

11      *post* historical returns are poor estimates of *ex ante* expectations.

12      The use of historical returns as market expectations has been criticized in numerous

13      academic studies as discussed later in my testimony. The general theme of these

14      studies is that the large equity risk premium discovered in historical stock and bond

15      returns cannot be justified by the fundamental data. These studies, which fall under

16      the category "*Ex Ante* Models and Market Data," compute *ex ante* expected returns

17      using market data to arrive at an expected equity risk premium. These studies have

18      also been called "Puzzle Research" after the famous study by Mehra and Prescott in

19      which the authors first questioned the magnitude of historical equity risk premiums

20      relative to fundamentals.[27]

21      In addition, there are a number of surveys of financial professionals regarding the

22      MRP. There have also been several published surveys of academics on the equity

23      risk premium. *CFO Magazine* conducts a quarterly survey of CFOs, which includes

24      questions regarding their views on the current expected returns on stocks and bonds.

25      Usually, over 200 CFOs participate in the survey.[28] Questions regarding expected

26      stock and bond returns are also included in the Federal Reserve Bank of

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[27]   Rajnish Mehra & Edward C. Prescott, "The Equity Premium: A Puzzle," *Journal of Monetary Economics*, 145 (1985).

[28]   *See* DUKE/CFO Magazine Global Business Outlook Survey, www.cfosurvey.org.

1   Philadelphia's annual survey of financial forecasters, which is published as the *Survey*

2   *of Professional Forecasters.*[29]   This survey of professional economists has been

3   published for almost fifty years.   In addition, Pablo Fernandez conducts annual

4   surveys of financial analysts and companies regarding the equity risk premiums they

5   use in their investment and financial decision-making.[30]

6   **Q.   PLEASE PROVIDE A SUMMARY OF THE MRP STUDIES.**

7   A.   Derrig and Orr (2003), Fernandez (2007), and Song (2007) completed the most

8   comprehensive review of the research on the MRP.[31]   Derrig and Orr's study

9   evaluated the various approaches to estimating MRPs, as well as the issues with the

10   alternative approaches and summarized the findings of the published research on the

11   MRP.   Fernandez examined four alternative measures of the MRP – historical,

12   expected, required, and implied.   He also reviewed the major studies of the MRP and

13   presented the summary MRP results.   Song provides an annotated bibliography and

14   highlights the alternative approaches to estimating the MRP.

15   Page 5 of Exhibit JRW-8 provides a summary of the results of the primary risk

16   premium studies reviewed by Derrig and Orr, Fernandez, and Song, as well as other

17   more recent studies of the MRP.   In developing page 5 of Exhibit JRW-8, I have

18   categorized the studies as discussed on page 4 of Exhibit JRW-8.   I have also

19   included the results of studies of the "Building Blocks" approach to estimating the

20   equity risk premium.   The Building Blocks approach is a hybrid approach employing

21   elements of both historical and *ex ante* models.

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[29]   Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters* (March 2019). The Survey of Professional Forecasters was formerly conducted by the American Statistical Association ("ASA") and the National Bureau of Economic Research ("NBER") and was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation with the NBER, assumed responsibility for the survey in June 1990.

[30]   Pablo Fernandez, Vitaly Pershin and Isabel Fernandez Acín, "Market Risk Premium and Risk-Free Rate used for 59 countries in 2019: a survey." *IESE Business School,* April 2019.

[31]   *See* Richard Derrig & Elisha Orr, "Equity Risk Premium: Expectations Great and Small," Working Paper (version 3.0), Automobile Insurers Bureau of Massachusetts, (August 28, 2003); Pablo Fernandez, "Equity Premium: Historical, Expected, Required, and Implied," IESE Business School Working Paper, (2007); Zhiyi Song, "The Equity Risk Premium: An Annotated Bibliography," CFA Institute, (2007).

1 **Q. PLEASE DISCUSS PAGE 5 OF EXHIBIT JRW-8.**

2 A. Page 5 of Exhibit JRW-8 provides a summary of the results of the MRP studies that I

3 have reviewed. These include the results of: (1) the various studies of the historical

4 risk premium, (2) *ex ante* MRP studies, (3) MRP surveys of CFOs, financial

5 forecasters, analysts, companies and academics, and (4) the Building Blocks approach

6 to the MRP. There are results reported for over about studies, and the median MRP is

7 4.83%.

8 **Q. PLEASE HIGHLIGHT THE RESULTS OF THE MORE RECENT RISK**
9 **PREMIUM STUDIES AND SURVEYS.**

10 A. The studies cited on page 5 of Exhibit JRW-8 include every MRP study and survey I

11 could identify that was published over the past fifteen years and that provided an

12 MRP estimate. Many of these studies were published prior to the financial crisis that

13 began in 2008. In addition, some of these studies were published in the early 2000s at

14 the market peak. It should be noted that many of these studies (as indicated) used

15 data over long periods of time (as long as fifty years of data) and so were not

16 estimating an MRP as of a specific point in time (e.g., the year 2001). To assess the

17 effect of the earlier studies on the MRP, I have reconstructed page 5 of Exhibit JRW-

18 8 on page 6 of Exhibit JRW-8; however, I have eliminated all studies dated before

19 January 2, 2010. The median for this subset of studies is 4.87%.

20 **Q. PLEASE SUMMARIZE THE MRP STUDIES AND SURVEYS.**

21 A. As noted above, there are three approaches to estimating the MRP – historic stock

22 and bond returns, ex ante or expected returns models, and surveys. The studies on

23 pages 5 and 6 of Exhibit JRW-8 can be summarized in the following manners:

24 Historic Stock and Bond Returns - Historic stock and bond returns suggest an MRP in

25 the 4.40% to 6.26% range, depending on whether one uses arithmetic or geometric

26 mean returns.

27 Ex Ante Models - MRP studies that use expected or ex ante return models, indicates
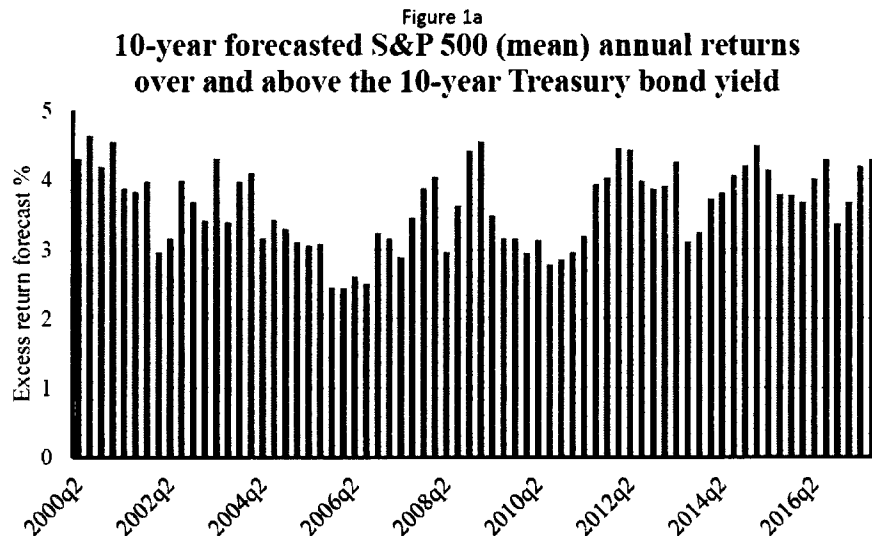
28 MRPs in the range of 4.49% to 6.00%.

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1        <u>Surveys</u> - MRPs developed from surveys of analysts, companies, financial

2        professionals, and academics find lower MRPs, with a range from 1.85% to 5.7%.

3  **Q.**  **PLEASE HIGHLIGHT THE EX ANTE MRP STUDIES AND SURVEYS**
4       **THAT YOU BELIEVE ARE MOST TIMELY AND RELEVANT.**

5  **A.**  I will highlight a number of studies/surveys.

6        *CFO Magazine* conducts a quarterly survey of CFOs, which includes questions

7        regarding their views on the current expected returns on stocks and bonds. Usually,

8        over 200 CFOs participate in the survey.[32] In the December 2018 CFO survey

9        conducted by *CFO Magazine* and Duke University, which included approximately

10     200 responses, the expected 10-year MRP was 3.15%.[33] Figure 5, below, shows the

11     MRP associated with the CFO Survey, which has been in the 4.0% range in recent

12     years.

13                           **Figure 5**
14                    **Market Risk Premium**
15                       **CFO Survey**



Figure 1a
**10-year forecasted S&P 500 (mean) annual returns
over and above the 10-year Treasury bond yield**

Source: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3151162&download=yes

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17

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[32] *See* DUKE/CFO Magazine Global Business Outlook Survey, https://www.cfosurvey.org/past-results-2018.html, (December 2018).

[33] https://www.cfosurvey.org/wp-content/uploads/2018/12/Q4-18-US-Toplines.pdf, P. 45.

1      Pablo Fernandez conducts annual surveys of financial analysts and companies

2      regarding the equity risk premiums they use in their investment and financial

3      decision-making.[34] His survey results are included on pages 5 and 6 of Exhibit JRW-

4      8. The results of his 2019 survey of academics, financial analysts, and companies,

5      which included 4,000 responses, indicated a median MRP employed by U.S. analysts

6      and companies of 5.6%.[35] His estimated MRP for the U.S. has been in the 5.00%-

7      5.50% range in recent years.

8      Professor Aswath Damodaran of NYU, a leading expert on valuation and the MRP,

9      provides a monthly updated MRP which is based on projected S&P 500 EPS and

10      stock price level, and long-term interest rates. His estimated MRP is shown

11      graphically in Figure 6, below, for the past twenty years, has primarily been in the

12      range of 5.0% to 6.0% since 2010.

13
14

**Figure 6**
**Damodaran Market Risk Premium**



Source: http://pages.stern.nyu.edu/~adamodar/

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16

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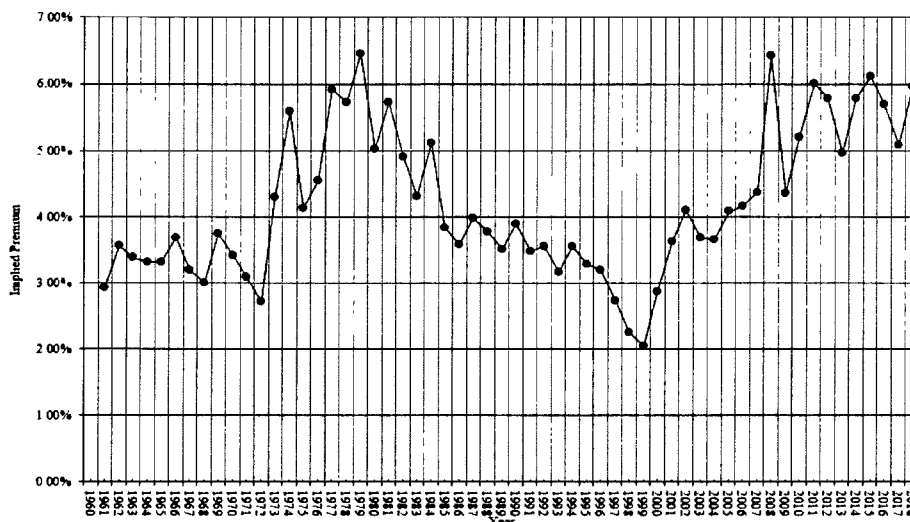
[34] Pablo Fernandez, Vitaly Pershin and Isabel Fernandez Acín, "Market Risk Premium and Risk-Free Rate used for 59 countries in 2019: a survey," *IESE Business School,* (Apr. 2019), available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3358901.

[35] *Ibid.* p. 3.

1     Duff & Phelps, an investment advisory firm, provides recommendations for the risk-
2     free interest rate and MRPs to be used in calculating the cost of capital data. Their
3     recommendations over the 2008-2019 time periods are shown on page 7 of Exhibit
4     JRW-8. Duff & Phelps' recommended MRP has been in the 5.0% to 6.0% over the
5     past decade. Most recently, on December 31 of 2018, Duff & Phelps increased its
6     recommended MRP on January 31, 2016 from 5.00% to 5.50%.[36]

7     KPMG is one of the largest public accounting firms in the world. Their recommended
8     MRP over the 2013-2019 time period is shown in Panel A of page 8 of Exhibit JRW-
9     8. KPMG's recommended MRP has been in the 5.50% to 6.50% range over this time
10    period. Since the third quarter of 2018, KPMG has recommended a MRP of 5.50%.[37]

11    Finally, the website *market-risk-premia.com* provides risk-free interest rates, implied
12    MRPs, and overall cost of capital for thirty-six countries around the world. These
13    parameters for the U.S. over the 2002-2019 time period are shown in Panel B of page
14    8 of Exhibit JRW-8. As of March 31, 2019, market-risk-premia.com estimated an
15    implied cost of capital for the U.S. of 6.69% consisting of a risk-free rate of 2.41%
16    and an implied MRP of 4.29%.

17  **Q.    GIVEN THESE RESULTS, WHAT MRP ARE YOU USING IN YOUR CAPM?**

18  A.   The studies on page 6 of Exhibit JRW-8, and more importantly the more timely and
19       relevant studies just cited, suggest that the appropriate MRP in the U.S. is in the 4.0%
20       to 6.0% range. I will use an expected MRP of 5.50%, which is in the upper end of the
21       range, as the MRP. I gave most weight to the MRP estimates of the CFO Survey,
22       Duff & Phelps, the 2019 Dimson, Marsh, Staunton - Credit Suisse Report the
23       Fernandez survey, and Damodaran. This is a conservatively high estimate of the
24       MRP in light of the many studies and surveys of the MRP.

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[36]  https://www.duffandphelps.com/insights/publications/cost-of-capital/recommended-us-equity-risk-
premium-and-corresponding-risk-free-rates.

[37]  https://assets.kpmg/content/dam/kpmg/nl/pdf/2019/advisory/equity-market-research-summary.pdf

1 Q. **WHAT EQUITY COST RATE IS INDICATED BY YOUR CAPM ANALYSIS?**

2 A. The results of my CAPM study for the proxy groups are summarized on page 1 of

3     Exhibit JRW-8 and in Table 4 below.

**Table 4**
**CAPM-Derived Equity Cost Rate/ROE**
$$K = (R_f) + ß * [E(R_m) - (R_f)]$$

| | Risk-Free Rate | Beta | Equity Risk Premium | Equity Cost Rate |
|---|---|---|---|---|
| Electric Proxy Group | 4.0% | 0.60 | 5.5% | 7.3% |
| Hevert Proxy Group | 4.0% | 0.60 | 5.5% | 7.3% |

7     For the Electric Proxy Group, the risk-free rate of 4.0% plus the product of the beta of

8     0.60 times the equity risk premium of 5.5% results in a 7.3% equity cost rate. For the

9     Hevert Proxy Group, the risk-free rate of 4.0% plus the product of the beta of 0.60

10     times the equity risk premium of 5.5% results in a 7.3% equity cost rate.

11 Q. **THESE CAPM EQUITY COST RATES SEEM LOW. WHY IS THAT?**

12 A. One major factor is that the riskiness of utilities has declined in recent years, and this

13     lower risk is reflected in their betas. Utility betas have been in the .70 to .75 range in

14     recent years. But they have declined in the past year and are now are primarily in the

15     0.55 to 0.60 range.

16     **D.**    **Equity Cost Rate Summary**

17 Q. **PLEASE SUMMARIZE THE RESULTS OF YOUR EQUITY COST RATE**
18     **STUDIES.**

19 A. My DCF analyses for the Electric and Hevert Proxy Groups indicate equity cost rates

20     of 8.50% and 8.65%, respectively. The CAPM equity cost rates for the groups are

21     7.3% and 7.3%. Table 5, below, shows these results.

**Table 5**
**ROEs Derived from DCF and CAPM Models**

| | DCF | CAPM |
|---|---|---|
| Electric Proxy Group | 8.50% | 7.30% |
| Hevert Proxy Group | 8.65% | 7.30% |

1 Q. **GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST**
2 **RATE FOR THE GROUPS?**

3 A. Given these results, I conclude that the appropriate equity cost rate for companies in

4 the Electric and Hevert Proxy Groups is in the 7.3% to 8.65% range.

5 Q. **ARE YOU RECOMMENDING AN EQUITY COST RATE IN THIS RANGE**
6 **FOR CENTERPOINT HOUSTON?**

7 A. No; not as a primary ROE recommendation. While I believe that this range accurately

8 reflects current capital market data, I recognize that this range is below the authorized

9 ROEs for electric delivery companies nationally. Therefore, as a primary ROE for

10 CEHE, I am recommending 9.0%. This recommendation: (1) gives weight to the

11 higher authorized ROEs for electric delivery companies; and (2) recognizes the

12 concept of 'gradualism' in which authorized ROEs are adjusted on a gradual basis to

13 reflect capital market data.

14 Q. **ARE YOU ALSO PROVIDING AN ALTERNATIVE ROE**
15 **RECOMMENDATION FOR CEHE?**

16 A. Yes. As indicated above, I believe that my equity cost rate range, 7.30% to 8.65%,

17 accurately reflects current capital market data. Capital costs in the U.S. remain low,

18 with low inflation and interest rates and very modest economic growth. To reflect

19 these low capital costs, my alternative ROE recommendation is 8.65%, which is at the

20 high end of my equity cost rate range.

21 Q. **PLEASE INDICATE WHY YOUR EQUITY COST RATE**
22 **RECOMMENDATIONS ARE APPROPRIATE FOR THE ELECTRIC**
23 **DELIVERY OPERATIONS OF THE COMPANY.**

24 A. There are a number of reasons why an equity cost rates of 9.0%/8.65% are

25 appropriate and fair for the Company in this case:

26 1. CEHE's investment risk, as indicated by its S&P and Moody's credit

27 ratings, is a little below the averages of the Electric and Hevert Proxy Groups;

28 2. As shown in Exhibits JRW-5, capital costs for utilities, as indicated by

29 long-term utility bond yields, are still at historically low levels. In addition, given

1    low inflationary expectations and slow global economic growth, interest rates are

2    likely to remain at low levels for some time;

3        3. As shown in Exhibit JRW-5, the electric utility industry is among the

4    lowest risk industries in the U.S. as measured by beta. Most notably, the betas for

5    electric utilities have been declining in recent years, which indicates the risk of the

6    industry has declined. Overall, the cost of equity capital for this industry is the lowest

7    in the U.S., according to the CAPM;

8        4. I have recommended an equity cost rate of the high end of the range of my

9    ROE outcomes;

10       5. As shown in Figure 3, the authorized ROEs for electric utility and gas

11   distribution companies have declined in recent years. The authorized ROEs for

12   electric utilities have declined from 10.01% in 2012, to 9.8% in 2013, to 9.76% in

13   2014, 9.58% in 2015, 9.60% in 2016, and 9.68% in 2017, 9.56% in 2018, and 9.57%

14   in the first quarter of 2019, according to Regulatory Research Associates.[38] In my

15   opinion, these authorized ROEs have lagged behind capital market cost rates, or in

16   other words, authorized ROEs have been slow to reflect low capital market cost rates.

17   However, the trend has been towards lower ROEs, and the norm now is below ten

18   percent. Hence, I believe that my recommended ROE reflects the low capital cost

19   rates in today's markets, and these low capital cost rates are finally being recognized

20   by state utility commissions.

21       6. As shown in Figure 4, the authorized ROEs for delivery or distribution

22   companies have consistently been below those of vertically integrated utilities. These

23   authorized ROEs have been 30-50 basis points below those of all electric utilities in

24   recent years. In 2018, the average authorized ROE for electric delivery companies

25   was 9.38%.

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[38] *Regulatory Focus*, Regulatory Research Associates, 2019. The electric utility authorized ROEs exclude the
authorized ROEs in Virginia, which include generation adders.

| 1 | Q. | DO YOU BELIEVE THAT YOUR ROE RECOMMENDATIONS MEET |
|---|---|---|
| 2 | | *HOPE* AND *BLUEFIELD* STANDARDS? |

3    A.    Yes, I do. As previously noted, according to the *Hope* and *Bluefield* decisions,

4        returns on capital should be: (1) comparable to returns investors expect to earn on

5        other investments of similar risk; (2) sufficient to assure confidence in the company's

6        financial integrity; and (3) adequate to maintain and support the company's credit and

7        to attract capital.

8    Q.    **PLEASE ALSO DISCUSS YOUR RECOMMENDATION IN LIGHT OF A**

9        **MOODY'S PUBLICATION ON ROES AND CREDIT QUALITY.**

10    A.    Moody's published an article on utility ROEs and credit quality. In the article,

11        Moody's recognizes that authorized ROEs for electric and gas companies are

12        declining due to lower interest rates. The article explains:

13             The credit profiles of US regulated utilities will remain intact over

14             the next few years despite our expectation that regulators will

15             continue to trim the sector's profitability by lowering its authorized

16             returns on equity (ROE). Persistently low interest rates and a

17             comprehensive suite of cost recovery mechanisms ensure a low

18             business risk profile for utilities, prompting regulators to scrutinize

19             their profitability, which is defined as the ratio of net income to

20             book equity. We view cash flow measures as a more important

21             rating driver than authorized ROEs, and we note that regulators can

22             lower authorized ROEs without hurting cash flow, for instance by

23             targeting depreciation, or through special rate structures.[39]

24        Moody's indicates that with the lower authorized ROEs, electric and gas companies

25        are earning ROEs of 9.0% to 10.0%, yet this is not impairing their credit profiles and

26        is not deterring them from raising record amounts of capital.

27        With respect to authorized ROEs, Moody's recognizes that utilities and regulatory

28        commissions are having trouble justifying higher ROEs in the face of lower interest

29        rates and cost recovery mechanisms.

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[39] Moody's Investors Service, "Lower Authorized Equity Returns Will Not Hurt Near-Term Credit Profiles," March 10, 2015.

| 1 | | Robust cost recovery mechanisms will help ensure that US |
| 2 | | regulated utilities' credit quality remains intact over the next few |
| 3 | | years. As a result, falling authorized ROEs are not a material credit |
| 4 | | driver at this time, but rather reflect regulators' struggle to justify |
| 5 | | the cost of capital gap between the industry's authorized ROEs and |
| 6 | | persistently low interest rates. We also see utilities struggling to |
| 7 | | defend this gap, while at the same time recovering the vast majority |
| 8 | | of their costs and investments through a variety of rate |
| 9 | | mechanisms.[40] |

10  Overall, this article further supports the prevailing/emerging belief that lower

11  authorized ROEs are unlikely to hurt the financial integrity of utilities or their ability

12  to attract capital.

13  **Q.  ARE UTILITIES ABLE TO ATTRACT CAPITAL WITH THE LOWER**
14  **ROES?**

15  A.  Moody's also highlights in the article that utilities are raising about $50 billion a year

16  in debt capital, despite the lower ROEs.

17  **V.  CRITIQUE OF CEHE'S RATE OF RETURN TESTIMONY**

18  **Q.  PLEASE SUMMARIZE THE COMPANY'S RATE OF RETURN**
19  **RECOMMENDATION.**

20  A.  The Company's rate of return recommendation is summarized on page 1 of Exhibit

21  JRW-9.  The Company has proposed a capital structure of 50.00% long-term debt and

22  50.00% common equity.  The Company has recommended a long-term debt cost rate

23  of 4.38%. Mr. Hevert has recommended a common equity cost rate of 10.40%.  The

24  Company's overall proposed rate of return is 7.39%.

25  **Q.  PLEASE REVIEW MR. HEVERT'S EQUITY COST RATE APPROACHES**
26  **AND RESULTS.**

27  A.  Mr. Hevert has developed a proxy group of electric utility companies and employs

28  DCF, CAPM, risk premium, and Expected Earnings equity cost rate approaches.  Mr.

29  Hevert's equity cost rate estimates for the Company are summarized on page 2 of

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[40] *Id.*

1    Exhibit JRW-9. Based on these figures, he concludes that the appropriate equity cost

2    rate for the Company is 10.40%.  As I discuss below, there are a number of issues

3    with the inputs, applications, and results of his equity cost rate models that cause his

4    recommendations to overstate the cost of common equity for the Company.

5  Q.  **WHAT ARE THE MAJOR AREAS OF DISAGREEMENT YOU HAVE WITH**
6      **THE COMPANY'S COST OF CAPITAL POSITION?**

7  A.  The most significant areas of disagreement in measuring the Company's cost of

8      capital are as follows:

9      Capital Structure – Mr. Robert B. McRae has proposed a hypothetical capital

10     structure consisting of 50% long-term debt and 50R% common equity.  The

11     Company's proposed capital structure is hypothetical and has a higher common

12     equity ratio than CEHE's actual capitalization, CEHE's parent CenterPoint Energy, as

13     well as the average of the Electric and Hevert proxy groups.

14     Capital Market Conditions – Mr. Hevert's analyses and ROE results and

15     recommendations reflect the assumption of higher interest rates and capital costs.

16     However, I show that despite the Federal Reserve's moves to increase the federal

17     funds rate, interest rates and capital costs have remained at historically low levels and

18     are likely to remain low for some time.

19     Disconnect Between Mr. Hevert's Equity Cost Rate Studies and his 10.4% ROE

20     Recommendation – There is a disconnect between Mr. Hevert's equity cost rate

21     results and his 10.4% ROE recommendation.  Simply stated, the vast majority of his

22     equity cost rate results point to a lower ROE.  In fact, the only results that point to a

23     ROE as high as 10.4% are his CAPM results using *Value Line* betas and MRP.  As a

24     result, Mr. Hevert's ROE recommendation is based on: (1) the results of only one

25     model (the CAPM); and, even more narrowly, (2) only one source of financial

26     information for betas and MRP (*Value Line*).   As outlined below, the resulting *Value*

27     *Line* expected stock market return and MRP are highly unrealistic and outliers.

1    DCF Equity Cost Rate -   The DCF Equity Cost Rate is estimated by summing the
2    stock's dividend yield and investors' expected long-run growth rate in dividends paid
3    per share.  Mr. Hevert's DCF analyses suffers from two major errors: (1) he has given
4    very little weight to his constant-growth DCF results; and (2) he has relied
5    exclusively on the overly optimistic and upwardly biased earnings per share ("EPS")
6    growth rate forecasts of Wall Street analysts and *Value Line.*  On the other hand, when
7    developing the DCF growth rate that I have used in my analysis, I have reviewed
8    thirteen growth rate measures, including historical and projected growth rate
9    measures, and have evaluated growth in dividends, book value, and earnings per
10   share.

11   CAPM Approach -  The CAPM approach requires an estimate of the risk-free interest
12   rate, the beta, and the market or equity risk premium.  There are three primary
13   shortcomings in Mr. Hevert's CAPM analyses: (1) he employs an excessive projected
14   long-term risk-free interest rate; (2) Mr. Hevert's market risk premiums ("MRPs") of
15   10.72% and 14.10% are exaggerated and do not reflect current market fundamentals.
16   Mr. Hevert has employed analysts' EPS three-to-five-year growth rate projections to
17   compute an expected market return and MRP.  These EPS growth rate projections and
18   the resulting expected market returns and MRPs include highly unrealistic
19   assumptions regarding future economic and earnings growth and stock returns; (3)
20   Mr. Hevert has used the three-to-five- year projected EPS growth rates with *Value*
21   *Line* adjusted betas, despite the fact that utility betas do not regress to 1.0 over three-
22   to-five year time periods, and therefore it is erroneous to use adjusted betas.

23   As I highlight in my testimony, there are three procedures for estimating a market or
24   equity risk premium – historic returns, surveys, and expected return models.  I have
25   used a MRP of 5.50%, which: (1) factors in all three approaches to estimating a
26   market premium; and (2) employs the results of many studies of the MRP.  As I note,
27   my MRP reflects the MRPs: (1) determined in recent academic studies by leading
28   finance scholars; (2) employed by leading investment banks and management
29   consulting firms; and (3) found in surveys of companies, financial forecasters,
30   financial analysts, and corporate CFOs.

1    Alternative Risk Premium Model - Mr. Hevert estimates an equity cost rate using the

2    BYRP model. His risk premium is based on the historical relationship between the

3    yields on long-term Treasury yields and authorized returns on equity ("ROEs") for

4    electric utility companies. There are three primary deficiencies with this approach:

5    (1) this approach is a gauge of commission behavior and not investor behavior.

6    Capital costs are determined in the market place through the financial decisions of

7    investors and are reflected in such fundamental factors as dividend yields, expected

8    growth rates, interest rates, and investors' assessment of the risk and expected return

9    of different investments; (2) Mr. Hevert's methodology produces an inflated measure

10   of the risk premium because his approach uses historical authorized ROEs and Treasury

11   yields, and the resulting risk premium is applied to projected Treasury yields; and (3) the

12   risk premium is inflated as a measure of investor's required risk premium, since

13   electric utility companies have been selling at market-to-book ratios in excess of 1.0.

14   This indicates that the authorized rates of return have been greater than the return that

15   investors require.

16   Expected Earnings Approach - Mr. Hevert also uses the Expected Earnings approach

17   to estimate an equity cost rate for the Company. As described by Mr. Hevert in this

18   approach, he computes the expected ROE as forecasted by *Value Line* for his proxy

19   group as well as for *Value Line*'s universe of electric utilities. As I discuss in my

20   critique of Mr. Hevert's presentation, the so-called "Expected Earnings" approach

21   does not measure the market cost of equity capital, is independent of most cost of

22   capital indicators, and has a number of other empirical flaws. Therefore, the

23   Commission should ignore this approach in determining the appropriate ROE for

24   CenterPoint Houston.

25   Other Issues - Mr. Hevert also considers several risk factors in arriving at his 10.4%

26   ROE recommendation. These factors include: (1) customer concentration: (2)

27   geographic and weather risk, together with the securitization of system restoration

28   expenses; (3) regulatory mechanisms and capital spending; and (4) historical cash

29   flow from operations. These risk factors are all part of CenterPoint Houston's credit

30   rating. Mr. Hevert indicates that he also considered flotation costs in arriving at his

1   10.4% ROE recommendation. However, he has not identified any flotation costs for

2   CEHE.

3   **A.    Mr. Hevert's Equity Cost Rate Results and His 10.4% ROE**

4   **Recommendation**

5   **Q.    PLEASE REVIEW MR. HEVERT'S EQUITY COST RATE RESULTS AND**

6   **HIS 10.4% ROE RECOMMENDATION.**

7   A.    Page 2 of Exhibit JRW-9 shows Mr. Hevert's equity cost rate results using the DCF,

8   CAPM, and BYRP approaches. There appears to be a disconnect between these

9   results and his 10.4% ROE recommendation. First, it is very difficult to see exactly

10  how he gets to his 10.4% ROE recommendation. He provides no details on how he

11  weighted his equity cost rate results to get to 10.4%.

12  Second, the vast majority of his equity cost rate results point to a lower ROE. The

13  average of his DCF results is 9.26%, to which he clearly gave no weight. His BYRP

14  results, which are inflated because he has used projected interest rates, average

15  10.0%. His CAPM results using a Bloomberg MRP, which are also inflated because

16  he has used projected interest rates, average 9.0%. These results clearly received no

17  weight.

18  Finally, the only results that point to a ROE as high as 10.4% are his CAPM results

19  using *Value Line* betas and MRP. As a result, Mr. Hevert's ROE recommendation is

20  based on: (1) the results of only one model (the CAPM); and, even more narrowly,

21  (2) only one source of financial information for betas and MRP (*Value Line*).

22  Otherwise, Mr. Hevert provides no other equity cost rate studies that support his

23  10.4% ROE recommendation. Therefore, his ROE recommendation is based on not

24  only one model (CAPM), but also on only one information source (*Value Line*).

25  There are obvious risks to relying on only one approach and information source to

26  estimate the cost of equity capital.

| 1 | | **B.** | **The Company's DCF Approach** |

1    **B.    The Company's DCF Approach**

2  Q.  **PLEASE SUMMARIZE MR. HEVERT'S DCF ESTIMATES.**

3  A.  On pages 56-63 of his testimony and in Exhibit No. RBH-1, Mr. Hevert develops an

4     equity cost rate by applying the DCF model to the Hevert Proxy Group. Mr. Hevert's

5     DCF results are summarized on page 2 of my Exhibit JRW-9. He uses constant-

6     growth and multistage growth DCF models. Mr. Hevert uses three dividend-yield

7     measures (30, 90, and 180 days) in his DCF models. In his constant-growth and

8     quarterly DCF models, Mr. Hevert has relied on the forecasted EPS growth rates of

9     Zacks, IBES, and *Value Line.* For each model, he reports Mean Low, Mean, and

10    Mean High results

11 Q.  **WHAT ARE THE ERRORS IN MR. HEVERT'S DCF ANALYSES?**

12 A.  The primary errors in Mr. Hevert's DCF analyses are: (1) the low weight he gives to his

13    constant-growth DCF results, and (2) his exclusive use of the overly optimistic and

14    upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line.*

15         **1.    The Low Weight Given to the DCF Results**

16 Q.  **HOW MUCH WEIGHT HAS MR. HEVERT GIVEN HIS DCF RESULTS IN**
17    **ARRIVING AT AN EQUITY COST RATE FOR THE COMPANY?**

18 A.  Apparently, very little, if any. The average of his mean constant-growth and multi-

19    stage DCF equity cost rates is only 9.26%. Had he given these results more weight,

20    he would have arrived at a much lower recommendation for his estimated cost of

21    equity.

22 Q.  **AT PAGES 61-63 OF HIS TESTIMONY, MR. HEVERT SUGGESTS THAT**
23    **EQUITY COST RATE RESULTS FROM THE CONSTANT-GROWTH DCF**
24    **MODEL ARE SUSPECT DUE TO CURRENT MARKET CONDITIONS.**
25    **PLEASE RESPOND.**

26 A.  Mr. Hevert expresses concerns with the constant-growth DCF model results because

27    of current capital market conditions. However, he has provided no evidence as to

28    how this impacts the DCF equity cost rates. As discussed, the Moody's article I cite

29    above, utilities have achieved higher market valuations due to cost recovery

1     mechanisms that have reduced the risk of the utility industry which has led to higher

2     valuation levels.[41]

3           As utilities increasingly secure more up-front assurance for cost recovery in
4           their rate proceedings, we think regulators will increasingly view the sector as
5           less risky. The combination of low capital costs, high equity market valuation
6           multiples (which are better than or on par with the broader market despite the
7           regulated utilities' low risk profile), and a transparent assurance of cost
8           recovery tend to support the case for lower authorized returns, although
9           because utilities will argue they should rise, or at least stay unchanged.

10    Therefore, Mr. Hevert's suggestion that the constant-growth DCF results may provide

11    low results due to current market conditions is incorrect. As indicated by Moody's,

12    the lower risk of utilities has led to higher valuation levels.

13            **2.      Wall Street Analysts' EPS Growth Rate Forecasts**

14  **Q.   PLEASE DISCUSS MR. HEVERT'S EXCLUSIVE RELIANCE ON THE**
15  **PROJECTED GROWTH RATES OF WALL STREET ANALYSTS AND**
16  ***VALUE LINE* FOR HIS DCF ANALYSIS.**

17  A.   It seems highly unlikely that investors today would rely exclusively on the EPS

18       growth rate forecasts of Wall Street analysts and ignore other growth rate measure in

19       arriving at their expected growth rates for equity investments. As I previously stated,

20       the appropriate growth rate in the DCF model is the dividend growth rate, not the

21       earnings growth rate. Hence, consideration must be given to other indicators of

22       growth, including historical prospective dividend growth, internal growth, as well as

23       projected earnings growth.

24       In addition, a 2011 study by Lacina, Lee, and Xu (2011) has shown that analysts'

25       long-term earnings growth rate forecasts are not more accurate at forecasting future

26       earnings than naïve random walk forecasts of future earnings.[42] As such, the weight

27       given to analysts' projected EPS growth rates should be limited.

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[41]  *Id.* p. 3.

[42]  M. Lacina, B. Lee and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8)*, Kenneth D.

1    Finally, and most significantly, it is well-known that the long-term EPS growth rate

2    forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.

3    Hence, using these growth rates as a DCF growth rate produces an overstated equity

4    cost rate. A 2007 study by Easton and Sommers (2007) found that optimism in

5    analysts' earnings growth rate forecasts leads to an upward bias in estimates of the

6    cost of equity capital of almost 3.0 percentage points.[43]

7    Q.   **WHY IS HIS EXCLUSIVE RELIANCE ON THE PROJECTED GROWTH**
8         **RATES OF WALL STREET ANALYSTS AND *VALUE LINE***
9         **PROBLEMATIC?**

10   A.   As previously discussed, the long-term EPS growth rate estimates of Wall Street

11        analysts have been shown to be upwardly biased and overly optimistic. Therefore,

12        exclusive reliance on these forecasts for a DCF growth rate results in failure of one

13        the basic inputs in the equation.

14   **C.   CAPM Approach**

15   Q.   **PLEASE DISCUSS MR. HEVERT'S CAPM.**

16   A.   On pages 63-69 of his testimony and in Exhibit Nos. RBH-2 – RBH-4, Mr. Hevert

17        develops an equity cost rate by applying the CAPM model to the companies in his

18        proxy group. The CAPM approach requires an estimate of the risk-free interest rate,

19        beta, and the MRP. Mr. Hevert uses two different measures of the 30-Year Treasury

20        bond yield (a) current yield of 3.03% and a near-term projected yield of 3.33%; (b)

21        two different Betas (an average Bloomberg Beta of 0.497 and an average *Value Line*

22        Beta of 0.582); and (c) two MRP measures – a Bloomberg, DCF-derived MRPs of

23        10.72% and a *Value Line* DCF-derived MRP of 14.10%. Based on these figures, he

24        finds a CAPM equity cost rate range from 8.37% to 11.54%. Mr. Hevert's CAPM

25        results are summarized in on page 2 of Exhibit JRW-9.

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Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

[43]   Easton, P., & Sommers, G. (2007). "Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts." *Journal of Accounting Research*, 45(5), 983–1015.

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| 1 | Q. | WHAT ARE THE ERRORS IN MR. HEVERT'S CAPM ANALYSES? |

2    A.    There are two primary faults in Mr. Hevert' CAPM analyses. First, Mr. Hevert's

3          MRPs of 10.72% and 14.10% are extremely excessive and do not reflect current

4          market fundamentals. Second, he used three-to-five- year projected EPS growth rates

5          in computing the MRP, and employed *Value Line* adjusted betas, which do not

6          regress to 1.0 over three-to-five-year time periods.

7                  1.      <u>MRPs</u>

8    Q.    PLEASE ASSESS MR. HEVERT'S MRPS DERIVED FROM APPLYING THE
9          DCF MODEL TO THE S&P 500 AND *VALUE LINE INVESTMENT*
10        *SURVEY.*

11    A.    For his Bloomberg and *Value Line* MRPs, Mr. Hevert computes MRPs of 10.72% and

12          14.10% by: (1) calculating an expected market return by applying the DCF model to

13          the S&P 500; and then (2) subtracting the current 30-year Treasury bond yield of

14          3.03% from his estimate of the expected market return. Mr. Hevert also uses (1) a

15          dividend yield of 2.21% and an expected DCF growth rate of 11.55% for Bloomberg

16          and (2) a dividend yield of 2.14% and an expected DCF growth rate of 15.00% for

17          *Value Line.* The resulting expected S&P 500 stock market returns using this

18          approach are 13.75% (using Bloomberg three- to five-year EPS growth rate

19          estimates) and 17.14% (using *Value Line* three- to five-year EPS growth rate

20          estimates). These results are not realistic in today's market.

21    Q.    ARE MR. HEVERT'S MRPS OF 11.55% AND 15.00% REFLECTIVE OF
22          THE MRPS FOUND IN STUDIES AND SURVEYS OF THE MRP?

23    A.    No. These are well in excess of MRPs: (1) discovered in studies of the MRP by

24          leading academic scholars; (2) produced by analyses of historic stock and bond

25          returns; and (3) found in surveys of financial professionals. Page 5 of Exhibit JRW-8

26          provides the results of over thirty MRP studies from the past fifteen years. Historic

27          stock and bond returns suggest an MRP in the 4.5% to 7.0% range, depending on

28          whether one uses arithmetic or geometric mean returns. There have been many

29          studies using expected return (also called *ex ante*) models, and their MRP results vary

30          from as low as 2.0% to as high as 7.31%. Finally, the MRPs developed from surveys

| 1 | | of analysts, companies, financial professionals, and academics suggest lower MRPs, |
| 2 | | in a range of from 1.91% to 5.70%. The bottom line is that there is no support in |
| 3 | | historic return data, surveys, academic studies, or in reports for investment firms for |
| 4 | | an MRP as high as those used by Mr. Hevert. |

5    Q.    **PLEASE ONCE AGAIN ADDRESS THE ISSUES WITH ANALYSTS' EPS**
6        **GROWTH RATE FORECASTS.**

7    A.    The key point is that Mr. Hevert's CAPM MRP methodology is based entirely on the

8        concept that analyst projections of companies' three-to-five EPS growth rates reflect

9        investors' expected *long-term* EPS growth for those companies. However, this seems

10      highly unrealistic given the research on these projections. The short answer is that

11      analysts' three- to five-year EPS growth rate forecasts are inaccurate, overly

12      optimistic and upwardly biased, and they inflate the indicated cost of equity by about

13      300 basis points. As previously noted, numerous studies have shown that the long-

14      term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic

15      and upwardly biased.[44] Moreover, a 2011 study showed that analysts' forecasts of

16      EPS growth over the next three-to-five years earnings are no more accurate than their

17      forecasts of the next single year's EPS growth.[45] The overly-optimistic inaccuracy of

18      analysts' growth rate forecasts leads to an upward bias in equity cost estimates that

19      has been estimated at about 300 basis points.[46]

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[44] Such studies include: R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 725-55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, "The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings," *Contemporary Accounting Research* (2000); K. Chan, L., Karceski, J., & Lakonishok, J., "The Level and Persistence of Growth Rates," *Journal of Finance* pp. 643–684, (2003); M. Lacina, B. Lee and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8)*, Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

[45] M. Lacina, B. Lee & Z. Xu, *Advances in Business and Management Forecasting* Vol. 8, Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

[46] Peter D. Easton & Gregory A. Sommers, "Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts," 45, *Journal of Accounting Research*, pp. 983–1015 (2007).

1 Q. **IS THERE OTHER EVIDENCE THAT INDICATES THAT MR. HEVERT'S**
2 **MRPS COMPUTED USING S&P 500 EPS GROWTH RATE ARE**
3 **EXCESSIVE?**

4 A. Beyond my previous discussion of upwardly biased nature of analysts' projected EPS

5 growth rates, the fact is that long-term EPS growth rates of 11.55% and 15.00% are

6 inconsistent with both historic and projected economic and earnings growth in the

7 U.S for several reasons: (1) long-term EPS and economic growth is about one-half of

8 Mr. Hevert's projected EPS growth rates of 11.55% and 15.00%; (2) as discussed

9 below, long-term EPS and GDP growth are directly linked; and (3) more recent

10 trends in GDP growth, as well as projections of GDP growth, suggest slower

11 economic and earnings growth in the future.

12 <u>Long-Term Historic EPS and GDP Growth has been in the 6%-7% Range</u> - I

13 performed a study of the growth in nominal GDP, S&P 500 stock price appreciation,

14 and S&P 500 EPS and DPS growth since 1960. The results are provided on page 1 of

15 Exhibit JRW-10, and a summary is shown in the Table 6, below.

16 **Table 6**
17 **GDP, S&P 500 Stock Price, EPS, and DPS Growth**
18 **1960-Present**

| Nominal GDP | 6.46 |
|---|---|
| S&P 500 Stock Price | 6.71 |
| S&P 500 EPS | 6.89 |
| S&P 500 DPS | 5.85 |
| Average | 6.48 |

19 The results show that the historical long-run growth rates for GDP, S&P EPS, and

20 S&P DPS are in the 6% to 7% range. By comparison, Mr. Hevert's long-run growth

21 rate projections of 11.55% and 15.00% are at best overstated. These estimates

22 suggest that companies in the U.S. would be expected to: (1) increase their growth

23 rate of EPS by 100% in the future and (2) maintain that growth indefinitely in an

24 economy that is expected to grow at about one-third of his projected growth rates.

25 <u>There is a Direct Link Between Long-Term EPS and GDP Growth</u> - The results in

26 Exhibit JRW-10 and Table 6 show that historically there has been a close link

| 1 | between long-term EPS and GDP growth rates. Brad Cornell of the California |
| 2 | Institute of Technology published a study on GDP growth, earnings growth, and |
| 3 | equity returns. He finds that long-term EPS growth in the U.S. is directly related to |
| 4 | GDP growth, with GDP growth providing an upward limit on EPS growth. In |
| 5 | addition, he finds that long-term stock returns are determined by long-term earnings |
| 6 | growth. He concludes with the following observations:[47] |

| 7 | The long-run performance of equity investments is fundamentally linked to |
| 8 | growth in earnings. Earnings growth, in turn, depends on growth in real GDP. |
| 9 | This article demonstrates that both theoretical research and empirical research |
| 10 | in development economics suggest relatively strict limits on future growth. In |
| 11 | particular, real GDP growth in excess of 3 percent in the long run is highly |
| 12 | unlikely in the developed world. In light of ongoing dilution in earnings per |
| 13 | share, this finding implies that investors should anticipate real returns on U.S. |
| 14 | common stocks to average no more than about 4–5 percent in real terms. |

| 15 | The Trend and Projections Indicate Slower GDP Growth in the Future - The |
| 16 | components of nominal GDP growth are real GDP growth and inflation. Page 3 of |
| 17 | Exhibit JRW-10 shows annual real GDP growth rate over the 1961 to 2018 time |
| 18 | period. Real GDP growth has gradually declined from the 5.0% to 6.0% range in the |
| 19 | 1960s to the 2.0% to 3.0% range during the most recent five-year period. The second |
| 20 | component of nominal GDP growth is inflation. Page 4 of Exhibit JRW-10 shows |
| 21 | inflation as measured by the annual growth rate in the Consumer Price Index (CPI) |
| 22 | over the 1961 to 2018 time period. The large increase in prices from the late 1960s to |
| 23 | the early 1980s is readily evident. Equally evident is the rapid decline in inflation |
| 24 | during the 1980s as inflation declined from above 10% to about 4%. Since that time |
| 25 | inflation has gradually declined and has been in the 2.0% range or below over the past |
| 26 | five years. |

| 27 | The graphs on pages 2, 3, and 4 of Exhibit JRW-10 provide clear evidence of the |
| 28 | decline, in recent decades, in nominal GDP as well as its components, real GDP, and |

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[47] Bradford Cornell, "Economic Growth and Equity Investing," *Financial Analysts Journal* (January-February 2010), p. 63.

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1      inflation. To gauge the magnitude of the decline in nominal GDP growth, Table 7,

2      below, provides the compounded GDP growth rates for 10-, 20-, 30-, 40- and 50-

3      years. Whereas the 50-year compounded GDP growth rate is 6.63%, there has been a

4      monotonic and significant decline in nominal GDP growth over subsequent 10-year

5      intervals. These figures strongly suggest that nominal GDP growth in recent decades

6      has slowed and that a figure in the range of 4.0% to 5.0% is more appropriate today for

7      the U.S. economy.

8
9

**Table 7**
**Historical Nominal GDP Growth Rates**

| | | |
|---|---|---|
| **10-Year Average** | | **3.37%** |
| **20-Year Average** | | **4.17%** |
| **30-Year Average** | | **4.65%** |
| **40-Year Average** | | **5.56%** |
| **50-Year Average** | | **6.36%** |

10      Long-Term GDP Projections also Indicate Slower GDP Growth in the Future -A

11      lower range is also consistent with long-term GDP forecasts. There are several

12      forecasts of annual GDP growth that are available from economists and government

13      agencies. These are listed in Panel B of on page 5 of Exhibit JRW-10. The mean 10-

14      year nominal GDP growth forecast (as of March 2019) by economists in the recent

15      *Survey of Financial Forecasters* is 4.27%.[48] The Energy Information Administration

16      ("EIA"), in its projections used in preparing *Annual Energy Outlook,* forecasts long-

17      term GDP growth of 4.3% for the period 2017-2050.[49] The Congressional Budget

18      Office ("CBO"), in its forecasts for the period 2018 to 2048, projects a nominal GDP

19      growth rate of 4.0%.[50] Finally, the Social Security Administration ("SSA"), in its

20      Annual OASDI Report, provides a projection of nominal GDP from 2018-2095.[51]

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[48] https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/

[49] U.S. Energy Information Administration, *Annual Energy Outlook 2018,* Table: Macroeconomic Indicators, *https://www.eia.gov/outlooks/aeo/data/browser/#/?id=18-AEO2018&sourcekey=0.*

[50] Congressional Budget Office, The *2018 Long-Term Budget Outlook,* June 1, 2018. https://www.cbo.gov/system/files?file=2018-06/53919-2018ltbo.pdf

[51] Social Security Administration, *2018 Annual Report of the Board of Trustees of the Old-Age, Survivors, and Disability Insurance (OASDI) Program,* Table VI.G4, p. 211(June 15, 2018), https://www.ssa.gov/oact/tr/2018/lr6g4.html. The 4.4% represents the compounded growth rate in projected

---

1     SSA's projected growth GDP growth rate over this period is 4.4%. Overall, these

2     forecasts suggest long-term GDP growth rate in the 4.0% - 4.4% range. The trends

3     and projections indicating slower GDP growth make Mr. Hevert's MRPs computed

4     using analysts projected EPS growth rates look even more unrealistic. Simply stated,

5     Mr. Hevert's projected EPS growth rates of 11.55% and 15.00% are almost three

6     times projected GDP growth.

7  Q.  **WHAT ARE THE FUNDAMENTAL FACTORS THAT HAVE LED TO THE**
8      **DECLINE IN PROSPECTIVE GDP GROWTH**

9  A.   As addressed in a study by the consulting firm McKinsey & Co., two factors drive

10     real GDP growth over time: (a) the number of workers in the economy (employment);

11     and (2) the productivity of those workers (usually defined as output per hour).[52]

12     According to McKinsey, real GDP growth over the past 50 years was driven by

13     population and productivity growth which grew at compound annual rates of 1.7%

14     and 1.8%.

15     However, global economic growth is projected to slow significantly in the years to

16     come. The primary factor leading to the decline is slow growth in employment

17     (working-age population), which results from slower population growth and longer

18     life expectancy. McKinsey estimates that employment growth will slow to 0.3% over

19     the next fifty years. They conclude that even if productivity remains at the rapid rate

20     of the past fifty years of 1.8%, real GDP growth will fall by 40 percent to 2.1%.

21  Q.  **PLEASE PROVIDE MORE INSIGHTS INTO THE RELATIONSHIP**
22      **BETWEEN S&P 500 EPS AND GDP GROWTH.**

23  A.   Table 6 shows the average annual growth rates for GDP and the S&P 500 EPS since

24     1960. The one very apparent difference between the two is that the S&P 500 EPS

25     growth rates are much more volatile than the GDP growth rates, when compared

26     using the relatively short, and somewhat arbitrary, annual conventions used in these

---

GDP from $20,307 trillion in 2018 to $548,108 trillion in 2095.

[52] McKinsey & Co., "Can Long-Term Growth be Saved?" McKinsey Global Institute, January 2015.

1    data.[53] Volatility aside, however, it is clear that over the medium to long run, S&P

2    500 EPS growth does not outpace GDP growth.

3                                  **Figure 7**
4                        **Average Annual Growth Rates**
5                          **GDP and S&P 500 EPS**
6                                 **1960-2017**



— GDP Growth    — S&P 500 EPS Growth
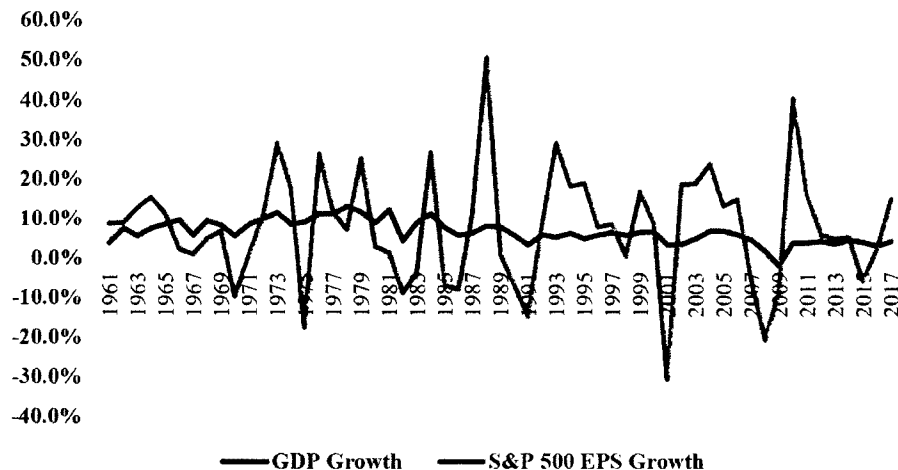
7

8    Data Sources: Data Sources: GDPA - http://research.stlouisfed.org/fred2/series/GDPA/downloaddata.
9    S&P EPS - http://pages.stern.nyu.edu/~adamodar/

10   A fuller understanding of the relationship between GDP and S&P 500 EPS growth

11   requires consideration of several other factors.

12   <u>Corporate Profits are Constrained by GDP</u> – Milton Friedman, the noted economist,

13   warned investors and others not to expect corporate profit growth to sustainably

14   exceed GDP growth, stating, "Beware of predictions that earnings can grow faster

15   than the economy for long periods. When earnings are exceptionally high, they don't

16   just keep booming."[54] Friedman also noted that profits must move back down to their

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[53]  Timing conventions such as years and quarters are needed for measurement and benchmarking but are
      somewhat arbitrary. In reality, economic growth and profit accrual occur on continuous bases. A 2014
      study evaluated the timing relationship between corporate profits and nominal GDP growth. The authors
      found that aggregate accounting earnings growth is a leading indicator of the GDP growth with a quarter-
      ahead forecast horizon. See Yaniv Konchitchki and Panos N. Patatoukas, "Accounting Earnings and Gross
      Domestic Product," *Journal of Accounting and Economics* 57 (2014), pp. 76–88.

[54]  Shaun Tully, "Corporate Profits Are Soaring. Here's Why It Can't Last," Fortune, December 7, 2017.
      http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/.

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1      traditional share of GDP. In Table 8, below, I show that currently the aggregate net

2      income levels for the S&P 500 companies, using 2018 figures, represents 6.73% of

3      nominal GDP.

4

**Table 8**

5

**S&P 500 Aggregate Net Income as a Percent of GDP**

| Aggregate Net Income for S&P 500 Companies ($B) | $1,406,400.00 |
|---|---|
| 2018 Nominal U.S. GDP ($B) | $20,891,000.00 |
| Net Income/GDP (%) | 6.73% |

6    Data Sources: 2018 Net Income for S&P 500 companies – *Value Line* (March 12, 2019).
7    2018 Nominal GDP – Moody's - https://www.economy.com/united-states/nominal-gross-domestic-
8    product.

9      Short-Term Factors Impact S&P 500 EPS – The growth rates in the S&P 500 EPS

10      and GDP can diverge on a year-to-year basis due to short-term factors that impact

11      S&P 500 EPS in a much greater way than GDP. As shown above, S&P EPS growth

12      rates are much more volatile than GDP growth rates. The EPS growth for the S&P

13      500 companies have been influenced by low labor costs and interest rates, commodity

14      prices, the recovery of different sectors such as the energy and financial sectors, the

15      cut in corporate tax rates, etc. These short-term factors can make it appear that there

16      is a disconnect between the economy and corporate profits.

17      The Differences Between the S&P 500 EPS and GDP – In the last two years, as the

18      EPS for the S&P 500 has grown at a faster rate than U.S. nominal GDP, some have

19      pointed to the differences between the S&P 500 and GDP.[55] These differences

20      include: (a) corporate profits are about 2/3 manufacturing driven, while GDP is 2/3

21      services driven; (b) consumer discretionary spending accounts for a smaller share of

22      S&P 500 profits (15%) than of GDP (23%); (c) corporate profits are more

23      international-trade driven, while exports minus imports tend to drag on GDP; and (d)

24      S&P 500 EPS is impacted not just by corporate profits but also by share buybacks on

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[55]   See the following studies: Burt White and Jeff Buchbinder, The S&P and GDP are not the Same Thing,"
LPL Financial, 2014, https://www.businessinsider.com/sp-is-not-gdp-2014-11; Matt Comer, "How Do We
Have 18.4% Earnings Growth In A 2.58% GDP Economy?," Seeking Alpha, April 2018,
https://seekingalpha.com/article/4164052-18_4-percent-earnings-growth-2_58-percent-gdp-economy;
Shaun Tully, "How on Earth Can Profits Grow at 10% in a 2% Economy? *Fortune*, July 27, 2017.
http://fortune.com/2017/07/27/profits-economic-growth/ .

1    the positive side (fewer shares boost EPS) and by share dilution on the negative side

2    (new shares dilute EPS). While these differences may seem significant, it must be

3    remembered that the Income Approach to measure GDP includes corporate profits (in

4    addition to employee compensation and taxes on production and imports) and

5    therefore effectively accounts for the first three factors.

6    The bottom line is that despite the intertemporal short-term differences between S&P

7    500 EPS and nominal GDP growth, the long-term link between corporate profits and

8    GDP is inevitable.

9  Q.   **PLEASE PROVIDE ADDITIONAL EVIDENCE ON HOW UNREALISTIC**
10      **THE S&P 500 EPS GROWTH RATES ARE THAT MR. HEVERT USES TO**
11      **COMPUTE HIS MRPS.**

12 A.   Beyond my previous discussion, I have performed the following analysis of S&P 500

13      EPS and GDP growth in Table 9, below. Specifically, I started with the 2018

14      aggregate net income for the S&P 500 companies and 2018 nominal GDP for the U.S.

15      As shown in Table 9, the aggregate profit for the S&P 500 companies represented

16      6.73% of nominal GDP in 2018. In Table 9, I then projected the aggregate net

17      income level for the S&P 500 companies and GDP as of the year 2050. For the

18      growth rate for the S&P 500 companies, I used the average of Mr. Hevert's

19      Bloomberg and *Value Line* growth rates, 11.55% and 15.00%, which is 13.28%. As a

20      growth rate for nominal GDP, I used the average of the long-term projected GDP

21      growth rates from CBO, SSA, and EIA (4.0%, 4.4%, and 4.3%), which is 4.23%.

22      The projected 2050 level for the aggregate net income level for the S&P 500

23      companies is $76.0 trillion. However, over the same period GDP only grows to $78.7

24      trillion. As such, if the aggregate net income for the S&P 500 grows in accordance

25      with the growth rates used by Mr. Hevert, and if nominal GDP grows at rates

26      projected by major government agencies, the net income of the S&P 500 companies

27      will represent growth from 6.73% in 2018 to 96.6% of GDP in 2050. Obviously, it is

28      implausible for the net income of the S&P 500 to become such as large part of GDP.

**Table 9**
**Projected S&P 500 Earnings and Nominal GDP**
**2018-2050**
**S&P 500 Aggregate Net Income as a Percent of GDP**

| | 2018 Value | Growth Rate | No. of Years | 2050 Value |
|---|---|---|---|---|
| **Aggregate Net Income for S&P 500 Companies** | **1,406,400.0** | **13.28%** | **32** | **76,034,824.7** |
| **2018 Nominal U.S. GDP** | **20,891,000.0** | **4.23%** | **32** | **78,735,624.7** |
| **Net Income/GDP (%)** | **6.73%** | | | **96.57%** |

Data Sources: 2018 Aggregate Net Income for S&P 500 companies – *Value Line* (March 12, 2019).
2018 Nominal GDP – Moody's - https://www.economy.com/united-states/nominal-gross-domestic-product.
S&P 500 EPS Growth Rate - Average of Hevert's Bloomberg and *Value Line* growth rates - 11.55% and 15.14%;
Nominal GDP Growth Rate – The average of the long-term projected GDP growth rates from CBO, SSA, and
EIA (4.0%, 4.4%, and 4.3%).

**Q.    PLEASE PROVIDE A SUMMARY ANALYSIS ON GDP AND S&P 500 EPS GROWTH RATES.**

A.    As noted above, the long-term link between corporate profits and GDP is inevitable. The short-term differences in growth between the two has been highlighted by some notable market observers, including Warren Buffet, who indicated that corporate profits as a share of GDP tend to go far higher after periods where they are depressed, and then drop sharply after they have been hovering at historically high levels. In a famous 1999 *Fortune* article, he made the following observation: [56]

You know, someone once told me that New York has more lawyers than people. I think that's the same fellow who thinks profits will become larger than GDP. When you begin to expect the growth of a component factor to forever outpace that of the aggregate, you get into certain mathematical problems. In my opinion, you have to be wildly optimistic to believe that corporate profits as a percent of GDP can, for any sustained period, hold much above 6%. One thing keeping the percentage down will be competition, which is alive and well. In addition, there's a public-policy point: If corporate investors, in aggregate, are going to eat an ever-growing portion of the American economic pie, some other group will have to settle for a smaller

[56] Carol Loomis, "Mr. Buffet on the Stock Market," *Fortune*, November 22, 1999. https://money.cnn.com/magazines/fortune/fortune_archive/1999/11/22/269071/.

| 1 | | portion. That would justifiably raise political problems--and in my view a |
| 2 | | major reslicing of the pie just isn't going to happen. |
| 3 | | In sum, Mr. Hevert's long-term S&P 500 EPS growth rates of 11.55% and 15.00% |
| 4 | | are grossly overstated and have no basis in economic reality. In the end, the big |
| 5 | | question remains as to whether corporate profits can grow faster than GDP. Jeremy |
| 6 | | Siegel, the renowned finance professor at the Wharton School of the University of |
| 7 | | Pennsylvania, believes that going forward, earnings per share can grow about half a |
| 8 | | point faster than nominal GDP, or about 5.0%, due to the big gains in the technology |
| 9 | | sector. But he also believes that sustained EPS growth matching analysts' near-term |
| 10 | | projections is absurd: "The idea of 8% or 10% or 12% growth is ridiculous. It will |
| 11 | | not happen."[57] |

| 12 | Q. | **PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE CAPM RESULTS** |
| 13 | | **FROM USING *VALUE LINE* DATA.** |

| 14 | A. | The are several additional issues with the *Value Line* results. Simply put, the 17.14% |
| 15 | | expected stock market return is simply outrageous. The compounded annual return in |
| 16 | | the U.S. stock market is about 10% (9.49% according to Damodaran between 1928- |
| 17 | | 2018).[58] Mr. Hevert's *Value Line* CAPM results assume that return on the U.S. stock |
| 18 | | market will be more than 50% higher in the future than it has been in the past!!! The |
| 19 | | extremely high expected stock market return, and the resulting MRP and equity cost |
| 20 | | rate results, is directly related to the 15.00% expected EPS growth rate. There are |
| 21 | | numerous fallacies with this growth rate. First, the expected growth rate is not from |
| 22 | | today going forward, but instead it is computed from a three-year base period in the |
| 23 | | past (2015-2017) to a projected three-year period in the future (2021-2023). The |
| 24 | | problem here is that it incorporates historic growth in the base period, which can |
| 25 | | inflate projected growth for the future if the base period includes poor earnings. |
| 26 | | Second, and most significantly, a projected growth rate of 15.00% does not reflect |

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[57] Shaun Tully, "Corporate Profits Are Soaring. Here's Why It Can't Last," *Fortune*, December 7, 2017. http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/.

[58] http://pages.stern.nyu.edu/~adamodar/

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1   economic reality. As noted above, it assumes that S&P 500 companies can grow their

2   earnings in the future at a rate that is triple the expected GDP growth rate.

3       **2.      Adjusted Betas**

4   Q.  **PLEASE DISCUSS THE ERROR WITH USING ADJUSTED BETAS WITH A**
5       **MRP BASED ON THREE-TO-FIVE YEAR EPS GROWTH RATE**
6       **FORECASTS.**

7   A.  Beyond the drawbacks discussed above, Mr. Hevert's has erred in his CAPM by

8       using a MRP based on three-to-five-year EPS growth rates in conjunction with

9       adjusted betas. The error is that utility betas do not regress to 1.0 over three- to five-

10      year periods.

11      Several investment information services, such as *Value Line*, Bloomberg, Yahoo and

12      Reuters, provide estimates of stock betas. Usually these services report different

13      betas for the same stock. The differences are usually due to the time period over

14      which beta is measured and any adjustments that are made to reflect those betas tend

15      to regress to 1.0 over time. *Value Line* defines their computation of beta as:[59]

16          Beta - A relative measure of the historical sensitivity of a stock's price
17          to overall fluctuations in the New York Stock Exchange Composite
18          Index. A Beta of 1.50 indicates a stock tends to rise (or fall) 50% more
19          than the New York Stock Exchange Composite Index. The "Beta
20          coefficient" is derived from a regression analysis of the relationship
21          between weekly percent-age changes in the price of a stock and
22          weekly percentage changes in the NYSE Index over a period of five
23          years. In the case of shorter price histories, a smaller time period is
24          used, but two years is the minimum. The Betas are adjusted for their
25          long-term tendency to converge toward 1.00. Value Line then adjusts
26          these Betas to account for their long-term tendency to converge toward
27          1.00. (Though the scope of this convergence is beyond our purposes
28          here, readers can refer to M. Blume, "On the Assessment of Risk,"
29          Journal of Finance, March 1971 for further details.)

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[59]  Andrew Cueter, "Using Beta," October 2, 2012.
      http://www.valueline.com/Tools/Educational_Articles/Stocks/Using_Beta.aspx#.XIz2bChKhPY.

| 1 | The so-called Blume adjustment cited by *Value Line* adjusts betas calculated using |
| 2 | historical returns data to reflect the tendency of stock betas to regress toward 1.0 over |
| 3 | time, which means that the betas of typical low beta stocks tend to increase toward |
| 4 | 1.0, and the betas of typical high beta stocks tend to decrease toward 1.0.[60] The |
| 5 | Blume adjustment procedure is: |

6    Regressed Beta = .67 * (Observed Beta) + 0.33

| 7 | For example, suppose a company has an observed past beta of 0.50. The Blume- |
| 8 | adjusted beta would be: |

9    Adjusted Beta = .67 * (0.50) + 0.33 = 0.67

| 10 | Blume offered two reasons for Betas to regress toward 1.0. First, he suggested it may |
| 11 | be a by-product of management's efforts to keep the level of the firm's systematic |
| 12 | risk close to that of the market. He also suggested that it results from the |
| 13 | management's efforts to diversify through investment projects. |

| 14 | Both Mr. Hevert and I have used *Value Line* betas. Mr. Hevert also uses Bloomberg |
| 15 | betas, which are also adjusted. The error with Mr. Hevert's analyses is that he |
| 16 | computed a MRP based on three-to-five-year EPS growth rates in conjunction with |
| 17 | adjusted betas.[61] The error is that utility betas do not regress to 1.0 over three-to-five- |
| 18 | year periods. This is highlighted in a study by Michelfelder and Theodossiou.[62] |

| 19 | Conceptually, Michelfelder and Theodossiou suggested that utilities are different |
| 20 | from unregulated companies in several areas which may result in betas not regressing |
| 21 | toward 1.0.[63] Being natural monopolies in their own geographic areas, public utilities |
| 22 | have more influence on the prices of their product (gas and electricity) than other |

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[60] M. Blume, "On the Assessment of Risk," *Journal of Finance*, March 1971.

[61] In contrast, my MRP is based on studies and surveys of long-term expected stock returns.

[62] Richard A. Michelfelder and Panayiotis Theodossiou, "Public Utility Beta Adjustment and Biased Costs of Capital in Public Utility Rate Proceedings," *The Electricity Journal*, November 2013.

[63] *Id*, p. 61.

1    firms. The rate setting process provides public utilities with the opportunity to adjust

2    prices of gas and electricity to recover rising costs related to the transmission and

3    distribution of electricity and gas.

4    To test for a regression toward 1.0, the authors used monthly holding period total

5    returns for 57 publicly traded U.S. public utilities for the period from January 1962 to

6    December 2007 using 60-, 84-, 96-, and 108-monthly returns over five different non-

7    lapping periods. They also used alternative time periods and saw similar results. The

8    authors came to the following conclusion from their analysis of the data:

9        Major vendors of CAPM Betas such as Merrill Lynch, *Value Line*, and
10       Bloomberg distribute Blume adjusted Betas to investors. We have
11       shown empirically that public utility Betas do not have a tendency to
12       converge to 1. Short-term Betas of public utilities follow a cyclical
13       pattern with recent downward trends, then upward structural breaks
14       with long-term Betas following a downward trend.[64]

15   The authors concluded that utility betas converge to 0.59 as opposed to 1.0. The

16   implication is that using regressed betas such as those from *Value Line* will result in

17   an inflated expected return using the CAPM for utilities. For example, the average

18   *Value Line* beta for utilities in recent years has been about 0.70. As shown below, this

19   corresponds to an unadjusted Beta of 0.55.

20                    Observed Beta = (VL Beta -0.33)/0.67

21                    Observed Beta = (0.70 - 0.33)/0.67 = 0.55.

22   In sum, the study by Michelfelder and Theodossiou shows that the betas of utilities do

23   not regress toward 1.0 over three-to-five year periods, and therefore it is not

24   appropriate to use them in conjunction with MRPs computed using three-to-five-year

25   EPS growth rates.

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[64]  *Id*, p. 67.

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| 1 | | **D.** | **BYRP Approach** |

1    **D.    BYRP Approach**

2    Q.    PLEASE DISCUSS MR. HEVERT'S BYRP APPROACH.

3    A.    On pages 69-72 of his testimony and in Exhibit No. RBH-5, Mr. Hevert develops an

4          equity cost rate using his BYRP approach.  Mr. Hevert develops an equity cost rate

5          by: (1) regressing the average quarterly authorized returns on equity for electric utility

6          companies from the January 1, 1992, to December 31, 2018, time period on the thirty-

7          year Treasury Yield; and (2) adding the appropriate risk premium established in step

8          (1) to three different thirty-year Treasury yields: (a) current yield of 3.03%; (b) a

9          near-term projected yield of 3.33%; and  (c) a long-term projected yield of 4.05%.

10         Mr. Hevert's RP results are provided on page 2 of in Exhibit JRW-9.  He reports

11         BYRP equity cost rates ranging from 9.93% to 10.17%.

12   Q.    WHAT ARE THE ERRORS IN MR. HEVERT'S BYRP ANALYSIS?

13   A.    The errors include the base yield as well as the measurement and magnitude of the

14         risk premium.

                    **1.    Base Interest Rate**

16   Q.    PLEASE DISCUSS THE BASE YIELD OF MR. HEVERT'S BYRP
17         ANALYSIS.

18   A.    The base yield in Mr. Hevert's BYRP analyses is the prospective yield on long-term,

19         Treasury bonds.  This includes a long-term projected rate of 4.05%.  Investors would

20         not be buying Treasury bonds at their current yield of about 2.75% if they expected

21         rates to go up to 4.05% in the future.  As previously discussed, this would result in a

22         significant negative return due to the inverse relationship between interest rates and

23         bond prices.

                    **2.    Risk Premium**

25   Q.    WHAT ARE THE ISSUES WITH MR. HEVERT'S RISK PREMIUM?

26   A.    There are several problems with this approach.   First, his BYRP methodology

27         produces an inflated measure of the risk premium because the approach uses historic

28         authorized ROEs and Treasury yields, and the resulting risk premium is applied to

| 1 | | projected Treasury Yields. Since Treasury yields are always forecasted to increase, |
|---|---|---|
| 2 | | the resulting risk premium would be smaller if done correctly, which would be to use |
| 3 | | projected Treasury yields in the analysis rather than historic Treasury yields. |
| 4 | | In addition, Mr. Hevert's BYRP approach is a gauge of *commission* behavior and not |
| 5 | | *investor* behavior. Capital costs are determined in the market place through the |
| 6 | | financial decisions of investors and are reflected in such fundamental factors as |
| 7 | | dividend yields, expected growth rates, interest rates, and investors' assessment of the |
| 8 | | risk and expected return of different investments. Regulatory commissions evaluate |
| 9 | | capital market data in setting authorized ROEs, but also take into account other |
| 10 | | utility- and rate case-specific information in setting ROEs. As such, Mr. Hevert's |
| 11 | | approach and results reflect other factors such as capital structure, credit ratings and |
| 12 | | other risk measures, service territory, capital expenditures, energy supply issues, rate |
| 13 | | design, investment and expense trackers, and other factors used by utility |
| 14 | | commissions in determining an appropriate ROE in addition to capital costs. This |
| 15 | | may especially be true when the authorized ROE data includes the results of rate |
| 16 | | cases that are settled and not fully litigated. |
| 17 | | Finally, Mr. Hevert's methodology produces an inflated required rate of return since |
| 18 | | utilities have been selling at market-to-book ratios well in excess of 1.0 for many |
| 19 | | years. This indicates that the authorized and earned rates of return on equity have |
| 20 | | been greater than the return that investors require. The relationship between ROE, |
| 21 | | the equity cost rate, and market-to-book ratios was explained earlier in this testimony. |
| 22 | | In short, a market-to-book ratio above 1.0 indicates a company's ROE is above its |
| 23 | | equity cost rate. Therefore, the risk premium produced from the study is overstated |
| 24 | | as a measure of investor return requirements and produces an inflated equity cost rate. |
| 25 | | **E.    Expected Earnings Approach** |
| 26 | Q. | **PLEASE REVIEW MR. HEVERT'S EXPECTED EARNINGS APPROACH.** |
| 27 | A. | On pages 31-2 of his testimony and in Exhibit RBH-6, Mr. Hevert develops an equity |
| 28 | | cost rate using his Expected Earnings approach. Mr. Hevert's approach involves |
| 29 | | using *Value Line*'s projected ROE for the years 2021-23 for his proxy group and |

1       *Value Line*'s universe of electric utilities, and then adjusting this ROE to account for

2       the fact the *Value Line* uses year-end equity in computing ROE.  Mr. Hevert's results

3       are provided on page 2 of in Exhibit JRW-9.  He reports and equity cost rate of

4       10.27%.

5   Q.  **PLEASE ADDRESS THE ISSUES WITH MR. HEVERT'S EXPECTED**
6       **EARNINGS APPROACH.**

7   A.  There are a number of issues with this so-called Expected Earnings approach.  As

8       such, I strongly suggest that the Commission ignore this approach in setting a ROE

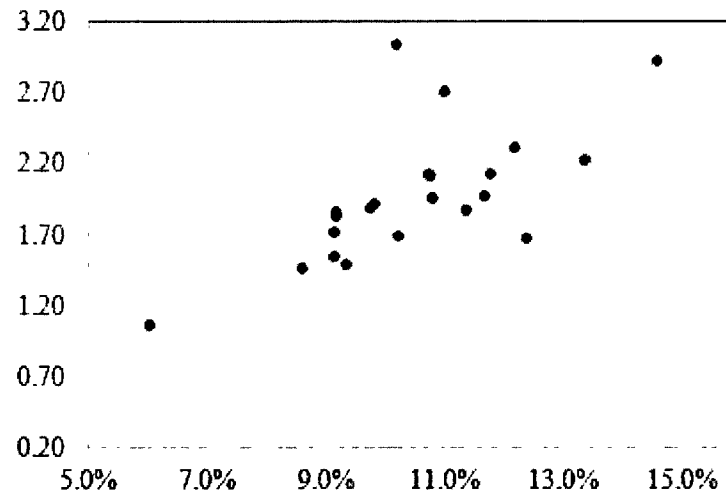9       for CEHE.  These issues include:

10      The Expected Earnings Approach Does Not Measure the Market Cost of Equity

11      Capital – First and foremost, this accounting-based methodology does not measure

12      investor return requirements. As indicated by Professor Roger Morin, a long-term

13      utility rate of return consultant, "More simply, the Comparable (Expected)

14      Earnings standard ignores capital markets. If interest rates go up 2% for example,

15      investor requirements and the cost of equity should increase commensurably, but if

16      regulation is based on accounting returns, no immediate change in equity cost

17      results."[65] As such, this method does not measure the market cost of equity because

18      there is no way to assess whether the earnings are greater than or less than the

19      earnings investors require, and therefore this approach does not measure the market

20      cost of equity capital.

21      The Expected ROEs are not Related to Investors' Market-Priced Opportunities – The

22      ROE ratios are an accounting measure that does not measure investor return

23      requirements.  Investors had no opportunity to invest in the proxy companies at the

24      accounting book value of equity.  In other words, the equity's book value *to investors*

25      is tied to market prices, which means that investors' required return on market-priced

26      equity aligns with expected return on book equity only when the equity's market

27      price and book value are aligned. Therefore, a market-based evaluation of the cost of

---

[65]   Roger Morin, *New Regulatory Finance* (2006), p. 293.

1    equity to investors in the proxies requires an associated analysis of the proxies'
2    market-to-book ("M/B") ratios. This was discussed at length earlier in my testimony.
3    In addition, as shown in Figure 8, below, there is a strong positive relationship
4    between Mr. Hevert's expected ROEs and the M/B ratios for his proxy companies.

5    **Figure 8**
6    **Expected ROEs and M/B Ratios**
7    **Hevert Proxy Group**



8
9    Data Sources: ROEs – Exhibit RBH-6, M/B Ratios – Exhibit JRW-2.

10   Changes in ROE Ratios do not Track Capital Market Conditions - As also indicated
11   by Morin, "The denominator of accounting return, book equity, is a historical cost-
12   based concept, which is insensitive to changes in investor return requirements. Only
13   stock market price is sensitive to a change in investor requirements. Investors can
14   only purchase new shares of common stock at current market prices and not at
15   book value."[66]

16   There is a Strong Negative Relationship between the ROE Ratios and the Common
17   Equity Ratios for the Proxy Companies - As shown in Figure 9 below, there is a
18   strong negative relationship between the proxies' ROEs and their common equity
19   ratios. That is, proxy companies with lower common equity ratios have higher ROEs,
20   and vise-versa. Since the proxy companies have a lower average common equity

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[66]    *Id.*

---

1      ratio (45.8%) as opposed to CenterPoint Houston's proposed common equity ratios

2      (51.65%), CenterPoint Houston's lower financial risk associated with a higher

3      common equity ratio implies that CenterPoint Houston would have a lower ROE, if

4      ROEs ratios correlated with equity's risks and costs.

5      **Figure 9**
6      **Expected ROEs and Common Equity Ratios**
7      **Hevert Proxy Group**



Data Sources: ROEs – Exhibit RBH-6, M/B Ratios – Exhibit JRW-2

8
9
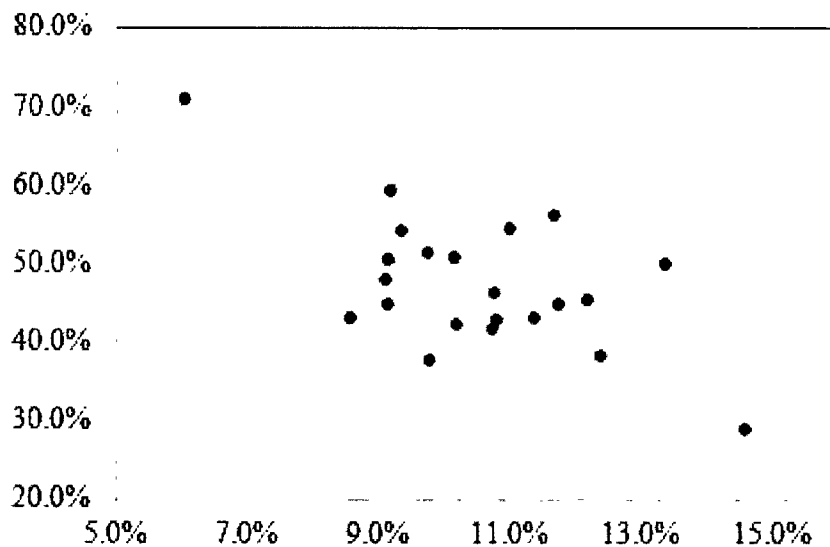
10     The Expected Earnings Approach is Circular - The proxies' ROEs ratios are not

11     determined by competitive market forces, but instead are largely the result of federal

12     and state rate regulation, including the present proceedings.

13     The Proxies' ROEs Reflect Earnings on Business Activities that are not

14     Representative of CEHE's Rate-Regulated Utility Activities - The numerators of the

15     proxy companies' ROEs include earnings from business activities that are riskier and

16     produce more projected earnings per dollar of book investment than does regulated

17     transmission with formula rates.  These include earnings from: (1) unregulated

18     businesses including merchant generation; (2) electric generation; and (3)

19     international operations.

| 1 | Q. | PLEASE SUMMARIZE YOUR ANALYSIS OF MR. HEVERT'S EXPECTED |
| 2 | | EARNINGS APPROACH. |

3  A.  In short, Mr. Hevert's Expected Earnings approach does not measure the market cost

4  of equity capital, is independent of most cost of capital indicators and, as shown

5  above, has a number of other empirical issues. Therefore, the Commission should

6  ignore this approach in determining the appropriate ROE for CenterPoint Houston.

7  **F.  Other Issues**

8  **1.  Other CEHE Risk Factors**

9  Q.  **PLEASE ADDRESS MR. HEVERT'S CONSIDERATION OF OTHER**
10  **UNIQUQE RISK FACTORS FACED BY CEHE.**

11  A.  Mr. Hevert also considers several other CEHE risk factors in arriving at his 10.4%

12  ROE recommendation.  These factors include: (1) customer concentration: (2)

13  geographic and weather risk, together with the securitization of system restoration

14  expenses; (3) regulatory mechanisms and capital spending; and (4) historical cash

15  flow from operations.  The issue is that these risk factors are all part of the credit-

16  rating process used by major rating agencies.  In addition, as I noted above, CEHE's

17  S&P and Moody's credit ratings of BBB+ and A3 suggest that the Company's

18  investment risk is a little less than the average of the proxy groups.

19  **2.  Flotation Costs**

20  Q.  **PLEASE ADDRESS MR. HEVERT'S CONSIDERATION OF FLOTATION**
21  **COSTS.**

22  A.  Mr. Hevert indicates that he has considered flotation costs of his ROE

23  recommendation for the Company.  However, there are a number of issues which

24  indicate that flotation costs should be ignored.

25  First and foremost, he has not identified any equity flotation cost paid by CEHE.

26  Therefore, he is asking for revenues in the form of a higher ROE to cover expenses

27  that the company does not incur.

1    Second, it is commonly argued that a flotation-cost adjustment (such as that used by

2    the Company) is necessary to prevent the dilution of the existing shareholders. This

3    is incorrect for several reasons:

4    (1)   If an equity flotation-cost adjustment is similar to a debt flotation-cost

5    adjustment, the fact that the market-to-book ratios for electric utility companies are

6    over 1.95X actually suggests that there should be a flotation-cost reduction (and not

7    an increase) to the equity cost rate. This is because when (a) a bond is issued at a

8    price in excess of face or book value, and (b) the difference between market price and

9    the book value is greater than the flotation or issuance costs, the cost of that debt is

10   lower than the coupon rate of the debt. The amount by which market values of

11   electric utility companies are in excess of book values is much greater than flotation

12   costs. Hence, if common stock flotation costs were exactly like bond flotation costs,

13   and one was making an explicit flotation cost adjustment to the cost of common

14   equity, the adjustment would be downward;

15   (2)   If a flotation cost adjustment is needed to prevent dilution of existing

16   stockholders' investment, then the reduction of the book value of stockholder

17   investment associated with flotation costs can occur only when a company's stock is

18   selling at a market price at/or below its book value. As noted above, electric utility

19   companies are selling at market prices well in excess of book value. Hence, when

20   new shares are sold, existing shareholders realize an increase in the book value per

21   share of their investment, not a decrease;

22   (3) Flotation costs consist primarily of the underwriting spread or fee and not out-of-

23   pocket expenses. On a per-share basis, the underwriting spread is the difference

24   between the price the investment banker receives from investors and the price the

25   investment banker pays to the company. Therefore, these are not expenses that must

26   be recovered through the regulatory process. Furthermore, the underwriting spread is

27   known to the investors who are buying the new issue of stock, and who are well

28   aware of the difference between the price they are paying to buy the stock and the

29   price that the Company is receiving. The offering price they pay is what matters

1          when investors decide to buy a stock based on its expected return and risk prospects.

2          Therefore, the company is not entitled to an adjustment to the allowed return to

3          account for those costs; and

4          (4) Flotation costs, in the form of the underwriting spread, are a form of a transaction

5          cost in the market. They represent the difference between the price paid by investors

6          and the amount received by the issuing company. Whereas the Company believes

7          that it should be compensated for these transaction costs, it has not accounted for

8          other market transaction costs in determining its cost of equity. Most notably,

9          brokerage fees that investors pay when they buy shares in the open market are another

10         market transaction cost. Brokerage fees increase the effective stock price paid by

11         investors to buy shares. If the Company had included these brokerage fees or

12         transaction costs in its DCF analysis, the higher effective stock prices paid for stocks

13         would lead to lower dividend yields and equity cost rates. This would result in a

14         downward adjustment to their DCF equity cost rate.

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

16  A.    Yes.

| APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES | § § § § | BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS |

# DIRECT TESTIMONY AND EXHIBITS

## OF

## J. RANDALL WOOLRIDGE

## APPENDIX A:

**Qualifications of Dr. J. Randall Woolridge**

Appendix A
Educational Background, Research, and Related Business Experience
J. Randall Woolridge

J. Randall Woolridge is a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed Faculty Fellow in Business Administration in the College of Business Administration of the Pennsylvania State University in University Park, PA. In addition, Professor Woolridge is Director of the Smeal College Trading Room and President and CEO of the Nittany Lion Fund, LLC.

Professor Woolridge received a Bachelor of Arts degree in Economics from the University of North Carolina, a Master of Business Administration degree from the Pennsylvania State University, and a Doctor of Philosophy degree in Business Administration (major area-finance, minor area-statistics) from the University of Iowa. He has taught Finance courses including corporation finance, commercial and investment banking, and investments at the undergraduate, graduate, and executive MBA levels.

Professor Woolridge's research has centered on empirical issues in corporation finance and financial markets. He has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance,* the *Journal of Financial Economics,* and the *Harvard Business Review.* His research has been cited extensively in the business press. His work has been featured in the *New York Times, Forbes, Fortune, The Economist, Barron's, Wall Street Journal, Business Week, Investors' Business Daily, USA Today,* and other publications. In addition, Dr. Woolridge has appeared as a guest to discuss the implications of his research on CNN's *Money Line,* CNBC's *Morning Call* and *Business Today,* and Bloomberg's *Morning Call.*

Professor Woolridge's stock valuation book, *The StreetSmart Guide to Valuing a Stock* (McGraw-Hill, 2003), was released in its second edition. He has also co-authored *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation, 1999) as well as a textbook entitled *Basic Principles of Finance* (Kendall Hunt, 2011).

Professor Woolridge has also consulted with corporations, financial institutions, and government agencies. In addition, he has directed and participated in university- and company-sponsored professional development programs for executives in 25 countries in North and South America, Europe, Asia, and Africa.

Over the past twenty-five years Dr. Woolridge has prepared testimony and/or provided consultation services in regulatory rate cases in the rate of return area in following states: Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Indiana, Kansas, Kentucky, Maryland, Massachusetts, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Washington, D.C. He has also testified before the Federal Energy Regulatory Commission.

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# J. Randall Woolridge

| **Office Address** | **Home Address** |
| --- | --- |
| 302 Business Building | 120 Haymaker Circle |
| The Pennsylvania State University | State College, PA 16801 |
| University Park, PA 16802 | 814-238-9428 |
| 814-865-1160 | |

## Academic Experience

**Professor of Finance**, the Smeal College of Business Administration, the Pennsylvania State University (July 1, 1990 to the present).

> **President, Nittany Lion Fund LLC,** (January 1, 2005 to the present)
> **Director, the Smeal College Trading Room** (January 1, 2001 to the present)
> **Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration** (July 1, 1987 to the present).

**Associate Professor of Finance**, College of Business Administration, the Pennsylvania State University (July 1, 1984 to June 30, 1990).

**Assistant Professor of Finance**, College of Business Administration, the Pennsylvania State University (September, 1979 to June 30, 1984).

## Education

**Doctor of Philosophy in Business Administration**, the University of Iowa. Major field: Finance.
**Master of Business Administration**, the Pennsylvania State University.
**Bachelor of Arts**, the University of North Carolina. Major field: Economics.

## Books

James A. Miles and J. Randall Woolridge, *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation), 1999

Patrick Cusatis, Gary Gray, and J. Randall Woolridge, *The StreetSmart Guide to Valuing a Stock* (2nd Edition, McGraw-Hill), 2003.

J. Randall Woolridge and Gary Gray, *The New Corporate Finance, Capital Markets, and Valuation: An Introductory Text* (Kendall Hunt, 2003).

## Research

Dr. Woolridge has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance,* the *Journal of Financial Economics,* and the *Harvard Business Review.*

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| APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES | §<br>§<br>§<br>§ | BEFORE THE STATE OFFICE<br>OF<br>ADMINISTRATIVE HEARINGS |
|---|---|---|

# DIRECT TESTIMONY AND EXHIBITS

## OF

## J. RANDALL WOOLRIDGE

## EXHIBIT JRW-1:

**Recommended Cost of Capital**

**Exhibit JRW-1**

**CenterPoint Energy Houston Electric, LLC**
**Recommended Cost of Capital**

**Panel A**
**Primary Cost of Capital Recommendation**

| Capital Source | Capitalization Ratio | Cost Rate | Weighted Cost Rate |
|---|---|---|---|
| Short-Term Debt | 0.00% | 0.00% | 0.00% |
| Long-Term Debt | 60.00% | 4.38% | 2.63% |
| Common Equity | 40.00% | 9.00% | 3.60% |
| Total | 100.00% | | 6.23% |

**Panel B**
**Alternative Cost of Capital Recommendation**

| Capital Source | Capitalization Ratio | Cost Rate | Weighted Cost Rate |
|---|---|---|---|
| Short-Term Debt | 0.90% | 2.27% | 0.02% |
| Long-Term Debt | 55.48% | 4.38% | 2.43% |
| Common Equity | 43.62% | 8.65% | 3.77% |
| Total | 100.00% | | 6.22% |

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| APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES | §<br>§<br>§<br>§ | BEFORE THE STATE OFFICE<br>OF<br>ADMINISTRATIVE HEARINGS |
|---|---|---|

## DIRECT TESTIMONY AND EXHIBITS

### OF

### J. RANDALL WOOLRIDGE

### EXHIBIT JRW-2:

### Summary Financial Statistics for Proxy Groups

Exhibit JRW-2
CenterPoint Energy Houston Electric, LLC

**Panel A**
**Electric Proxy Group**

| | Company | Ticker | Operating Revenue ($mil) | Percent Reg Elec Revenue | Percent Reg Gas Revenue | Net Plant ($mil) | Market Cap ($mil) | S&P Issuer Credit Rating | Moody's Long Term Rating | Pre-Tax Interest Coverage | Primary Service Area | Common Equity Ratio | Return on Equity | Market to Book Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ALLETE, Inc. (NYSE-ALE) | ALE | $1,498.6 | 71% | 0% | $3,904.4 | $3,993.8 | BBB+ | A3 | 3.34 | MN, WI | 59.2% | 8.2% | 1.85 |
| 2 | Alliant Energy Corporation (NYSE-LNT) | LNT | $3,534.5 | 85% | 13% | $12,462.4 | $10,172.3 | A- | Baa1 | 3.31 | WI,IA,IL,MN | 44.6% | 11.4% | 2.13 |
| 3 | Ameren Corporation (NYSE-AEE) | AEE | $6,291.0 | 85% | 15% | $22,810.0 | $16,366.8 | BBB+ | Baa1 | 3.64 | IL,MO | 46.2% | 10.9% | 2.11 |
| 4 | American Electric Power Co. (NYSE-AEP) | AEP | $16,195.7 | 88% | 0% | $55,099.1 | $37,379.9 | A- | Baa1 | 2.99 | 10 States | 42.7% | 10.3% | 1.96 |
| 5 | AVANGRID, Inc. (NYSE-AGR) | AGR | $6,291.0 | 56% | 23% | $22,810.0 | $16,366.8 | BBB+ | Baa1 | 3.53 | NY,CT,ME | 70.8% | 3.9% | 1.06 |
| 6 | CMS Energy Corporation (NYSE-CMS) | CMS | $6,873.0 | 66% | 28% | $18,126.0 | $13,966.2 | BBB+ | Baa1 | 2.67 | MI | 28.9% | 14.2% | 2.91 |
| 7 | Consolidated Edison, Inc. (NYSE-ED) | ED | $12,337.0 | 70% | 19% | $41,749.0 | $25,673.3 | A- | A3 | 3.03 | NY,PA | 44.8% | 8.6% | 1.52 |
| 8 | Duke Energy Corporation (NYSE-DUK) | DUK | $24,521.0 | 90% | 7% | $91,694.0 | $63,736.1 | A- | Baa1 | 2.47 | NC,OH,FL,SC,KY | 43.1% | 6.2% | 1.45 |
| 9 | Edison International (NYSE-EIX) | EIX | $12,657.0 | 100% | 0% | $41,348.0 | $18,107.4 | BBB+ | Baa3 | (0.48) | CA | 45.1% | -2.4% | 1.43 |
| 10 | El Paso Electric Company (NYSE-EE) | EE | $903.6 | 100% | 0% | $3,085.0 | $2,121.7 | BBB | Baa1 | 2.31 | TX,NM | 44.8% | 7.3% | 1.82 |
| 11 | Entergy Corporation (NYSE-ETR) | ETR | $11,009.5 | 85% | 1% | $31,974.4 | $16,448.0 | BBB+ | Baa2 | 0.69 | LA,AR,MS,TX | 32.8% | 10.2% | 1.86 |
| 12 | Eversource Energy (NYSE-ES) | ES | $8,448.2 | 79% | 10% | $25,610.4 | $21,470.9 | A+ | Baa1 | 3.67 | CT,NH,MA | 46.7% | 9.2% | 1.87 |
| 13 | Exelon Corporation (NYSE-EXC) | EXC | $11,009.5 | 56% | 5% | $31,974.4 | $46,448.0 | BBB+ | Baa2 | 2.44 | PA,NJ,IL,MD,DC,DE | 47.8% | 6.4% | 1.40 |
| 14 | FirstEnergy Corporation (NYSE-FE) | FE | $11,261.0 | 91% | 0% | $29,911.0 | $18,851.1 | BBB- | Baa3 | 2.17 | OH,PA,NY,NJ,WV,MD | 25.8% | 25.1% | 2.77 |
| 15 | Hawaiian Electric Industries (NYSE-HEC) | HE | $2,860.8 | 89% | 0% | $4,830.1 | $4,060.1 | BBB- | NR | 3.87 | HI | 51.2% | 9.6% | 1.88 |
| 16 | IDACORP, Inc. (NYSE-IDA) | IDA | $1,370.8 | 100% | 0% | $4,395.7 | $8,562.5 | BBB | Baa1 | 3.85 | ID | 56.4% | 9.8% | 3.60 |
| 17 | MGE Energy, Inc. (NYSE-MGEE) | MGEE | $559.8 | 72% | 28% | $1,509.4 | $2,303.7 | AA- | Aa2 | 7.69 | WI | 61.5% | 10.6% | 2.82 |
| 18 | NextEra Energy, Inc. (NYSE-NEE) | NEE | $16,727.0 | 71% | 0% | $70,334.0 | $83,224.6 | A- | Baa1 | 5.87 | FL | 49.8% | 17.3% | 2.22 |
| 19 | NorthWestern Corporation (NYSE-NWE) | NWE | $1,192.0 | 77% | 23% | $4,521.3 | $2,991.2 | BBB | NR | 2.94 | MT,SD,NE | 47.8% | 10.5% | 1.54 |
| 20 | OGE Energy Corp. (NYSE-OGE) | OGE | $2,270.3 | 100% | 0% | $8,643.8 | $7,899.1 | BBB+ | Baa1 | 4.19 | OK,AR | 56.0% | 10.8% | 1.97 |
| 21 | Pinnacle West Capital Corp. (NYSE-PNW) | PNW | $3,691.2 | 95% | 0% | $14,029.6 | $16,260.8 | A- | A3 | 4.04 | AZ | 50.6% | 10.1% | 3.04 |
| 22 | PNM Resources, Inc. (NYSE-PNM) | PNM | $1,436.6 | 100% | 0% | $5,234.6 | $3,360.4 | BBB+ | Baa3 | 1.73 | NM,TX | 37.6% | 5.8% | 1.92 |
| 23 | Portland General Electric Company (NYSE-POR) | POR | $1,991.0 | 100% | 0% | $6,887.0 | $4,287.2 | BBB+ | A3 | 2.85 | OR | 50.3% | 8.6% | 1.71 |
| 24 | PPL Corporation (NYSE-PPL) | PPL | $7,785.0 | 94% | 4% | $34,458.0 | $20,457.2 | A- | Baa2 | 3.37 | PA,KY | 34.6% | 16.3% | 1.75 |
| 25 | Sempra Energy (NYSE-SRE) | SRE | $1,991.0 | 56% | 44% | $6,887.0 | $31,467.5 | BBB+ | Baa1 | 2.02 | CA,TX | 43.1% | 6.5% | 1.63 |
| 26 | Southern Company (NYSE-SO) | SO | $23,495.0 | 65% | 14% | $80,797.0 | $48,493.6 | A- | Baa2 | 2.49 | GA,FL,NJ,IL,VA,TN,MS | 38.3% | 8.4% | 1.67 |
| 27 | WEC Energy Group (NYSE-WEC) | WEC | $7,679.5 | 58% | 42% | $22,000.9 | $22,541.0 | A- | Baa1 | 3.76 | WI,IL,MN,MI | 45.3% | 3.3% | 2.30 |
| 28 | Xcel Energy Inc. (NYSE-XEL) | XEL | $11,537.0 | 84% | 15% | $36,944.0 | $25,972.7 | A- | A3 | 3.21 | MN,WI,ND,SD,MI | 41.5% | 10.7% | 2.13 |
| | Mean | | $7,764.9 | 82% | 10% | $26,215.4 | $21,178.0 | BBB+ | Baa1 | 3.13 | | 46.0% | 9.6% | 2.01 |
| | Median | | $6,582.0 | 85% | 4% | $22,405.5 | $16,407.4 | BBB+ | Baa1 | 3.12 | | 45.2% | 9.7% | 1.87 |

Data Source  Company 2018 SEC 10-K filings, *Value Line Investment Survey*, 2019

**Panel B**
**Hevert Proxy Group**

| | Company | Ticker | Operating Revenue ($mil) | Percent Reg Elec Revenue | Percent Reg Gas Revenue | Net Plant ($mil) | Market Cap ($bil) | S&P Issuer Credit Rating | Moody's Long Term Rating | Pre-Tax Interest Coverage | Primary Service Area | Common Equity Ratio | Return on Equity | Market to Book Ratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ALLETE, Inc. (NYSE-ALE) | ALE | $1,498.6 | 71% | 0% | $3,904.4 | $3,993.8 | BBB+ | A3 | 3.34 | MN, WI | 59.2% | 8.2% | 1.85 |
| 2 | Alliant Energy Corporation (NYSE-LNT) | LNT | $3,534.5 | 85% | 13% | $12,462.4 | $10,172.3 | A- | Baa1 | 3.31 | WI,IA,IL,MN | 44.6% | 11.4% | 2.13 |
| 3 | Ameren Corporation (NYSE-AEE) | AEE | $6,291.0 | 85% | 15% | $22,810.0 | $16,366.8 | BBB+ | Baa1 | 3.64 | IL,MO | 46.2% | 10.9% | 2.11 |
| 4 | American Electric Power Co. (NYSE-AEP) | AEP | $16,195.7 | 88% | 0% | $55,099.1 | $37,379.9 | A- | Baa1 | 2.99 | 10 States | 42.7% | 10.3% | 1.96 |
| 5 | AVANGRID, Inc. (NYSE-AGR) | AGR | $6,291.0 | 56% | 23% | $22,810.0 | $16,366.8 | BBB+ | Baa1 | 3.53 | NY,CT,ME | 70.8% | 3.9% | 1.06 |
| 6 | Black Hills Corporation (NYSE-BKH) | BKH | $1,754.3 | 41% | 58% | $4,854.9 | $3,842.7 | BBB+ | Baa2 | 2.77 | CO,SD,WY,MT | 42.1% | 13.3% | 1.68 |
| 7 | CMS Energy Corporation (NYSE-CMS) | CMS | $6,873.0 | 66% | 28% | $18,126.0 | $13,966.2 | BBB+ | Baa1 | 2.67 | MI | 28.9% | 14.2% | 2.91 |
| 8 | Consolidated Edison, Inc. (NYSE-ED) | ED | $12,337.0 | 70% | 19% | $41,749.0 | $25,673.3 | A- | A3 | 3.03 | NY,PA | 44.8% | 8.6% | 1.52 |
| 9 | DTE Energy Company (NYSE-DTE) | DTE | $14,212.0 | 37% | 39% | $21,650.0 | $20,066.4 | BBB+ | Baa1 | 3.15 | MI | 42.9% | 10.8% | 1.87 |
| 10 | Duke Energy Corporation (NYSE-DUK) | DUK | $24,521.0 | 90% | 7% | $91,694.0 | $63,736.1 | A- | Baa1 | 2.47 | NC,OH,FL,SC,KY | 43.1% | 6.2% | 1.45 |
| 11 | El Paso Electric Company (NYSE-EE) | EE | $903.6 | 100% | 0% | $3,085.0 | $2,121.7 | BBB | Baa1 | 2.31 | TX,NM | 44.8% | 7.3% | 1.82 |
| 12 | Evergy (NYSE:EVRG) | EVRG | $4,275.9 | 100% | 0% | $18,782.5 | $14,840.0 | BBB+ | Baa1 | 3.11 | KS,MO | 54.2% | 7.9% | 1.49 |
| 13 | Eversource Energy (NYSE-ES) | ES | $8,448.2 | 79% | 10% | $25,610.4 | $21,470.9 | A+ | Baa1 | 3.67 | CT,NH,MA | 46.7% | 9.2% | 1.87 |
| 14 | Hawaiian Electric Industries (NYSE-HEC) | HE | $2,860.8 | 89% | 0% | $4,830.1 | $4,060.1 | BBB- | NR | 3.87 | HI | 51.2% | 9.6% | 1.88 |
| 15 | NextEra Energy, Inc. (NYSE-NEE) | NEE | $16,727.0 | 71% | 0% | $70,334.0 | $83,224.6 | A- | Baa1 | 5.87 | FL | 49.8% | 17.3% | 2.22 |
| 16 | NorthWestern Corporation (NYSE-NWE) | NWE | $1,192.0 | 77% | 23% | $4,521.3 | $2,991.2 | BBB | NR | 2.94 | MT,SD,NE | 47.8% | 10.5% | 1.54 |
| 17 | OGE Energy Corp. (NYSE-OGE) | OGE | $2,270.3 | 100% | 0% | $8,643.8 | $7,899.1 | BBB+ | Baa1 | 4.19 | OK,AR | 56.0% | 10.8% | 1.97 |
| 18 | Otter Tail Corporation (NDQ-OTTR) | OTTR | $916.4 | 49% | 0% | $1,581.1 | $1,975.3 | BBB | Baa2 | 4.19 | OK,AR | 54.5% | 11.6% | 2.71 |
| 19 | Pinnacle West Capital Corp. (NYSE-PNW) | PNW | $3,691.2 | 95% | 0% | $14,029.6 | $16,260.8 | A- | A3 | 4.04 | AZ | 50.6% | 10.1% | 3.04 |
| 20 | PNM Resources, Inc. (NYSE-PNM) | PNM | $1,436.6 | 100% | 0% | $5,234.6 | $3,360.4 | BBB+ | Baa3 | 1.73 | NM,TX | 37.6% | 5.8% | 1.92 |
| 21 | Portland General Electric Company (NYSE-POR) | POR | $1,991.0 | 100% | 0% | $6,887.0 | $4,287.2 | BBB+ | A3 | 2.85 | OR | 50.3% | 8.6% | 1.71 |
| 22 | Southern Company (NYSE-SO) | SO | $23,495.0 | 65% | 14% | $80,797.0 | $48,493.6 | A- | Baa2 | 2.49 | GA,FL,NJ,IL,VA,TN,MS | 38.3% | 8.4% | 1.67 |
| 23 | WEC Energy Group (NYSE-WEC) | WEC | $7,679.5 | 58% | 42% | $22,000.9 | $22,541.0 | A- | Baa1 | 3.76 | WI,IL,MN,MI | 45.3% | 3.3% | 2.30 |
| 24 | Xcel Energy Inc. (NYSE-XEL) | XEL | $11,537.0 | 84% | 15% | $36,944.0 | $25,972.7 | A- | A3 | 3.21 | MN,WI,ND,SD,MI | 41.5% | 10.7% | 2.13 |
| | Mean | | $7,538.9 | 77% | 13% | $24,935.0 | $19,627.6 | BBB+ | Baa1 | 3.30 | | 47.2% | 9.5% | 1.95 |
| | Median | | $5,283.5 | 82% | 9% | $18,454.3 | $15,550.4 | BBB+ | Baa1 | 3.18 | | 45.8% | 9.8% | 1.88 |

Data Source  Company 2018 SEC 10-K filings, *Value Line Investment Survey*, 2019

Exhibit JRW-2

CenterPoint Energy Houston Electric, LLC

*Value Line* Risk Metrics

Panel A

Electric Proxy Group

| | Company | Beta | Financial Strength | Safety | Earnings Predictability | Stock Price Stability |
|---|---|---|---|---|---|---|
| 1 | ALLETE, Inc. (NYSE-ALE) | 0.65 | A | 2 | 85 | 95 |
| 2 | Alliant Energy Corporation (NYSE-LNT) | 0.60 | A | 2 | 85 | 95 |
| 3 | Ameren Corporation (NYSE-AEE) | 0.55 | A | 2 | 80 | 95 |
| 4 | American Electric Power Co. (NYSE-AEP) | 0.55 | A+ | 1 | 85 | 100 |
| 5 | AVANGRID, Inc. (NYSE-AGR) | 0.40 | B++ | 2 | NMF | 95 |
| 6 | CMS Energy Corporation (NYSE-CMS) | 0.55 | B++ | 2 | 85 | 100 |
| 7 | Consolidated Edison, Inc. (NYSE-ED) | 0.45 | A+ | 1 | 95 | 100 |
| 8 | Duke Energy Corporation (NYSE-DUK) | 0.50 | A | 2 | 85 | 100 |
| 9 | Edison International (NYSE-EIX) | 0.60 | B+ | 3 | 65 | 85 |
| 10 | El Paso Electric Company (NYSE-EE) | 0.70 | B++ | 2 | 75 | 90 |
| 11 | Entergy Corporation (NYSE-ETR) | 0.60 | B++ | 3 | 60 | 95 |
| 12 | Eversource Energy (NYSE-ES) | 0.60 | A | 1 | 90 | 100 |
| 13 | Exelon Corporation (NYSE-EXC) | 0.70 | B++ | 3 | 50 | 90 |
| 14 | FirstEnergy Corporation (NYSE-FE) | 0.65 | B++ | 2 | 40 | 90 |
| 15 | Hawaiian Electric Inductries (NYSE-HEC) | 0.60 | A | 2 | 60 | 95 |
| 16 | IDACORP, Inc. (NYSE-IDA) | 0.60 | A | 2 | 95 | 95 |
| 17 | MGE Energy, Inc. (NYSE-MGEE) | 0.60 | A | 1 | 90 | 85 |
| 18 | NextEra Energy, Inc. (NYSE-NEE) | 0.60 | A+ | 1 | 70 | 100 |
| 19 | NorthWestern Corporation (NYSE-NWE) | 0.60 | B++ | 2 | 85 | 95 |
| 20 | OGE Energy Corp. (NYSE-OGE) | 0.85 | A | 2 | 80 | 90 |
| 21 | Pinnacle West Capital Corp. (NYSE-PNW) | 0.55 | A+ | 1 | 95 | 100 |
| 22 | PNM Resources, Inc. (NYSE-PNM) | 0.65 | B+ | 3 | 75 | 85 |
| 23 | Portland General Electric Company (NYSE-POR) | 0.60 | B++ | 2 | 85 | 95 |
| 24 | PPL Corporation (NYSE-PPL) | 0.70 | B++ | 2 | 70 | 95 |
| 25 | Sempra Energy (NYSE-SRE) | 0.75 | A | 2 | 75 | 95 |
| 26 | Southern Company (NYSE-SO) | 0.50 | A | 2 | 95 | 100 |
| 27 | WEC Energy Group (NYSE-WEC) | 0.50 | A+ | 1 | 85 | 95 |
| 28 | Xcel Energy Inc. (NYSE-XEL) | 0.50 | A+ | 1 | 100 | 100 |
| | Mean | 0.60 | A | 1.9 | 79 | 95 |

Data Source: *Value Line Investment Survey*, 2019.

Panel B

Hevert Proxy Group

| | Company | Beta | Financial Strength | Safety | Earnings Predictability | Stock Price Stability |
|---|---|---|---|---|---|---|
| 1 | ALLETE, Inc. (NYSE-ALE) | 0.65 | A | 2 | 85 | 95 |
| 2 | Alliant Energy Corporation (NYSE-LNT) | 0.60 | A | 2 | 85 | 95 |
| 3 | Ameren Corporation (NYSE-AEE) | 0.55 | A | 2 | 80 | 95 |
| 4 | American Electric Power Co. (NYSE-AEP) | 0.55 | A+ | 1 | 85 | 100 |
| 5 | AVANGRID, Inc. (NYSE-AGR) | 0.40 | B++ | 2 | NMF | 95 |
| 6 | Black Hills Corporation (NYSE-BKH) | 0.80 | A | 2 | 55 | 80 |
| 7 | CMS Energy Corporation (NYSE-CMS) | 0.55 | B++ | 2 | 85 | 100 |
| 8 | Consolidated Edison, Inc. (NYSE-ED) | 0.45 | A+ | 1 | 95 | 100 |
| 9 | DTE Energy Company (NYSE-DTE) | 0.55 | B++ | 2 | 80 | 100 |
| 10 | Duke Energy Corporation (NYSE-DUK) | 0.45 | A | 2 | 85 | 100 |
| 11 | El Paso Electric Company (NYSE-EE) | 0.70 | B++ | 2 | 75 | 90 |
| 12 | Evergy (NYSE:EVRG) | NMF | B++ | 2 | NMF | NMF |
| 13 | Eversource Energy (NYSE-ES) | 0.60 | A | 1 | 90 | 100 |
| 14 | Hawaiian Electric Inductries (NYSE-HEC) | 0.60 | A | 2 | 60 | 95 |
| 15 | NextEra Energy, Inc. (NYSE-NEE) | 0.60 | A+ | 1 | 70 | 100 |
| 16 | NorthWestern Corporation (NYSE-NWE) | 0.60 | B++ | 2 | 85 | 95 |
| 17 | OGE Energy Corp. (NYSE-OGE) | 0.85 | A | 2 | 80 | 90 |
| 18 | Otter Tail Corporation (NDQ-OTTR) | 0.75 | A | 2 | 60 | 85 |
| 19 | Pinnacle West Capital Corp. (NYSE-PNW) | 0.55 | A+ | 1 | 95 | 100 |
| 20 | PNM Resources, Inc. (NYSE-PNM) | 0.65 | B+ | 3 | 75 | 85 |
| 21 | Portland General Electric Company (NYSE-POR) | 0.60 | B++ | 2 | 85 | 95 |
| 22 | Southern Company (NYSE-SO) | 0.50 | A | 2 | 95 | 100 |
| 23 | WEC Energy Group (NYSE-WEC) | 0.50 | A+ | 1 | 85 | 95 |
| 24 | Xcel Energy Inc. (NYSE-XEL) | 0.50 | A+ | 1 | 100 | 100 |
| | Mean | 0.59 | A | 1.8 | 81 | 95 |

Data Source *Value Line Investment Survey*, 2019

*Value Line* **Risk Metrics**

## Beta

A relative measure of the historical sensitivity of a stock's price to overall fluctuations in the New York Stock Exchange Composite Index. A of 1.50 indicates a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Index. The "coefficient" is derived from a regression analysis of the relationship between weekly percent-age changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. Betas are adjusted for their long-term tendency to converge toward 1.00.

## Financial Strength

A relative measure of of the companies reviewed by Value Line. The relative ratings range from A++ (strongest) down to C (weakest).

## Safety Rank

A measurement of potential risk associated with individual common stocks. The Safety Rank is computed by averaging two other Value Line indexes the Price Stability Index and the Financial strength Rating. Safety Ranks range from 1 (Highest) to 5 (Lowest). Conservative investors should try to limit their purchases to equities ranked 1 (Highest) and 2 (Above Average) for Safety.          .

## Earnings Predictability

A measure of the reliability of an earnings forecast. Earnings Predictability is based upon the stability of year-to-year comparisons, with recent years being weighted more heavily that earlier ones. The most reliable forecasts tend to be those with the highest rating (100); the least reliable, the lowest (5). The earnings stability is derived from the standard deviation of percentage changes in quarterly earnbings over an eight-year period. Special adjustments are made for comparisons around zero and from plus to minus.

## Stock Price Stability

A measure of the stability of a stock's price It includes sensitivity to the market (see Beta as well as the stock's inherent volatility. Value Line Stability ratings range from 1 (highest) to 5 (lowest).

Source: *Value Line Investment Analyzer*.

SOAH DOCKET NO. 473-19-3864
PUC DOCKET NO. 49421

| | | |
|---|---|---|
| APPLICATION OF CENTERPOINT ENERGY HOUSTON ELECTRIC, LLC FOR AUTHORITY TO CHANGE RATES | § § § § | BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS |

DIRECT TESTIMONY AND EXHIBITS

OF

J. RANDALL WOOLRIDGE

EXHIBIT JRW-3:

Capital Structure and Debt Cost Rate

**Exhibit JRW-3**
**Capital Structure and Senior Capital Cost Rates**

**Panel A - CEHE's Proposed Capital Structure and Senior Capital Cost Rates**

| Capital Source | Capitalization Ratio | Cost Rate |
|---|---|---|
| Short-Term Debt | 0.00% | 0.00% |
| Long-Term Debt | 50.00% | 4.38% |
| Common Equity | 50.00% | |
| Total | 100.00% | |

**Panel B - TCUC's Primary Capital Structure and Senior Capital Cost Rates**

| Capital Source | Capitalization Ratio | Cost Rate |
|---|---|---|
| Short-Term Debt | 0.00% | 0.00% |
| Long-Term Debt | 60.00% | 4.38% |
| Common Equity | 40.00% | |
| Total | 100.00% | |

**Panel C - TCUC's Alternative Capital Structure and Senior Capital Cost Rates**

| Capital Source | Capitalization Ratio | Cost Rate |
|---|---|---|
| Short-Term Debt | 0.90% | 2.27% |
| Long-Term Debt | 55.48% | 4.38% |
| Common Equity | 43.62% | |
| Total | 100.00% | |

**Exhibit JRW-3**
**Quarterly Capital Structure Ratios**
**CenterPoint Energy, Inc. and CenterPoint Energy Houston Electric, LLC**

**CenterPoint Energy, Inc.**

| $millions Capital Source | March 31, 2016 | June 30, 2016 | Sep 30, 2016 | Dec 31, 2016 | March 31, 2017 | June 30, 2017 | Sep 30, 2017 | Dec 31, 2017 | March 31, 2018 | June 30, 2018 | Sep 30, 2018 | Dec 31, 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Short-Term Debt | 824 | 1,213 | 998 | 1,404 | 1,631 | 1,688 | 976 | 1,753 | 915 | 565 | 202 | 210 |
| Long-Term Debt | 7,550 | 7,229 | 7,414 | 7,059 | 6,958 | 6,898 | 7,569 | 6,961 | 7,789 | 7,617 | 7,493 | 8,875 |
| Shareholders' Equity* | 3,506 | 3,397 | 3,472 | 3,460 | 3,537 | 3,563 | 3,618 | 4,688 | 4,857 | 4,670 | 5,508 | 8,058 |
| Total Capital | 11,880 | 11,839 | 11,884 | 11,924 | 12,126 | 12,149 | 12,162 | 13,402 | 13,562 | 12,852 | 13,203 | 17,143 |

| Percentages Capital Source | March 31, 2016 | June 30, 2016 | Sep 30, 2016 | Dec 31, 2016 | March 31, 2017 | June 30, 2017 | Sep 30, 2017 | Dec 31, 2017 | March 31, 2018 | June 30, 2018 | Sep 30, 2018 | Dec 31, 2018 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Short-Term Debt | 6.9% | 10.2% | 8.4% | 11.8% | 13.5% | 13.9% | 8.0% | 13.1% | 6.7% | 4.4% | 1.5% | 1.2% | 8.3% |
| Long-Term Debt | 63.5% | 61.1% | 62.4% | 59.2% | 57.4% | 56.8% | 62.2% | 51.9% | 57.4% | 59.3% | 56.8% | 51.8% | 58.3% |
| Shareholders' Equity* | 29.5% | 28.7% | 29.2% | 29.0% | 29.2% | 29.3% | 29.7% | 35.0% | 35.8% | 36.3% | 41.7% | 47.0% | 33.4% |
| Total Capital | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

*Source CenterPoint Energy Form 10-K and Form 10-Q filings, 2016-2018*

**CenterPoint Energy Houston Electric, LLC**

| $millions Capital Source | March 31, 2016 | June 30, 2016 | Sep 30, 2016 | Dec 31, 2016 | March 31, 2017 | June 30, 2017 | Sep 30, 2017 | Dec 31, 2017 | March 31, 2018 | June 30, 2018 | Sep 30, 2018 | Dec 31, 2018 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Short-Term Debt* | 465 | 444 | 129 | - | - | - | - | 60 | - | - | 75 | 1 |
| Long-Term Debt | 2,099 | 2,199 | 2,499 | 2,502 | 2,801 | 2,803 | 2,806 | 2,808 | 3,205 | 3,208 | 3,210 | 3,213 |
| Member's Equity | 1,618 | 1,678 | 1,772 | 2,117 | 2,103 | 2,168 | 2,252 | 2,369 | 2,394 | 2,464 | 2,550 | 2,682 |
| Total Capital | 4,182 | 4,321 | 4,400 | 4,619 | 4,904 | 4,971 | 5,058 | 5,237 | 5,599 | 5,672 | 5,835 | 5,896 |

| Percentages Capital Source | March 31, 2016 | June 30, 2016 | Sep 30, 2016 | Dec 31, 2016 | March 31, 2017 | June 30, 2017 | Sep 30, 2017 | Dec 31, 2017 | March 31, 2018 | June 30, 2018 | Sep 30, 2018 | Dec 31, 2018 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Short-Term Debt* | 11.1% | 10.3% | 2.9% | 0.0% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 1.3% | 0.0% | 2.2% |
| Long-Term Debt | 50.2% | 50.9% | 56.8% | 54.2% | 57.1% | 56.4% | 55.5% | 53.6% | 57.2% | 56.6% | 55.0% | 54.5% | 54.8% |
| Member's Equity | 38.7% | 38.8% | 40.3% | 45.8% | 42.9% | 43.6% | 44.5% | 45.2% | 42.8% | 43.4% | 43.7% | 45.5% | 42.9% |
| Total Capital | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

*Money Pool Borrowings, Source CenterPoint Energy Houston Electric Form 10-K and Form 10-Q filings, 2016-2018

Key issues
CEHE 700M debt issue - JAN
CPN 1 9B equity issue to fund Vectren Acq - 10-1-18
Feb - S&P downgrades CNP from A- to BBB+ due to merger
Other cases
Wind Energy Transmission LLC - 2015 - 9.6% ROE - 40% CE Ratio
Cross Texas transmission LLC - 2015 - 9 6% ROE - 40% CE Ratio
Lone Star transmission LLC - new entrant - 9 6% ROE 2019 - 45% CE Ratio

**Panel A**
**CenterPoint Energy Houston Electric, LLC**
**Quarterly Amounts of Long-Term Debt and Equity**

| *$millions* Capital Source | March 31, 2018 | June 30, 2018 | Sep 30, 2018 | Dec 31, 2018 | Average |
|---|---|---|---|---|---|
| Long-Term Debt | 3,205 | 3,208 | 3,210 | 3,213 | 3,209 |
| Member's Equity | 2,394 | 2,464 | 2,550 | 2,682 | 2,522 |
| Total Capital | 5,599 | 5,672 | 5,760 | 5,895 | 5,731 |

**Panel B**
**CenterPoint Energy Houston Electric, LLC**
**TCUC Recommended Capitl Structure**

| | Average | Percent | Cost Rate |
|---|---|---|---|
| Short-Term Debt* | 52.10 | 0.90% | 2.27% |
| Long-Term Debt** | 3208.76 | 55.48% | 4.38% |
| Member's Equity** | 2522.49 | 43.62% | |
| Total Capital | 5783.36 | 100.00% | |

\* 2018 Daily Average
\*\* 2018 Quarterly Average

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APPLICATION OF CENTERPOINT § BEFORE THE STATE OFFICE
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CHANGE RATES §

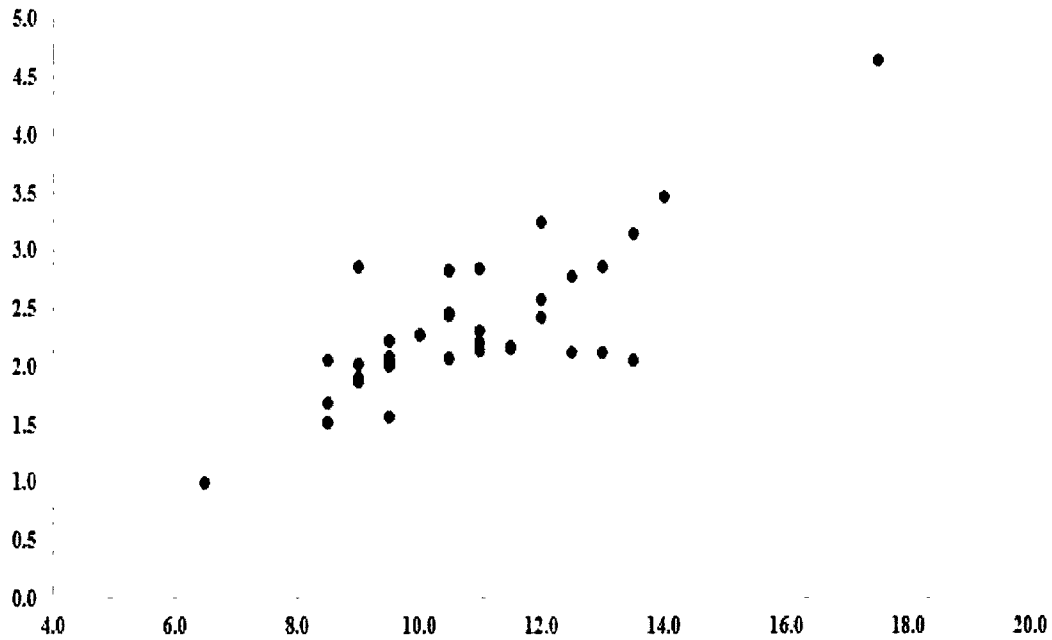DIRECT TESTIMONY AND EXHIBITS

OF

J. RANDALL WOOLRIDGE

EXHIBIT JRW-4:

The Relationship Between Estimated ROE and Market-to-Book Ratios

**Exhibit JRW-4**
**Electric Utilities**

**Market-to-Book**



**R-Square = .63, N=36**

Source: *Value Line Investment Survey*, 2019.